



MOTION TECHNOLOGIES
PTY LIMITED

ROTARY LIMIT SWITCHES



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BASE

Rotary limit switch



Rotary limit switch used to control and measure the movement of industrial machines. Its compact size makes it suitable for use in narrow spaces.

FEATURES

- It consists of a gear motor that transfers movement to the cams through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages (pairs of straight toothed gears).
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 1 million operations.
- IP protection degree: Base is classified IP42, IP65 or IP66, IP67 and IP69K.
- NEMA protection degree: Base IP66, IP67 and IP69K is classified Type 3.
- Extreme temperature resistance: -40°C to +80°C.
- It features stainless steel AISI 430F transmission and gear driving shafts, self-lubricating technopolymer gears and driving bushes, technopolymer base and cover.
- Sintered bronze bushes are moulded into the base of the limit switch to optimize shaft rotation and prevent rubbing with plastic material.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

OPTIONS

- Revolution ratios from 1:15 to 1:1500, achieved by combining different secondary output stages.
- Snap action switches with 1NO+1NC contacts.
- It can be equipped with a cam set with maximum 6 switches.
- Dedicated cable clamps or connectors.
- Available with anti-moisture plug fitted to the base by means of a lock nut, to improve transpiration for the limit switch while maintaining protection against water.
- Available with flanges, pinion gears and couplings.
- Available with direct control switches to enable direct action on the motor.

CERTIFICATIONS

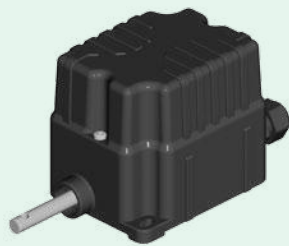
- CE marking, cURus* marking and EAC certification.
- Complying with accident prevention regulation BGV C 1 (only for Germany).

Use the online configurator (<https://configuratore.terworld.com>) or fill in the "request form" for accurate product configuration.

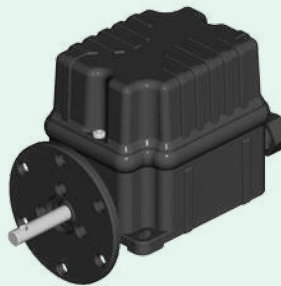
* Not available on all versions.

POSSIBLE ASSEMBLIES

IP 42 with 2 switches



IP 66/IP 67/IP 69K, with 2 or 3 switches and flange







IP 66/IP 67/IP 69K, with 4 switches



With anti-moisture plug



CERTIFICATIONS


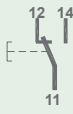





| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/35/UE Low Voltage Directive |
| | 2006/42/CE Machinery Directive |
| | EN 60204-1 Safety of machinery - Electrical equipment of machines |
| Conformity to CE Standards | EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines |
| | EN 60947-1 Low-voltage switchgear and controlgear |
| | EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices |
| Conformity to cULus Standards | EN 60529 Degrees of protection provided by enclosures |
| | CSA-C22.2 No 14-13 Industrial Control Equipment |
| | UL 508 Industrial Control Equipment |
| BGV C 1 | Regulations for the prevention of accidents BGV C 1 (only for Germany) |
| Markings and homologations | Version IP42 or IP65:   |
| | Version IP 66/IP 67/IP 69K:    |

GENERAL TECHNICAL SPECIFICATIONS

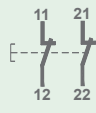

| | |
|------------------------|-------------------------------------|
| Ambient temperature | Storage -40°C/+80°C |
| | Operational -40°C/+80°C |
| IP protection degree | IP 42 |
| | IP 65 |
| | IP 66/IP 67/IP 69K |
| NEMA protection degree | Type 3 (version IP 66/IP 67/IP 69K) |
| Insulation category | Class II |
| Maximum rotation speed | 800 rpm |
| Cable entry | Cable clamp M16 |
| Shafts | Stainless steel AISI 430F |

* Not available on all versions.

TECHNICAL SPECIFICATIONS OF THE SWITCHES FOR AUXILIARY CONTROL

| Code | PRSL0003XX | PRSL0011XX | PRSL0017XX | PRSL0195XX |
|----------------------------|---|---|---|--------------------|
| Utilisation category | AC 15 - B300 | | AC 15 - C300 | |
| Rated operational voltage | 250 Vac | | | |
| Rated operational current | 3 A | | | |
| Rated thermal current | 5 A | | 2.5 A | |
| Rated insulation voltage | 300 Vac | | | |
| Mechanical life | 1x10 ⁶ operations | | | |
| Connections | 6.3 mm Faston taps | Screw-type terminals | Screw-type terminals | 6.3 mm Faston taps |
| Wires | - | 2x0.5mm ² , 2x1.5 mm ² , 1x2.5 mm ² | 2x0.5mm ² , 2x1.5 mm ² , 1x2.5 mm ² | - |
| Tightening torque | - | 0.5 Nm | 0.5 Nm | - |
| Switch type | Single break, snap action | | | |
| Contacts | 1NO+1NC (All NC contacts are of the positive opening operation type ) | 1NO+1NC | 1NO+1NC | 1NO+1NC |
| Scheme |  | | | |
| Markings and homologations |    | |   | |

TECHNICAL SPECIFICATIONS OF THE SWITCHES FOR DIRECT CONTROL

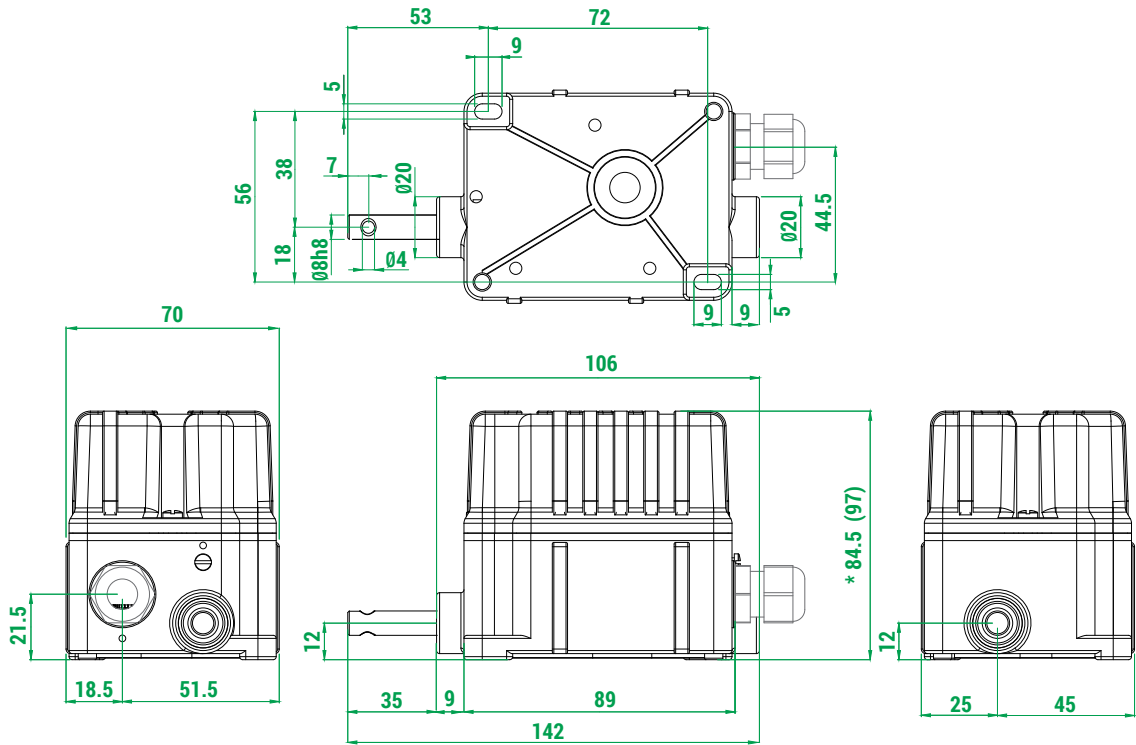
| Code | PRSL0455PI |
|----------------------------|---|
| Utilisation category | AC 3 |
| Rated operational current | 400 Vac |
| Rated operational voltage | 10 A |
| Rated thermal current | 20 A |
| Rated insulation voltage | 660 Vac |
| Mechanical life | 1x10 ⁶ operations |
| Connections | Screw-type terminals |
| Wires | 2x1.5 mm ² , 1x2.5 mm ² |
| Tightening torque | 0.8 Nm |
| Switch type | Two-pole |
| Contacts | 2NC |
| Scheme |  |
| Markings and homologations |  |

OVERALL DIMENSIONS (mm)

Limit switches with sets of 5 or 6 switches PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX or with sets of 2 switches PRSL0455PI are available only with protection degree IP 66 / IP 67 / IP 69K and a special cover, or in the IP 00 version without cover. Both configurations are not cURus certified. Overall dimensions and code numbers are available on request.

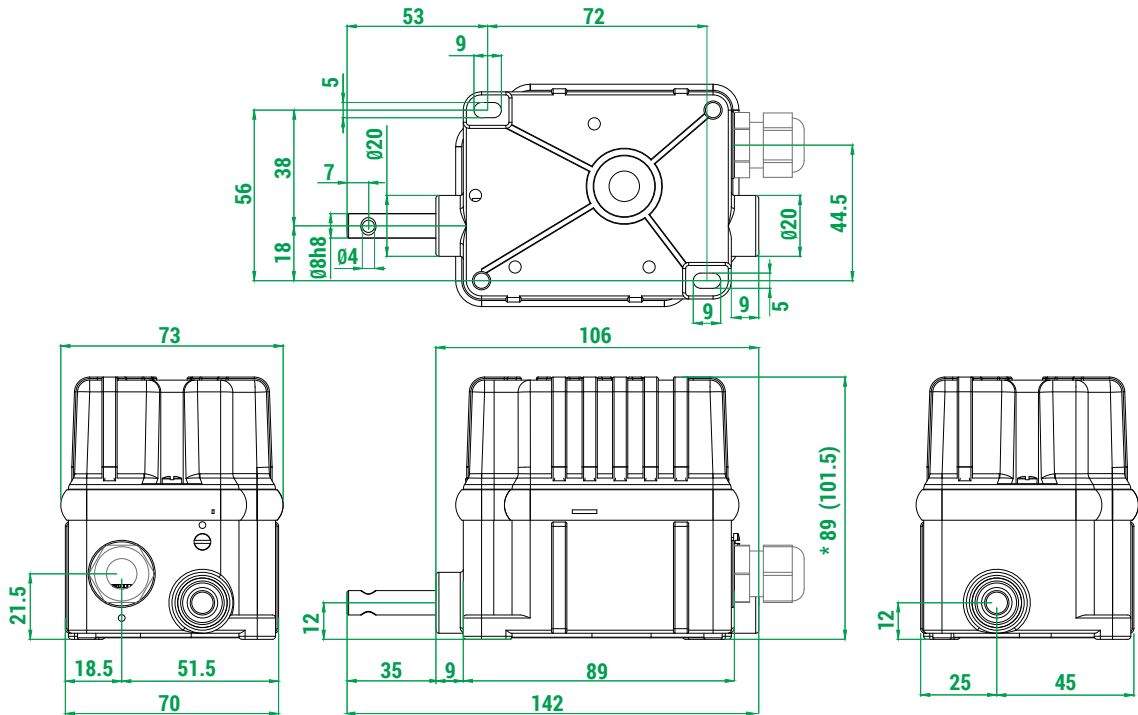
IP 42 or IP 65

- * 2 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches or 1 PRSL0455PI switch.
- () 3/4 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches.



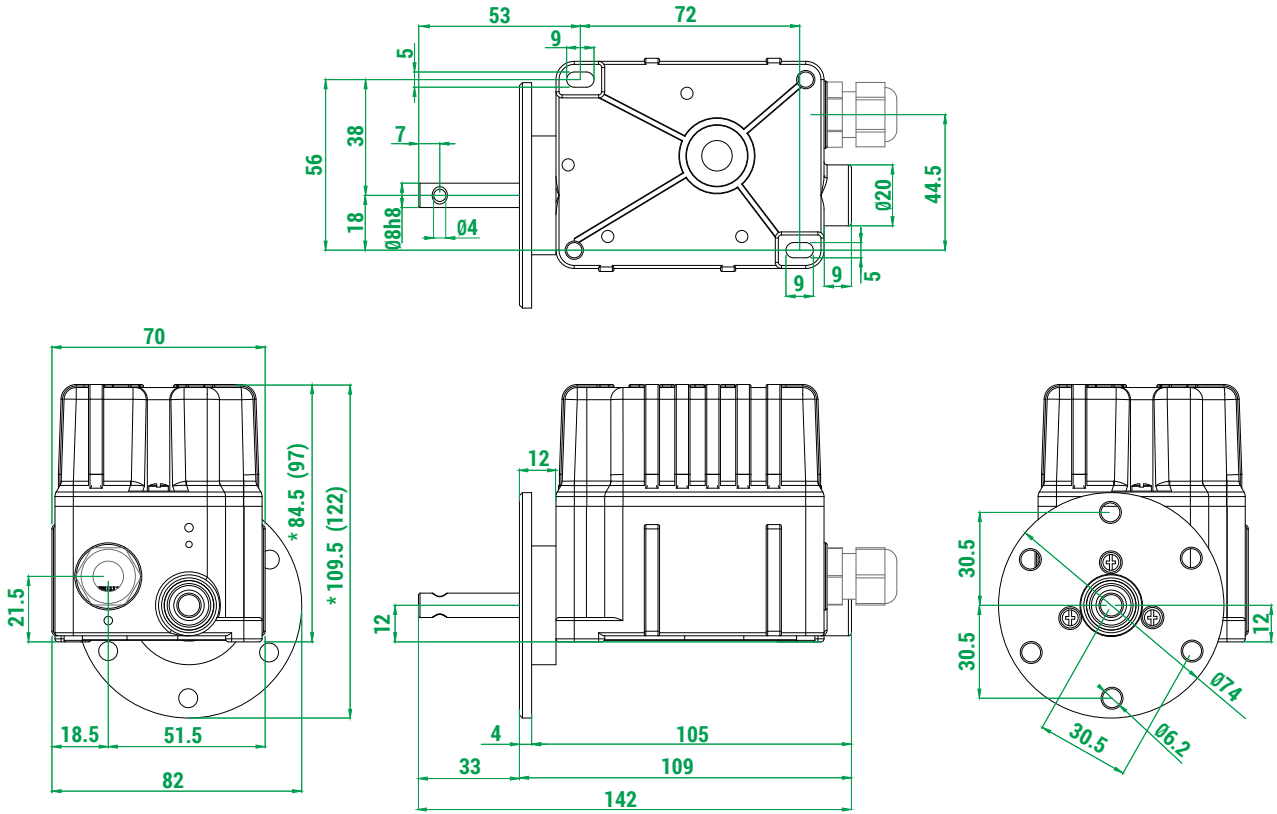
IP 66 / IP 67 / IP 69K

- * 2/3 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches or 1 PRSL0455PI switch.
- () 4 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches.



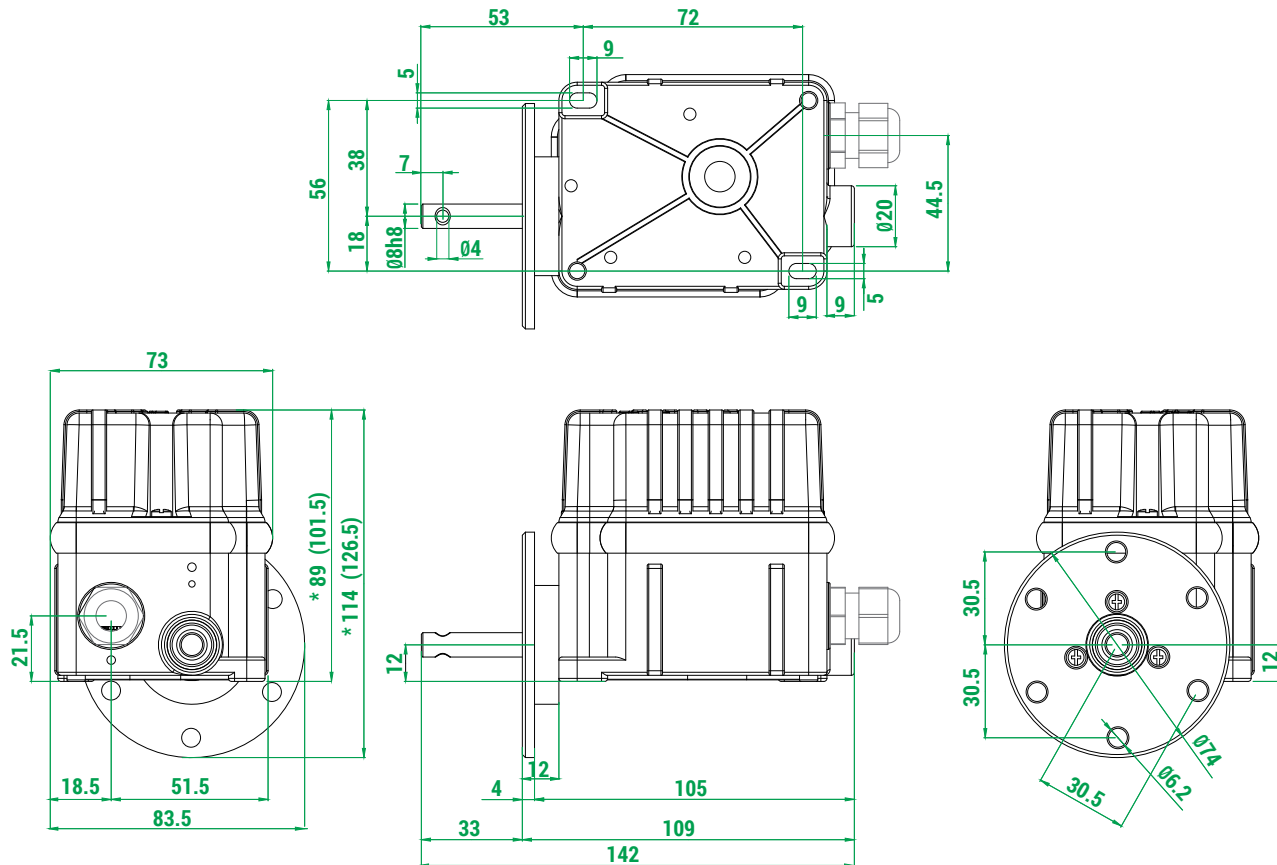
IP 42 or IP 65 with 12mm high flange

* 2 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches or 1 PRSL0455PI switch.
 () 3/4 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches.



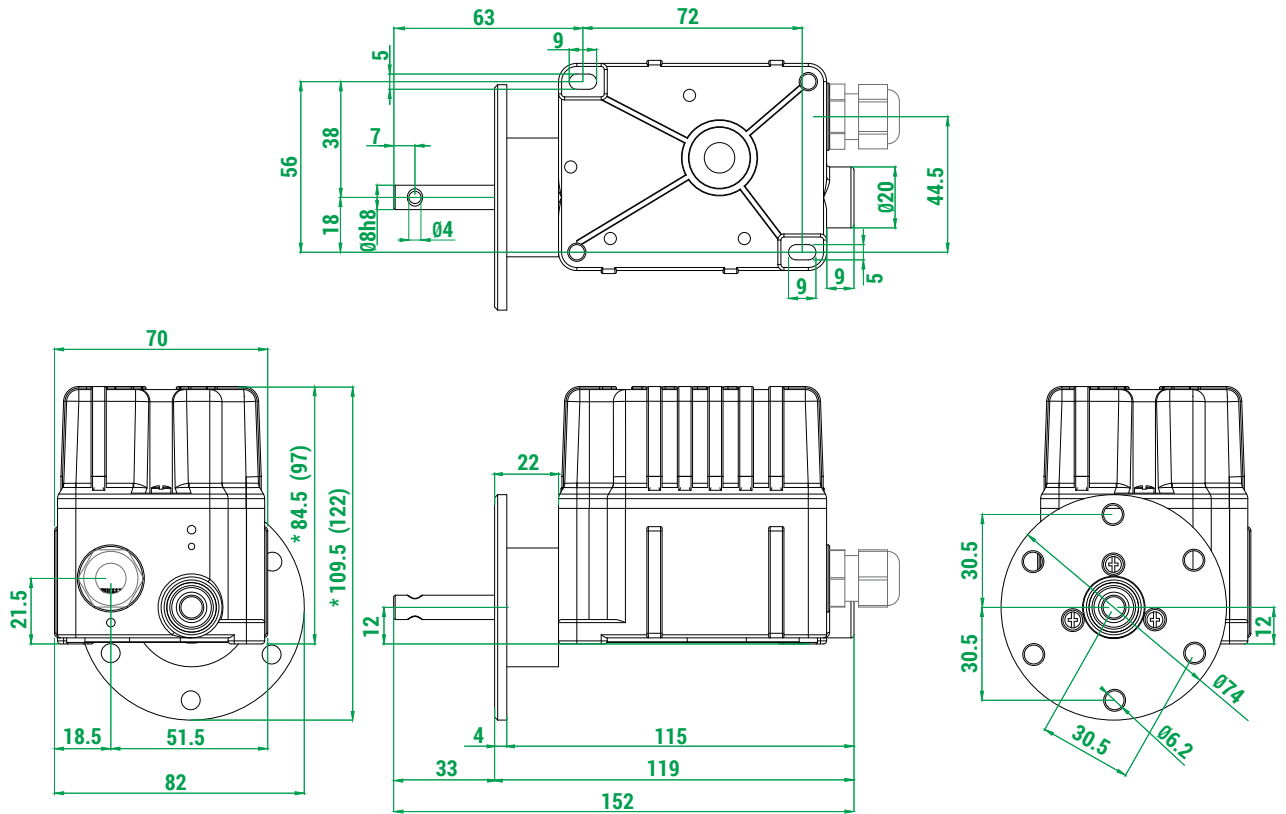
IP 66 / IP 67 / IP 69K with 12 mm high flange

* 2-3 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches or 1 PRSL0455PI switch.
 () 4 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches.



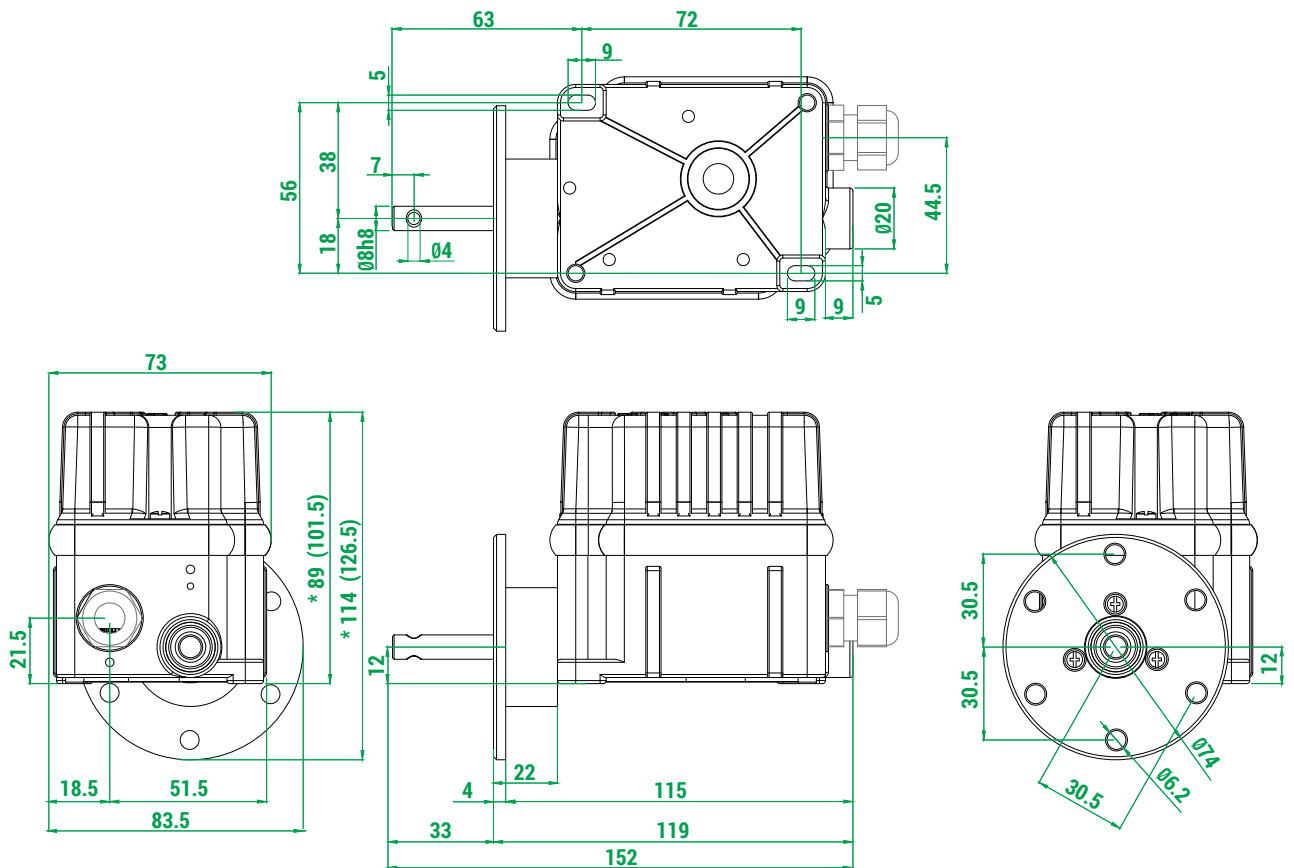
IP 42 or IP 65 with 22 mm high flange

* 2 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches or 1 PRSL0455PI switch.
 () 3/4 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches.





IP 66 / IP 67 / IP 69K with 22 mm high flange

* 2-3 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches or 1 PRSL0455PI switch.
 () 4 PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX switches.



STANDARD LIMIT SWITCHES

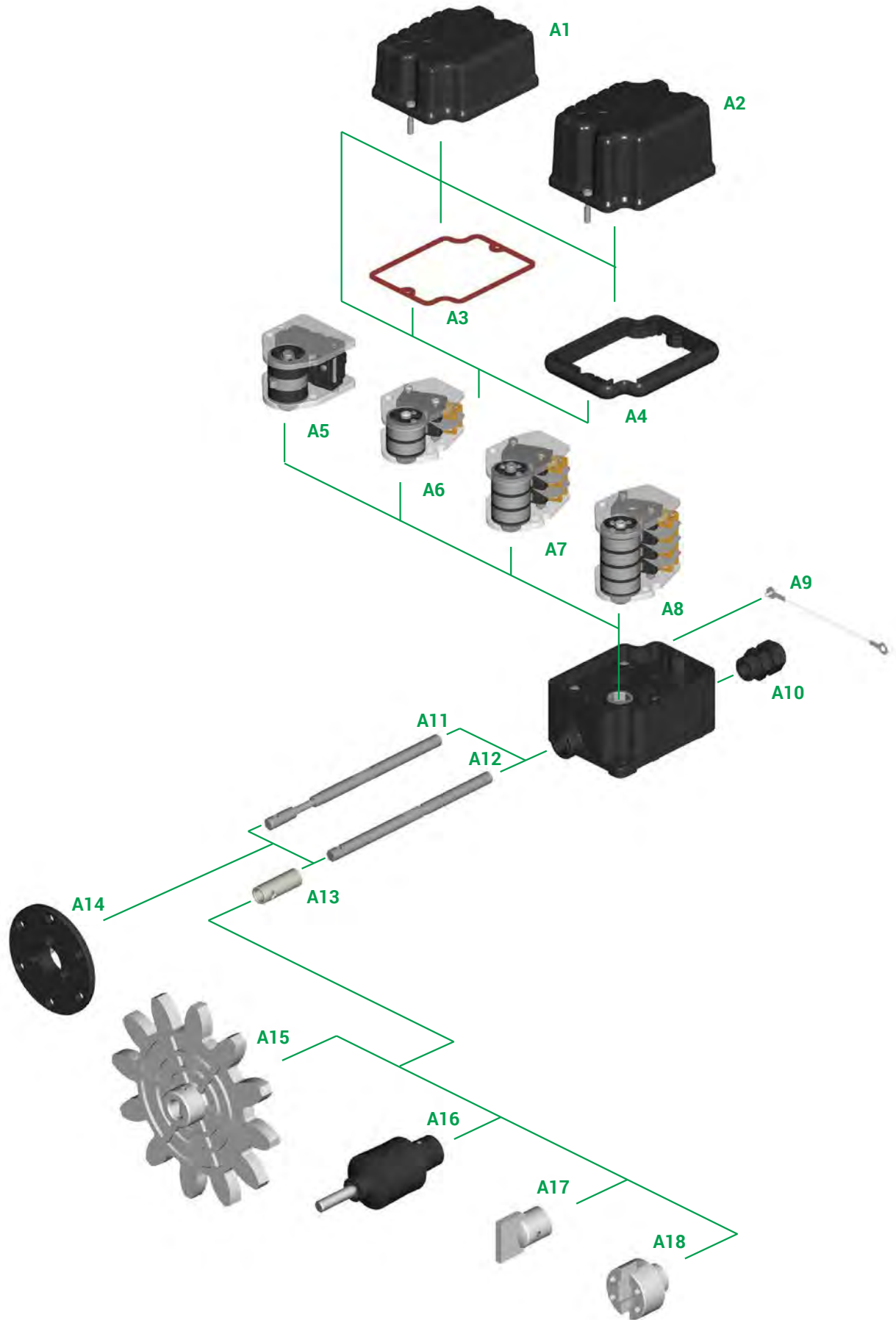
Standard limit switches are equipped with cams PRSL7140PI  and auxiliary control switches PRSL0003XX with

1NO+1NC contacts 

| Rated revolution ratio | Real revolution ratio | No. of cams and switches | IP 42 | IP 65 | IP 66 / IP 67 / IP 69K |
|------------------------|-----------------------|--------------------------|-----------------|-----------------|------------------------|
| | | | CE EAC | CE EAC | CE cRU US EAC |
| | | | Code | Code | Code |
| 1:15 | 1:15.82 | 2 | PFA9142A0015001 | PFA9165A0015003 | PFA9067A0015001 |
| | | 3 | PFA9142A0015003 | PFA9165A0015004 | PFA9067A0015003 |
| | | 4 | PFA9142A0015002 | PFA9165A0015005 | PFA9067A0015002 |
| 1:20 | 1:20.37 | 2 | PFA9142A0020001 | PFA9165A0020001 | PFA9067A0020001 |
| | | 3 | PFA9142A0020003 | PFA9165A0020003 | PFA9067A0020003 |
| | | 4 | PFA9142A0020002 | PFA9165A0020002 | PFA9067A0020002 |
| 1:25 | 1:25.96 | 2 | PFA9142A0025001 | PFA9165A0025004 | PFA9067A0025001 |
| | | 3 | PFA9142A0025003 | PFA9165A0025005 | PFA9067A0025003 |
| | | 4 | PFA9142A0025002 | PFA9165A0025006 | PFA9067A0025002 |
| 1:50 | 1:50 | 2 | PFA9142A0050001 | PFA9165A0050002 | PFA9067A0050001 |
| | | 3 | PFA9142A0050003 | PFA9165A0050003 | PFA9067A0050003 |
| | | 4 | PFA9142A0050002 | PFA9165A0050004 | PFA9067A0050002 |
| 1:75 | 1:75 | 2 | PFA9142A0075001 | PFA9165A0075001 | PFA9067A0075001 |
| | | 3 | PFA9142A0075003 | PFA9165A0075003 | PFA9067A0075003 |
| | | 4 | PFA9142A0075002 | PFA9165A0075002 | PFA9067A0075002 |
| 1:100 | 1:103.57 | 2 | PFA9142A0103001 | PFA9165A0103001 | PFA9067A0103001 |
| | | 3 | PFA9142A0103003 | PFA9165A0103003 | PFA9067A0103003 |
| | | 4 | PFA9142A0103002 | PFA9165A0103002 | PFA9067A0103002 |
| 1:150 | 1:158.02 | 2 | PFA9142A0158001 | PFA9165A0158001 | PFA9067A0158001 |
| | | 3 | PFA9142A0158003 | PFA9165A0158003 | PFA9067A0158003 |
| | | 4 | PFA9142A0158002 | PFA9165A0158002 | PFA9067A0158002 |

ASSEMBLY DRAWING




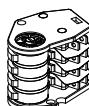
4



Refer to the following tables for descriptions of components: "Standard cam sets" and "Accessories".






COMPONENTS

Standard cam sets

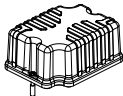


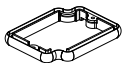

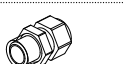
| Ref. | Drawing | No. and type of cams | No. and type of switches | Code |
|------|---|----------------------|--------------------------|-------------|
| A5 |  | 1 cam A | 1 PRSL0455PI switch | PRFC0101PE |
| A6 |  | 2 cams A | 2 PRSL0003XX switches | PRFC0008PEC |
| | | 2 cams C | 2 PRSL0003XX switches | PRFC0009PEC |
| A7 |  | 3 cams A | 3 PRSL0003XX switches | PRFC0004PEC |
| | | 3 cams C | 3 PRSL0003XX switches | PRFC0006PEC |
| A8 |  | 4 cams A | 4 PRSL0003XX switches | PRFC0202PEC |
| | | 4 cams C | 4 PRSL0003XX switches | PRFC0198PEC |

Other sets with 2/3/4/5 or 6 switches PRSL0003XX/PRSL0011XX/PRSL0017XX/PRSL0195XX or with 1 or 2 switches PRSL0455PI are available on request.


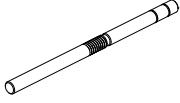

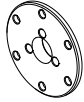

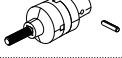


Cam reference chart

| Cam | | Switching angle | Code | |
|-----|---|-----------------|--------------|------------|
| A |  | 1 point | 20.5° ±0.5° | PRSL7140PI |
| B |  | 10 points | 14.0° ±0.5° | PRSL7142PI |
| C |  | 60° sector | 78.0° ±0.5° | PRSL7141PI |
| E |  | 180° sector | 199.5° ±0.5° | PRSL7144PI |
| H |  | 335° sector | 344.0° ±0.5° | PRSL7143PI |

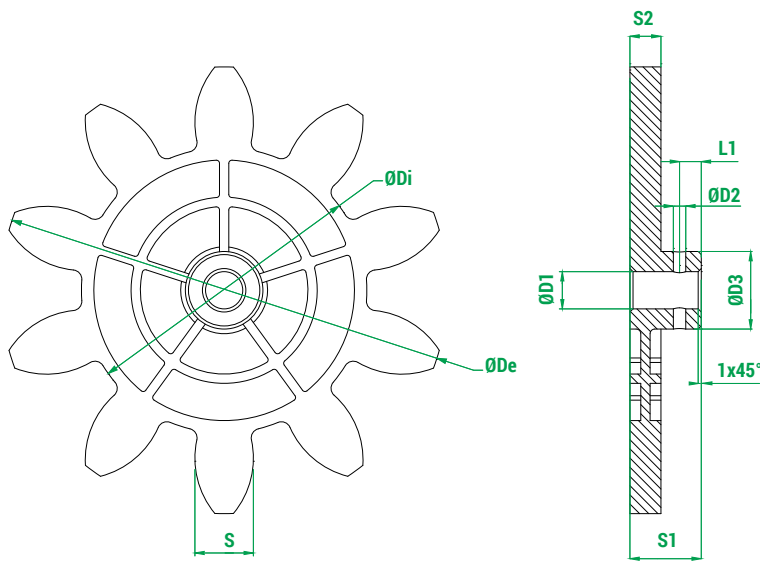
Accessories

| Ref. | Drawing | Description | Code |
|------|---|---|------------|
| A1 |  | Cover with screws for Base IP 42 or IP 65 with 2 switches | PA090013 |
| | | Cover with screws per Base IP 66/IP 67/ IP 69K with 2/3 switches | PA090010 |
| A2 |  | Cover with screws for Base IP 42 or IP 65 or IP 66/IP 67/IP 69K with 3/4 switches | PA090011 |
| A3 |  | Gasket for Base IP 65 | PRGU1085PE |
| A4 |  | Tightening rubber for Base IP 66/IP 67/IP 69K | PRGU1200PE |
| A9 |  | Cover holding wire + screw (bag with 10 pieces) | PRSL0358PI |
| A10 |  | Cable clamp M16 | PRPS0062PE |

Accessories

| Ref. | Drawing | Description | Code |
|------|---|---|------------------------|
| A11 |  | Flexible shaft | ALL1F00001 |
| A12 |  | Standard shaft | ALL1R00001 |
| | | Shaft for 22 mm high flange | ALL1R00121 |
| A13 |  | Bush \varnothing 8 to \varnothing 12 for pinion gear/coupling | PRT01075PE |
| A14 |  | 12 mm high flange | PRT04040PE |
| | | 22 mm high flange | PRSL8087PI |
| A15 |  | Pinion gear | See pinion gear tables |
| A16 |  | Coupling with pin | PRSL0981PI |
| A17 |  | Male coupling with pin | PRSL0919PI |
| A18 |  | Female coupling with pin | PRSL0920PI |

Moulded pinion gears

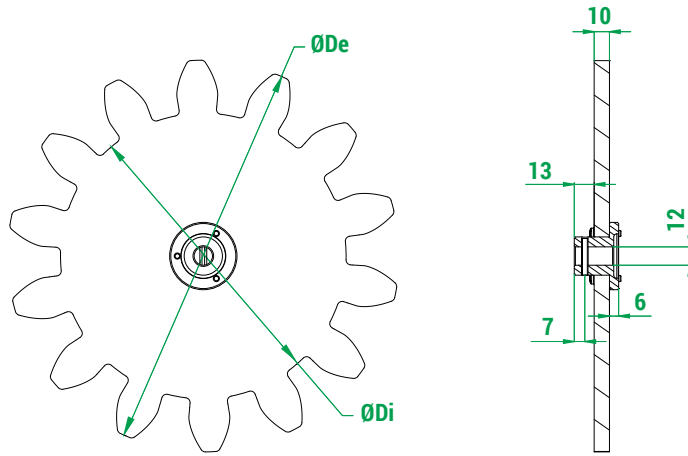


| Legend | |
|--------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | S | Alpha | D1 | D2 | D3 | S1 | S2 | L1 |
|------------|----|-------|--------|--------|--------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|
| PRSL0971PI | 8 | 2.50 | 20.00 | 25.00 | 14.15 | 2.50 | 2.93 | 3.93 | 20.00 | 8.00 | 2.50 | 14.00 | 18.00 | 8.00 | 4.00 |
| PRSL0915PI | 8 | 20.00 | 160.00 | 200.00 | 113.20 | 20.00 | 23.40 | 31.41 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0964PI | 9 | 2.50 | 22.50 | 27.50 | 16.25 | 2.50 | 3.13 | 3.93 | 20.00 | 8.00 | 2.50 | 13.50 | 18.00 | 8.00 | 4.00 |
| PRSL0963PI | 9 | 3.50 | 31.50 | 38.50 | 23.40 | 3.50 | 4.10 | 4.71 | 20.00 | 8.00 | 2.50 | 14.00 | 18.00 | 8.00 | 4.00 |
| PRSL0892PI | 9 | 5.00 | 45.00 | 56.00 | 36.00 | 5.50 | 4.50 | 9.19 | 20.00 | 8.00 | 2.50 | 16.00 | 18.00 | 8.00 | 4.00 |
| PRSL0968PI | 10 | 3.00 | 30.00 | 36.00 | 23.00 | 3.00 | 3.51 | 4.71 | 20.00 | 8.00 | 2.50 | 14.00 | 18.00 | 8.00 | 4.00 |
| PRSL0912PI | 10 | 12.00 | 120.00 | 144.00 | 92.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 25.00 | 23.00 | 10.00 | 7.00 |
| PRSL0913PI | 10 | 14.00 | 140.00 | 168.00 | 107.24 | 14.00 | 16.38 | 21.99 | 20.00 | 12.00 | 4.00 | 24.60 | 23.00 | 10.00 | 7.00 |
| PRSL0914PI | 10 | 16.00 | 160.00 | 192.00 | 122.67 | 16.00 | 18.67 | 25.13 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0917PI | 11 | 6.00 | 66.00 | 78.00 | 51.96 | 6.00 | 7.02 | 9.42 | 20.00 | 12.00 | 4.00 | 19.00 | 23.00 | 8.00 | 7.00 |
| PRSL0916PI | 12 | 5.00 | 60.00 | 70.00 | 48.30 | 5.00 | 5.83 | 7.85 | 20.00 | 12.00 | 4.00 | 20.00 | 23.00 | 8.00 | 7.00 |
| PRSL0918PI | 12 | 8.00 | 96.00 | 112.00 | 77.28 | 8.00 | 9.36 | 12.56 | 20.00 | 12.00 | 4.00 | 21.50 | 23.50 | 10.00 | 7.00 |
| PRSL0911PI | 12 | 10.00 | 120.00 | 140.00 | 96.67 | 10.00 | 11.67 | 15.71 | 20.00 | 12.00 | 4.00 | 25.00 | 23.50 | 10.00 | 7.00 |
| PRSL0944PI | 12 | 12.00 | 144.00 | 168.00 | 116.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |

Measuring unit: mm.

Waterjet cut pinion gears



Legend

| | |
|-------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | Alpha |
|------------|----|-------|--------|--------|--------|-------|-------|-------|
| PRSL0857PI | 8 | 18.00 | 144.00 | 180.00 | 102.00 | 18.00 | 21.00 | 20.00 |
| PRSL0855PI | 8 | 24.00 | 192.00 | 240.00 | 136.00 | 24.00 | 28.00 | 20.00 |
| PRSL0992PI | 9 | 10.00 | 90.00 | 110.00 | 66.67 | 10.00 | 11.67 | 20.00 |
| PRSL0879PI | 9 | 16.00 | 144.00 | 176.00 | 106.67 | 16.00 | 18.67 | 20.00 |
| PRSL0854PI | 9 | 18.00 | 162.00 | 198.00 | 120.00 | 18.00 | 21.00 | 20.00 |
| PRSL0871PI | 9 | 20.00 | 180.00 | 220.00 | 133.33 | 20.00 | 23.33 | 20.00 |
| PRSL0849PI | 9 | 24.00 | 216.00 | 264.00 | 160.00 | 24.00 | 28.00 | 20.00 |
| PRSL0846PI | 10 | 10.00 | 100.00 | 120.00 | 76.67 | 10.00 | 11.67 | 20.00 |
| PRSL0993PI | 10 | 18.00 | 180.00 | 216.00 | 138.00 | 18.00 | 21.00 | 20.00 |
| PRSL0970PI | 10 | 22.00 | 220.00 | 264.00 | 168.52 | 22.00 | 25.74 | 20.00 |
| PRSL0856PI | 10 | 24.00 | 240.00 | 288.00 | 18.00 | 24.00 | 28.00 | 20.00 |
| PRSL0861PI | 11 | 12.00 | 132.00 | 156.00 | 104.00 | 12.00 | 14.00 | 20.00 |
| PRSL0998PI | 11 | 18.00 | 198.00 | 234.00 | 156.00 | 18.00 | 21.00 | 20.00 |
| PRSL0997PI | 11 | 20.00 | 220.00 | 260.00 | 173.36 | 20.00 | 23.32 | 20.00 |
| PRSL0859PI | 11 | 24.00 | 264.00 | 312.00 | 204.00 | 24.00 | 30.00 | 20.00 |
| PRSL0863PI | 12 | 14.00 | 168.00 | 196.00 | 133.00 | 14.00 | 17.50 | 20.00 |
| PRSL0897PI | 12 | 16.00 | 192.00 | 224.00 | 154.67 | 16.00 | 18.67 | 20.00 |
| PRSL0972PI | 12 | 18.00 | 216.00 | 252.00 | 173.88 | 18.00 | 21.06 | 20.00 |
| PRSL0845PI | 12 | 20.00 | 240.00 | 280.00 | 193.34 | 20.00 | 23.32 | 20.00 |
| PRSL0878PI | 12 | 24.00 | 288.00 | 336.00 | 232.00 | 24.00 | 28.00 | 20.00 |
| PRSL0860PI | 13 | 6.00 | 78.00 | 90.00 | 63.00 | 6.00 | 7.50 | 20.00 |
| PRSL0853PI | 13 | 12.00 | 156.00 | 178.59 | 126.00 | 11.29 | 15.00 | 20.00 |
| PRSL0898PI | 13 | 16.00 | 208.00 | 240.00 | 170.67 | 16.00 | 18.66 | 20.00 |
| PRSL0862PI | 14 | 10.00 | 140.00 | 169.00 | 125.00 | 15.00 | 7.50 | 20.00 |
| PRSL0896PI | 14 | 16.00 | 224.00 | 256.00 | 186.67 | 16.00 | 18.67 | 20.00 |
| PRSL0999PI | 14 | 18.00 | 252.00 | 288.00 | 210.00 | 18.00 | 21.00 | 20.00 |
| PRSL0848PI | 14 | 20.00 | 280.00 | 320.00 | 233.33 | 20.00 | 23.33 | 20.00 |
| PRSL0858PI | 15 | 18.00 | 270.00 | 306.00 | 228.00 | 18.00 | 21.00 | 20.00 |
| PRSL0847PI | 16 | 20.00 | 320.00 | 360.00 | 273.33 | 20.00 | 23.33 | 20.00 |
| PRSL0973PI | 17 | 10.00 | 170.00 | 190.00 | 145.00 | 10.00 | 12.50 | 22.89 |
| PRSL0974PI | 17 | 14.00 | 238.00 | 266.00 | 203.00 | 14.00 | 17.50 | 22.89 |
| PRSL0851PI | 20 | 6.00 | 120.00 | 132.00 | 105.00 | 6.00 | 7.50 | 22.89 |
| PRSL0844PI | 25 | 1.00 | 25.00 | 27.00 | 22.50 | 1.00 | 1.25 | 22.89 |

Measuring unit: mm.

BASE - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

(See next page for list of components and legends)

- 1 Version:** tick the required version.
 ATTENTION: Limit switches with sets of 5/6 switches PRSL0003XX/PRSL0011XX/ PRSL0017XX/PRSL0195XX or of 2 switches PRSL0455PI are available only with protection degree IP 66 / IP 67 / IP 69K and with a special cover, or in the IP 00 version without cover. These configurations are not cURus certified.
 Limit switches with switches PRSL0455PI are not EAC nor cURus certified.
- 2 Standard cam set:** write the code of the cam set required.
- 3 Customized cam set:** for non standard cam sets, fill in the scheme choosing the cams and the switches required. In case switch PRSL0455PI is required, it is possible to use max two switch.
 Customized cams are available on request.
- 4 Version with anti-moisture plug:** tick when the anti-moisture plug is required.
 ATTENTION: Limit switches with anti-moisture pluga are not cURus certified.
- 5 Cover holding wire:** tick when the cover holding wire is required.
- 6 Revolution ratio:** tick or write the required revolution ratio.
- 7 Shaft:** tick the shaft type required.
 Customized shafts are available on request.
- 8 Coupling, flange, pinion gear:** tick the box when coupling, flange or pinion gear are required.
 When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.
 When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.

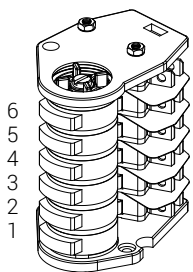
Version 1

- IP00 (without cover)
- IP42
- IP65
- IP66 / IP67 / IP69K

Standard cam set 2

Cam set code _____

Customized cam set 3



| Cam code | Switch code |
|----------|-------------|
| 6 | _____ |
| 5 | _____ |
| 4 | _____ |
| 3 | _____ |
| 2 | _____ |
| 1 | _____ |

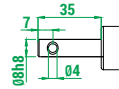
Version with anti-moisture plug 4

Cover holding wire 5

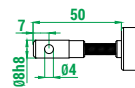
Revolution ratio 6

- 1:15 1:75
- 1:20 1:100
- 1:25 1:150
- 1:50 1:

Standard shaft 7



Flexible shaft



Male coupling 8

- Male coupling
- Female coupling
- Coupling
- 12 mm high flange
- 22 mm high flange
- Pinion gear

Pinion gear code _____






Customized pinion gear
 No. of teeth _____
 Module _____
 Primitive diameter _____

Remarks






2 Legend - Standard cam sets

| No. & type of switches | No. & type of cams | Code |
|------------------------|--------------------|-------------|
| 1 x PRSL0455PI | 1 cam A | PRFC0101PE |
| 2 x PRSL0003XX | 2 cams A | PRFC0008PEC |
| | 2 cams C | PRFC0009PEC |
| 3 x PRSL0003XX | 3 cams A | PRFC0004PEC |
| | 3 cams C | PRFC0006PEC |
| 4 x PRSL0003XX | 4 cams A | PRFC0202PEC |
| | 4 cams C | PRFC0198PEC |

3 Legend - Standard cams

| Cam | Switching angle | Code |
|---|-----------------|------------|
| A  1 point | 20,5° ±0,5° | PRSL7140PI |
| B  10 points | 14,0° ±0,5° | PRSL7142PI |
| C  60° sector | 78,0° ±0,5° | PRSL7141PI |
| E  180° sector | 199,5° ±0,5° | PRSL7144PI |
| H  335° sector | 344,0° ±0,5° | PRSL7143PI |

Legend - Switches

| Type of switches | Auxiliary control | | | | Direct control |
|----------------------|--|--|--|--|--|
| | PRSL0003XX | PRSL0011XX | PRSL0017XX | PRSL0195XX | PRSL0455PI |
| Utilisation category | AC 15 - B300 | AC 15 - B300 | AC 15 - C300 | AC 15 - C300 | AC 3 |
| Connections | 6.3 mm Faston taps | Screw-type terminals | Screw-type terminals | 6.3 mm Faston taps | Screw-type terminals |
| Contacts | 1NO+1NC  | 1NO+1NC  | 1NO+1NC  | 1NO+1NC  | 2NC  |

FOX

Rotary limit switch



Rotary limit switch used to control and measure the movement of industrial machines by reading the rotation angle and/or the number of revolutions of a shaft. Fox is used on wind turbines to control the position of the nacelle or the pitch angle of the blades.

FEATURES

- It consists of a gear motor that transfers movement to the cams and to the other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages (pairs of straight toothed gears).
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 10 million operations.
- IP protection degree: Fox is classified IP66 / IP67 / IP69K.
- NEMA protection degree: Fox is classified Type 4X*.
- Extreme temperature resistance: -40°C to +80°C.
- It features transmission and gear driving shafts made of stainless steel AISI 430F or AISI 303, worm gear transmission shaft rotating on ball bearings, self-lubricating technopolymer gears and driving bushes, technopolymer base and cover.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

OPTIONS

- Revolution ratios from 1:3 to 1:2870, achieved by combining different secondary output stages.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- It can be equipped with a cam set (with up to 5 switches) and potentiometers, encoders, Yankee absolute encoders.
- Dedicated cable glands or connectors.
- Available with anti-moisture plug fitted to the base by means of a lock nut, improving transpiration while maintaining protection against water.
- Available with flanges, pinion gears and couplings.
- Plates with universal adapters to replace existing systems.

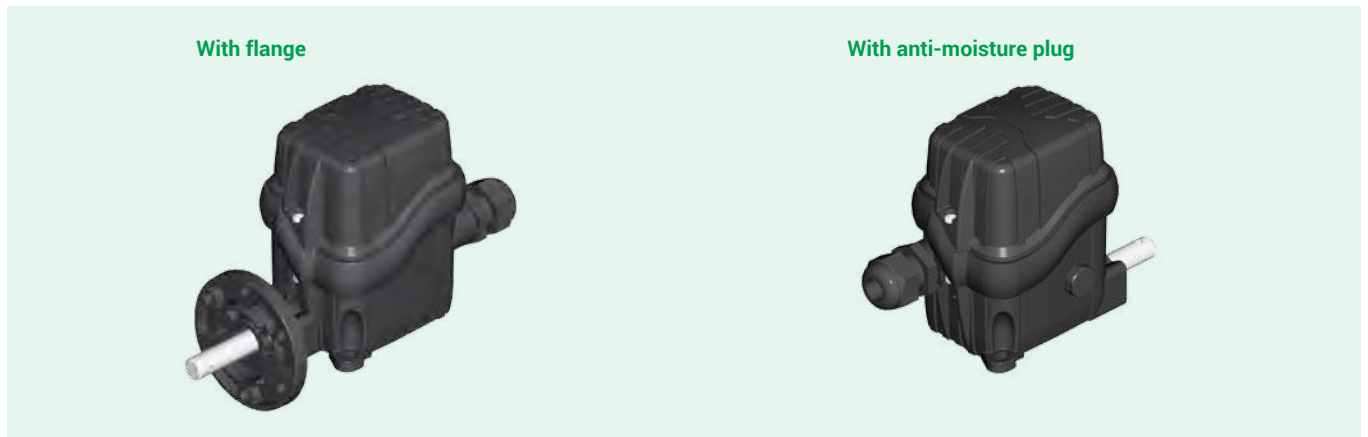
CERTIFICATIONS

- CE marking, cULus* marking and EAC certification.
- Fox is available, upon request, with the SIL1 certification (Safety Integrity Level 1), according to Standard IEC 61508.
- Complying with accident prevention regulation BGV C 1 (only for Germany).
- HALT TEST (Highly Accelerated Life Test) passed, simulating conditions largely exceeding standard operating conditions.

Use the online configurator (<https://configurator.terworld.com>) or fill in the "request form" for accurate product configuration.

* Not available on all versions.

POSSIBLE ASSEMBLIES



CERTIFICATIONS



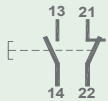




| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/35/UE Low Voltage Directive |
| | 2006/42/CE Machinery Directive |
| | EN 60204-1 Safety of machinery - Electrical equipment of machines |
| Conformity to CE Standards | EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines |
| | EN 60947-1 Low-voltage switchgear and controlgear |
| | EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices |
| | EN 60529 Degrees of protection provided by enclosures |
| Conformity to cULus Standards | CSA-C22.2 No 14-13 Industrial Control Equipment |
| | UL 508 Industrial Control Equipment |
| SIL1 | IEC 61508:2010 Part 2-4-6-7 Functional safety of electrical / electronic / programmable electronic safety-related systems |
| BGV C 1 | Regulations for the prevention of accidents BGV C 1 (only for Germany) |
| HALT TEST | Highly Accelerated Life Test, simulation of conditions largely exceeding the standard operating conditions (data available on request) |
| Markings and homologations | CE cULus* EAC |

GENERAL TECHNICAL SPECIFICATIONS

| | |
|------------------------|--|
| Ambient temperature | Storage -40°C/+80°C |
| | Operational -40°C/+80°C |
| IP protection degree | IP 66/IP 67/IP 69K |
| NEMA protection degree | Type 4X* |
| Insulation category | Class II |
| Rotation speed | Revolution ratios $\geq 1:16$: max. 800 rpm |
| | Revolution ratios $< 1:16$: max. 200 rpm |
| | Revolution ratios =1:50 and 1:100: max. 1500 rpm |
| Cable entry | Cable gland M20 |
| | Cable gland M20+M16 |
| | Cable gland M20+M20 |
| Shafts | Stainless steel AISI 430F (non-cULus version) |
| | Stainless steel AISI 303 |

* Not available on all versions.

TECHNICAL SPECIFICATIONS OF THE SWITCHES

| Code | PRSL0110XX | PRSL0111XX |
|----------------------------|---|--|
| Utilisation category | AC 15 | |
| Rated operational voltage | 250 Vac | |
| Rated operational current | 3 A | |
| Rated thermal current | 10 A | |
| Rated insulation voltage | 300 Vac | |
| Mechanical life | 10x10 ⁶ operations | |
| Connections | Screw-type terminals | |
| Wires | 1x2.5 mm ² , 2x1.5 mm ² (UL (c)UL: use 60°C or 75°C copper (CU) conductors and stiff or flexible wire 14-22 AWG) | |
| Tightening torque | 0.5 Nm | |
| Microswitch type | Double break. snap action | Double break. slow action |
| Contacts | 1NO+1NC (All NC contacts are of the positive opening operation type ) | 1NC (All NC contacts are of the positive opening operation type ) |
| Scheme |  |  |
| Markings and homologations |    | |

Switches PRSL0100XX available on request.

TECHNICAL SPECIFICATIONS OF THE POTENTIOMETERS


| Code of potentiometer with support | PA020001 | PA020002 |
|------------------------------------|------------------------------|-----------------------|
| Ohmic value | 10 kΩ | 10 kΩ mechanical stop |
| Resolution | Infinite | |
| Independent linearity | ±1% | |
| Life time | 10x10 ⁶ movements | |
| Power rating | Max. 1 W | |
| Operational ambient temperature | -55°C/+105°C | |
| Continuous rotation (without stop) | 360° | |
| Continuous rotation (with stop) | 333° ±5° | |
| Actual electrical angle | 310° ±5° | |
| Ohmic value tolerance | ±20% | |

| Code of potentiometer with support | PA020003 | PA020004 | PA020005 |
|--------------------------------------|-----------------------------|-------------------|-------------------|
| Ohmic value | 10 kΩ | 10 kΩ | 5 kΩ |
| Connections | 4 turrets | 3 turrets | 4 turrets |
| Independent linearity (ref. AEA -3°) | ≤±1% | ≤±0.35% | ≤±1% |
| Power rating | Max. 0.3 W | | |
| Life time | 5x10 ⁶ movements | | |
| Operational ambient temperature | -55°C/+125°C | | |
| Mechanical angle | 360° continuous | | |
| Actual Electrical Angle (AEA) | 340°±5° | | |
| Ohmic value tolerance | Max. ±20% at 20°C | Max. ±10% at 20°C | Max. ±20% at 20°C |

TECHNICAL SPECIFICATIONS OF THE ENCODERS

| | | |
|---------------------------------|--|-----------------|
| Code of encoder with support | PA030001 | PA030002 |
| Resolution | 36 pulses/rev. | 150 pulses/rev. |
| Operational ambient temperature | -40°C/+85°C | |
| Code | Incremental | |
| Supply voltage | 4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load) | |
| Output voltage | Low: 500 mV max. at 10 mA High: (Vin - 0.6) at -10 mA (Vin - 1.3) at -25 mA | |
| Output current | 25 mA max. load per output channel | |
| Output format | Two channel (A, B) quadrature with Index (Z) | |
| Phase sense | A leads B clockwise (CW) from the mounting end of the encoder | |
| Accuracy | +/- 0.8 arc-min. | |
| Outputs | Push pull | |
| Electrical protection | Protection against reverse polarity and output short-circuit | |

CERTIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/30/UE Electromagnetic Compatibility (EMC) Directive |
| | 2006/42/CE Machinery Directive |
| | 2014/35/UE Low Voltage Directive (LVD) |
| Conformity to CE Standards | EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements |
| | EN 60529 Degrees of protection provided by enclosures |
| Conformity to cULus Standards | CSA-C22.2 No 14-13 Industrial Control Equipment |
| | UL 508 Industrial Control Equipment |
| Markings and homologations | CE  |

GENERAL TECHNICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

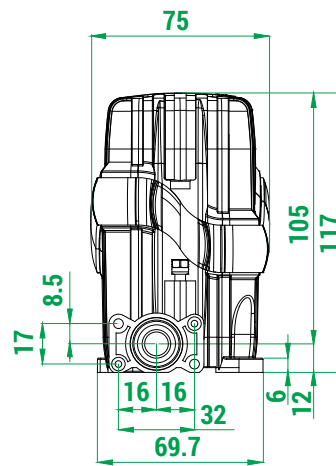
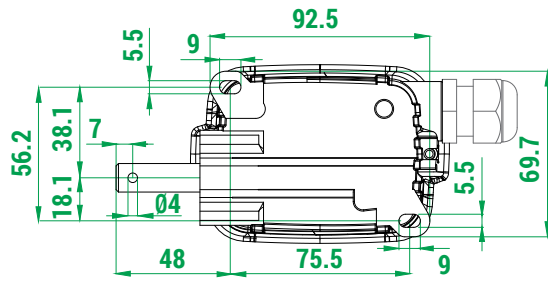
| | |
|----------------------|-------------------------|
| Ambient temperature | Storage -40°C/+80°C |
| | Operational -40°C/+80°C |
| IP protection degree | IP 20 |
| Free rotation | 360° |
| Rotation speed | Max. 800 rpm |

ELECTRICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

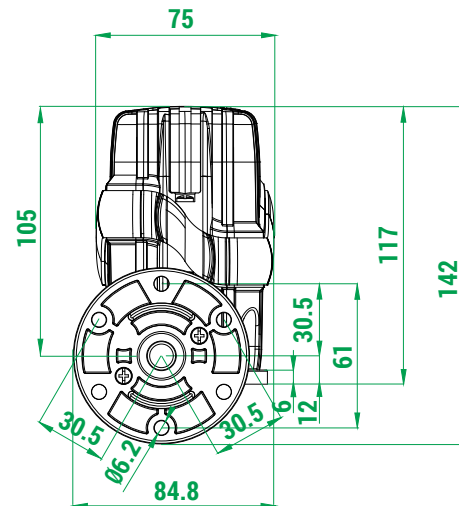
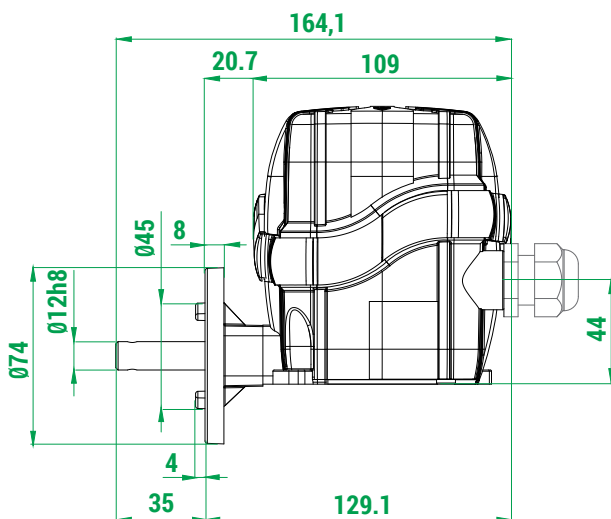
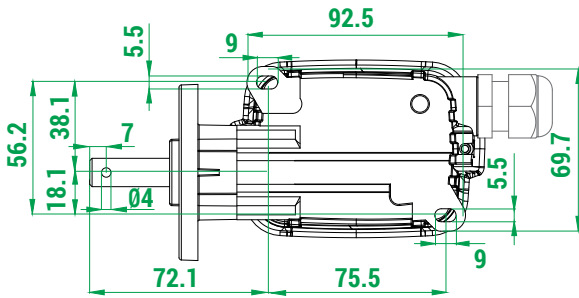
| | | | |
|-------------------------------------|--|------------------|---------------|
| Code | PA01AA01 | PA01AB01 | PA01AC01 |
| Output | Current 4 ÷ 20 mA | Voltage 0 ÷ 10 V | PWM 0 ÷ 100 % |
| Power supply | 12 ÷ 48 Vdc/12 ÷ 48 Vac | | |
| Protection against reverse polarity | Yes | | |
| Absorption | 50 mA | | |
| Resolution | 10 bit | | |
| Linearity | +/- 0.5° | | |
| Hysteresis | Max. 0.1° | | |
| Zero Point setting | Through button/wire | | |
| Signal increment direction | CW (standard)/CCW (on request) | | |
| Connections | Terminal board | | |
| Terminal wires | 0.14 mm ² - 1.5 mm ² | | |
| Terminal tightening torque | 0.22 Nm - 0.25 Nm | | |

OVERALL DIMENSIONS (mm)


Standard



With flange

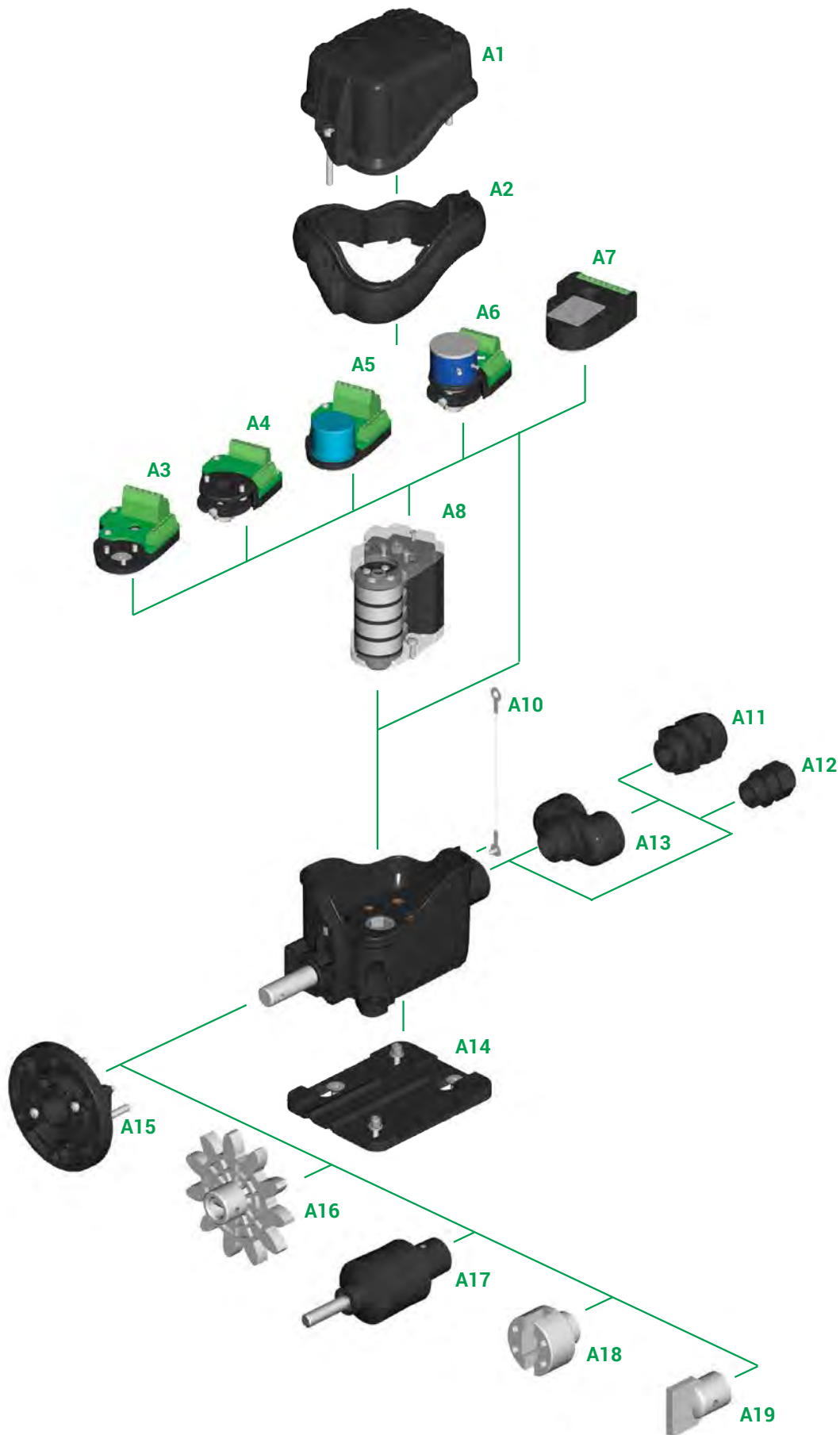


STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7194PI  and shafts made of stainless steel AISI 430F.
Standard limit switches are not cULus certified.

| Rated revolution ratio | Real revolution ratio | No. of cams and switches | Switches | |
|---------------------------|--------------------------|-----------------------------|---|---|
| | | | PRSL0110XX 1NO+1NC | PRSL0111XX 1NC |
| | | |  |  |
| | | | Code | Code |
| 1:15 | 1:16 | 2 | PFB9067L0016010 | PFB9067L0016012 |
| | | 3 | PFB9067L0016011 | PFB9067L0016013 |
| | | 4 | PFB9067L0016008 | PFB9067L0016014 |
| 1:20 | 1:20.21 | 2 | PFB9067L0020006 | PFB9067L0020008 |
| | | 3 | PFB9067L0020007 | PFB9067L0020009 |
| | | 4 | PFB9067L0020004 | PFB9067L0020010 |
| 1:25 | 1:27.27 | 2 | PFB9067L0027007 | PFB9067L0027017 |
| | | 3 | PFB9067L0027016 | PFB9067L0027018 |
| | | 4 | PFB9067L0027014 | PFB9067L0027019 |
| 1:50 | 1:62 | 2 | PFB9067L0062033 | PFB9067L0062045 |
| | | 3 | PFB9067L0062044 | PFB9067L0062046 |
| | | 4 | PFB9067L0062003 | PFB9067L0062025 |
| 1:75 | 1:75.48 | 2 | PFB9067L0075008 | PFB9067L0075010 |
| | | 3 | PFB9067L0075009 | PFB9067L0075004 |
| | | 4 | PFB9067L0075006 | PFB9067L0075011 |
| 1:100 | 1:103.44 | 2 | PFB9067L0103037 | PFB9067L0103038 |
| | | 3 | PFB9067L0103049 | PFB9067L0103027 |
| | | 4 | PFB9067L0103030 | PFB9067L0103050 |
| 1:150 | 1:162.52 | 2 | PFB9067L0162007 | PFB9067L0162008 |
| | | 3 | PFB9067L0162006 | PFB9067L0162009 |
| | | 4 | PFB9067L0162003 | PFB9067L0162002 |
| 1:200 | 1:222.58 | 2 | PFB9067L0222011 | PFB9067L0222014 |
| | | 3 | PFB9067L0222013 | PFB9067L0222015 |
| | | 4 | PFB9067L0222010 | PFB9067L0222016 |
| 1:250 | 1:254.57 | 2 | PFB9067L0254019 | PFB9067L0254010 |
| | | 3 | PFB9067L0254020 | PFB9067L0254021 |
| | | 4 | PFB9067L0254008 | PFB9067L0254022 |



ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Standard cam sets", "Potentiometers, encoders and sensors" and "Accessories".







COMPONENTS

Standard cam sets

| Ref. | Drawing | No. and type of cams | No. and type of switches | Code |
|------|---|----------------------|--------------------------|----------|
| A8 |  | 2 cams A | 2 PRSL0110XX switches | FCL20001 |
| | | 2 cams A | 2 PRSL0111XX switches | FCL20002 |
| | | Cams A+C | 2 PRSL0110XX switches | FCL20003 |
| | | Cams A+C | 2 PRSL0111XX switches | FCL20004 |
| | | 2 cams C | 2 PRSL0110XX switches | FCL20005 |
| | | 2 cams C | 2 PRSL0111XX switches | FCL20006 |
| |  | Cams D+D+B+F | 4 PRSL0110XX switches | FCL40001 |
| | | Cams D+D+B+F | 4 PRSL0111XX switches | FCL40002 |
| | | 4 cams A | 4 PRSL0110XX switches | FCL40003 |
| | | 4 cams A | 4 PRSL0111XX switches | FCL40004 |
| | | Cams A+A+C+C | 4 PRSL0110XX switches | FCL40005 |
| | | Cams A+A+C+C | 4 PRSL0111XX switches | FCL40006 |
| | | 4 cams C | 4 PRSL0110XX switches | FCL40007 |
| | | 4 cams C | 4 PRSL0111XX switches | FCL40008 |
| | | Cams C+C+C+E | 4 PRSL0110XX switches | FCL40009 |
| | | Cams C+C+C+E | 4 PRSL0111XX switches | FCL40010 |
| | | Cams A+A+E+E | 4 PRSL0110XX switches | FCL40011 |
| | | Cams A+A+E+E | 4 PRSL0111XX switches | FCL40012 |

Other sets with 2/3/4 or 5 cams/switches are available on request.

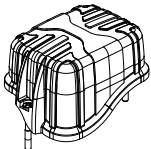
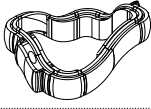




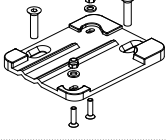
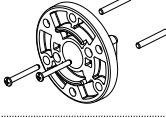
Cam reference chart

| Cam | | | Cam code for PRSL0110XX switch | Switching angle with PRSL0110XX | Cam code for PRSL0111XX switch | Switching angle with PRSL0111XX |
|-----|---|-------------|--------------------------------|---------------------------------|--------------------------------|---------------------------------|
| A |  | 1 point | PRSL7194PI | 21.5° ±0.5° | PRSL7194PI | 23.0° ±0.5° |
| B |  | 10 points | PRSL7193PI | 21.5° ±0.5° | PRSL7193PI | 23.0° ±0.5° |
| C |  | 60° sector | PRSL7195PI | 82.0° ±0.5° | PRSL7195PI | 86.0° ±0.5° |
| D |  | 72° sector | PRSL7196PI | 94.0° ±0.5° | PRSL7196PI | 97.5° ±0.5° |
| E |  | 180° sector | PRSL7191PI | 204.5° ±0.5° | PRSL7191PI | 203.0° ±0.5° |
| F |  | 305° sector | PRSL7192PI | 328.5° ±0.5° | PRSL7192PI | 327.0° ±0.5° |


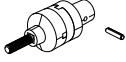


Potentiometers, encoders and sensors

| Ref. | Drawing | Description | Code |
|------|---|---|----------|
| A3 |  | Support for encoder | PA030000 |
| A4 |  | Support for potentiometer | PA020000 |
| A5 |  | Encoder 36 pulses/rev. - with support | PA030001 |
| | | Encoder 150 pulses/rev. - with support | PA030002 |
| A6 |  | Potentiometer 10 k Ω - with support | PA020001 |
| | | Potentiometer 10 k Ω mechanical stop - with support | PA020002 |
| | | Potentiometer 10 k Ω \pm 10% 4 pins - with support | PA020003 |
| | | Potentiometer 10 k Ω \pm 10% 3 pins - with support | PA020004 |
| | | Potentiometer 5 k Ω \pm 10% - with support | PA020005 |
| A7 |  | Absolute encoder Yankee - current output | PA01AA01 |
| | | Absolute encoder Yankee - voltage output | PA01AB01 |
| | | Absolute encoder Yankee - PWM output | PA01AC01 |

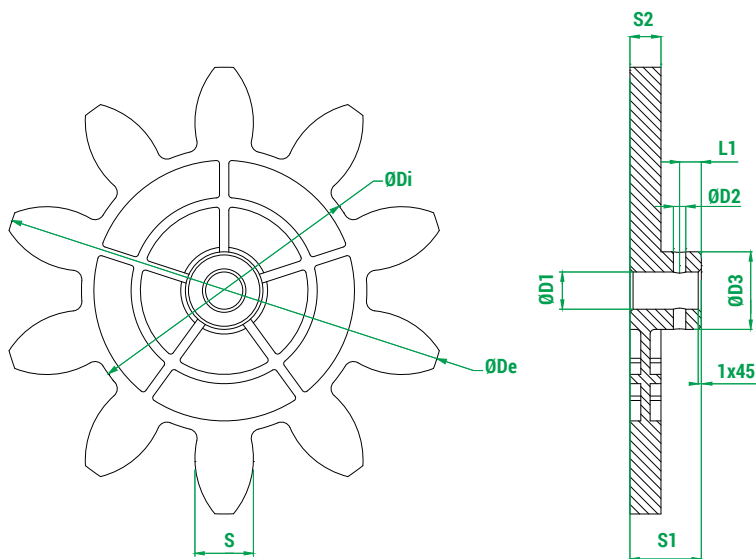
Accessories

| Ref. | Drawing | Description | Code |
|------|---|---|------------|
| A1 |  | Cover with screws | PA090017 |
| A2 |  | Tightening rubber | PRGU1500PE |
| A10 |  | Cover holding wire + screw (bag with 10 pieces) | PRSL0358PI |
| A11 |  | Cable gland M20 | PRPS0064PE |
| A12 |  | Cable gland M16 | PRPS0062PE |
| A13 |  | Cable gland holder with 2 outputs M20 | PRSL9051PI |
| | | Cable gland holder with 2 outputs M20+M16 | PRSL9052PI |
| A14 |  | Fixing plate | PRSL0430PI |
| A15 |  | Flange with screws and pins | PRSL0356PI |

Accessories

| Ref. | Drawing | Description | Code |
|------|---|--------------------------|------------------------|
| A16 |  | Pinion gear | See pinion gear tables |
| A17 |  | Coupling with pin | PRSL0981PI |
| A18 |  | Female coupling with pin | PRSL0920PI |
| A19 |  | Male coupling with pin | PRSL0919PI |

Moulded pinion gears



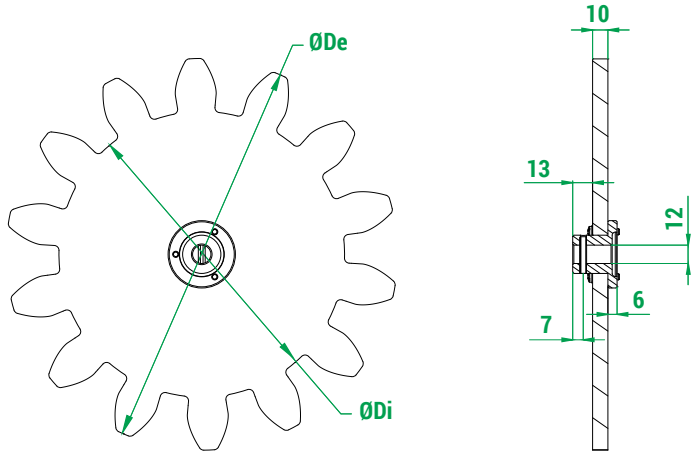
Legend

| | |
|-------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | S | Alpha | D1 | D2 | D3 | S1 | S2 | L1 |
|------------|----|-------|--------|--------|--------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|
| PRSL0915PI | 8 | 20.00 | 160.00 | 200.00 | 113.20 | 20.00 | 23.40 | 31.41 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0912PI | 10 | 12.00 | 120.00 | 144.00 | 92.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 25.00 | 23.00 | 10.00 | 7.00 |
| PRSL0913PI | 10 | 14.00 | 140.00 | 168.00 | 107.24 | 14.00 | 16.38 | 21.99 | 20.00 | 12.00 | 4.00 | 24.60 | 23.00 | 10.00 | 7.00 |
| PRSL0914PI | 10 | 16.00 | 160.00 | 192.00 | 122.67 | 16.00 | 18.67 | 25.13 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0917PI | 11 | 6.00 | 66.00 | 78.00 | 51.96 | 6.00 | 7.02 | 9.42 | 20.00 | 12.00 | 4.00 | 19.00 | 23.00 | 8.00 | 7.00 |
| PRSL0916PI | 12 | 5.00 | 60.00 | 70.00 | 48.30 | 5.00 | 5.83 | 7.85 | 20.00 | 12.00 | 4.00 | 20.00 | 23.00 | 8.00 | 7.00 |
| PRSL0918PI | 12 | 8.00 | 96.00 | 112.00 | 77.28 | 8.00 | 9.36 | 12.56 | 20.00 | 12.00 | 4.00 | 21.50 | 23.50 | 10.00 | 7.00 |
| PRSL0911PI | 12 | 10.00 | 120.00 | 140.00 | 96.67 | 10.00 | 11.67 | 15.71 | 20.00 | 12.00 | 4.00 | 25.00 | 23.50 | 10.00 | 7.00 |
| PRSL0944PI | 12 | 12.00 | 144.00 | 168.00 | 116.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |

Measuring unit: mm.

Waterjet cut pinion gears



| Legend | |
|--------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | Alpha |
|------------|----|-------|--------|--------|--------|-------|-------|-------|
| PRSL0857PI | 8 | 18.00 | 144.00 | 180.00 | 102.00 | 18.00 | 21.00 | 20.00 |
| PRSL0855PI | 8 | 24.00 | 192.00 | 240.00 | 136.00 | 24.00 | 28.00 | 20.00 |
| PRSL0992PI | 9 | 10.00 | 90.00 | 110.00 | 66.67 | 10.00 | 11.67 | 20.00 |
| PRSL0879PI | 9 | 16.00 | 144.00 | 176.00 | 106.67 | 16.00 | 18.67 | 20.00 |
| PRSL0854PI | 9 | 18.00 | 162.00 | 198.00 | 120.00 | 18.00 | 21.00 | 20.00 |
| PRSL0871PI | 9 | 20.00 | 180.00 | 220.00 | 133.33 | 20.00 | 23.33 | 20.00 |
| PRSL0849PI | 9 | 24.00 | 216.00 | 264.00 | 160.00 | 24.00 | 28.00 | 20.00 |
| PRSL0846PI | 10 | 10.00 | 100.00 | 120.00 | 76.67 | 10.00 | 11.67 | 20.00 |
| PRSL0993PI | 10 | 18.00 | 180.00 | 216.00 | 138.00 | 18.00 | 21.00 | 20.00 |
| PRSL0970PI | 10 | 22.00 | 220.00 | 264.00 | 168.52 | 22.00 | 25.74 | 20.00 |
| PRSL0856PI | 10 | 24.00 | 240.00 | 288.00 | 184.00 | 24.00 | 28.00 | 20.00 |
| PRSL0861PI | 11 | 12.00 | 132.00 | 156.00 | 104.00 | 12.00 | 14.00 | 20.00 |
| PRSL0998PI | 11 | 18.00 | 198.00 | 234.00 | 156.00 | 18.00 | 21.00 | 20.00 |
| PRSL0997PI | 11 | 20.00 | 220.00 | 260.00 | 173.36 | 20.00 | 23.32 | 20.00 |
| PRSL0859PI | 11 | 24.00 | 264.00 | 312.00 | 204.00 | 24.00 | 30.00 | 20.00 |
| PRSL0863PI | 12 | 14.00 | 168.00 | 196.00 | 133.00 | 14.00 | 17.50 | 20.00 |
| PRSL0897PI | 12 | 16.00 | 192.00 | 224.00 | 154.67 | 16.00 | 18.67 | 20.00 |
| PRSL0972PI | 12 | 18.00 | 216.00 | 252.00 | 173.88 | 18.00 | 21.06 | 20.00 |
| PRSL0845PI | 12 | 20.00 | 240.00 | 280.00 | 193.34 | 20.00 | 23.32 | 20.00 |
| PRSL0878PI | 12 | 24.00 | 288.00 | 336.00 | 232.00 | 24.00 | 28.00 | 20.00 |
| PRSL0860PI | 13 | 6.00 | 78.00 | 90.00 | 63.00 | 6.00 | 7.50 | 20.00 |
| PRSL0853PI | 13 | 12.00 | 156.00 | 178.59 | 126.00 | 11.29 | 15.00 | 20.00 |
| PRSL0898PI | 13 | 16.00 | 208.00 | 240.00 | 170.67 | 16.00 | 18.66 | 20.00 |
| PRSL0862PI | 14 | 10.00 | 140.00 | 169.00 | 125.00 | 15.00 | 7.50 | 20.00 |
| PRSL0896PI | 14 | 16.00 | 224.00 | 256.00 | 186.67 | 16.00 | 18.67 | 20.00 |
| PRSL0999PI | 14 | 18.00 | 252.00 | 288.00 | 210.00 | 18.00 | 21.00 | 20.00 |
| PRSL0848PI | 14 | 20.00 | 280.00 | 320.00 | 233.33 | 20.00 | 23.33 | 20.00 |
| PRSL0858PI | 15 | 18.00 | 270.00 | 306.00 | 228.00 | 18.00 | 21.00 | 20.00 |
| PRSL0847PI | 16 | 20.00 | 320.00 | 360.00 | 273.33 | 20.00 | 23.33 | 20.00 |
| PRSL0973PI | 17 | 10.00 | 170.00 | 190.00 | 145.00 | 10.00 | 12.50 | 22.89 |
| PRSL0974PI | 17 | 14.00 | 238.00 | 266.00 | 203.00 | 14.00 | 17.50 | 22.89 |
| PRSL0851PI | 20 | 6.00 | 120.00 | 132.00 | 105.00 | 6.00 | 7.50 | 22.89 |
| PRSL0844PI | 25 | 1.00 | 25.00 | 27.00 | 22.50 | 1.00 | 1.25 | 22.89 |

Measuring unit: mm.

FOX - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

(See next page for list of components and legends)

- 1 Version:** tick the required version.
- 2 SIL 1 certified:** tick the box if you require SIL 1 certified units.
- 3 Revolution ratio:** write the required revolution ratio.
- 4 Standard cam set:** write the code of the cam set required, according to the legend.
- 5 Customized cam set:** for non standard cam sets, fill in the scheme choosing the cams and the switches required, according to the legends. It is possible to assemble sets with 2, 3, 4 or 5 cams/switches.

Customized cams are available on request.
- 6 Potentiometer. encoder. Yankee:** write the code of the potentiometer, encoder or Yankee required.

ATTENTION: it is possible to mount a potentiometer or an encoder alone or together with a set of 2 or 3 cams/switches. Potentiometers PA020001 and PA020002 can be combined only with sets of 2 cams/switches.

ATTENTION: Yankee may be mouted alone or together with a set of max. 4 cams/switches.
- 7 Cable gland:** tick the type of cable gland required.
- 8 Coupling, flange, pinion gear:** tick the appropriate box when coupling, flange or pinion gear are required.

When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.

When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.
- 9 Shaft:** tick the type of shaft required.
Customized shafts are available on request.
- 10 Cover holding wire:** tick when the cover holding wire is required.

Version 1

- Version **CE EAC**
- Version **cULus CE EAC**
- Version with anti-moisture plug **CE EAC**

ATTENTION: Limit switches with shafts made of stainless steel AISI 430F are not cULus certified.

SIL1 certified 2

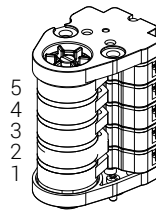
Revolution ratio 3

- | | |
|--------------------------------|---|
| <input type="checkbox"/> 1:15 | <input type="checkbox"/> 1:150 |
| <input type="checkbox"/> 1:20 | <input type="checkbox"/> 1:200 |
| <input type="checkbox"/> 1:25 | <input type="checkbox"/> 1:250 |
| <input type="checkbox"/> 1:50 | <input type="checkbox"/> 1:300 |
| <input type="checkbox"/> 1:75 | <input type="checkbox"/> 1:450 |
| <input type="checkbox"/> 1:100 | <input type="checkbox"/> 1: <input style="width: 50px;" type="text"/> |

Standard cam set 4

Cam set code _____

Customized cam set 5



| | |
|----------|-------------|
| Cam code | Switch code |
| 5 _____ | _____ |
| 4 _____ | _____ |
| 3 _____ | _____ |
| 2 _____ | _____ |
| 1 _____ | _____ |

Potentiometer. encoder. Yankee 6

Code _____

Cable gland 7

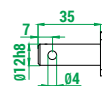
- M20 M20+M16
- M20+M20

- | | |
|--|-------------------------------------|
| <input type="checkbox"/> Male coupling | <input type="checkbox"/> Coupling 8 |
| <input type="checkbox"/> Female coupling | <input type="checkbox"/> Flange |
| <input type="checkbox"/> Pinion gear | |

Pinion gear code _____

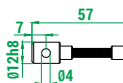
Customized pinion gear
No. of teeth _____
Module _____
Primitive diameter _____

Standard shaft 9



- Stainless steel AISI 430F shaft
- High resistance stainless steel AISI 303 shaft

Flexible shaft



- Stainless steel AISI 430F shaft
- High resistance stainless steel AISI 303 shaft

Cover holding wire 10

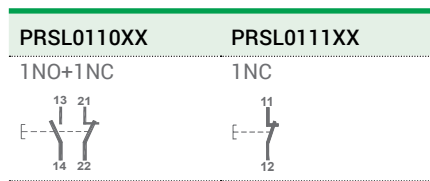
4 Legend - Standard cam sets

| No. & type of switches | No. & type of cams | Code |
|------------------------|--------------------|----------|
| 2 x PRSL0110XX | 2 cams A | FCL20001 |
| | Cams A+C | FCL20003 |
| 4 x PRSL0110XX | 2 cams C | FCL20005 |
| | Cams D+D+B+F | FCL40001 |
| | 4 cams A | FCL40003 |
| | Cams A+A+C+C | FCL40005 |
| | 4 cams C | FCL40007 |
| | Cams C+C+C+E | FCL40009 |
| 2 x PRSL0111XX | Cams A+A+E+E | FCL40011 |
| | 2 cams A | FCL20002 |
| | Cams A+C | FCL20004 |
| 4 x PRSL0111XX | 2 cams C | FCL20006 |
| | Cams D+D+B+F | FCL40002 |
| | 4 cams A | FCL40004 |
| | Cams A+A+C+C | FCL40006 |
| | 4 cams C | FCL40008 |
| | Cams C+C+C+E | FCL40010 |
| | Cams A+A+E+E | FCL40012 |

6 Legend - Potentiometers, encoders and Yankee

| Description | Code |
|--|----------|
| Potentiometer 10 kΩ - with support | PA020001 |
| Potentiometer 10 kΩ mechanical stop - with support | PA020002 |
| Potentiometer 10 kΩ ±10% 4 pins - with support | PA020003 |
| Potentiometer 10 kΩ ±10% 3 pins - with support | PA020004 |
| Potentiometer 5 kΩ ±10% - with support | PA020005 |
| Encoder 36 pulses/rev. - with support | PA030001 |
| Encoder 150 pulses/rev. - with support | PA030002 |
| Yankee - current output | PA01AA01 |
| Yankee - voltage output | PA01AB01 |
| Yankee - PWM output | PA01AC01 |

5 Legend - Switches



5 Legend - Cams

| Cam | Cam code for PRSL0110XX switch | Switching angle with PRSL0110XX | Cam code for PRSL0111XX switch | Switching angle with PRSL0111XX |
|-----|--------------------------------|---------------------------------|--------------------------------|---------------------------------|
| A | PRSL7194PI | 21.5° ±0.5° | PRSL7194PI | 23.0° ±0.5° |
| B | PRSL7193PI | 21.5° ±0.5° | PRSL7193PI | 23.0° ±0.5° |
| C | PRSL7195PI | 82.0° ±0.5° | PRSL7195PI | 86.0° ±0.5° |
| D | PRSL7196PI | 94.0° ±0.5° | PRSL7196PI | 97.5° ±0.5° |
| E | PRSL7191PI | 204.5° ±0.5° | PRSL7191PI | 203.0° ±0.5° |
| F | PRSL7192PI | 328.5° ±0.5° | PRSL7192PI | 327.0° ±0.5° |

GF4C

Rotary limit switch



Rotary limit switch used to control and measure the movement of industrial machines or the position of the nacelle or pitch angle of wind turbines.

FEATURES

- It consists of a gear motor that transfers movement to the cams and the other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages.
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 1 million operations.
- IP protection degree: GF4C is classified IP65.
- Extreme temperature resistance: -25°C to +70°C.
- It features transmission and gear driving shafts made of stainless steel, self-lubricating technopolymer gears and driving bushes and sintered bronze bushes moulded into the base of the limit switch to prevent rubbing against plastic material.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

OPTIONS

- Revolution ratios from 1:1 to 1:969, achieved by combining different secondary output stages.
- Each of the two outputs can be set to a different revolution ratio to enable diversified control of the machine when special requirements need to be met.
- Snap actions switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- It can be equipped with 2 cam sets (with up to 7 switches), potentiometers and encoders (alone or on top of cam sets with up to 2 switches) and Yankee absolute encoders (on top of cam sets with up to 3 switches).
- Available with flanges, pinion gears and couplings.
- Available with direct control switches to enable direct action on the motor.

CERTIFICATIONS

- CE marking and cULus* marking

Fill in the "request form" for accurate product configuration.

* Not available on all versions.



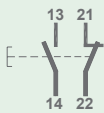
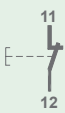
CERTIFICATIONS

| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/35/UE Low Voltage Directive |
| | 2006/42/CE Machinery Directive |
| Conformity to CE Standards | EN 60204-1 Safety of machinery - Electrical equipment of machines |
| | EN 60947-1 Low-voltage switchgear and controlgear |
| | EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices |
| | EN 60529 Degrees of protection provided by enclosures |
| Conformity to cULus Standards | CSA-C22.2 No 14-13 Industrial Control Equipment |
| | UL 508 Industrial Control Equipment |
| Markings and homologations | CE cULus* |



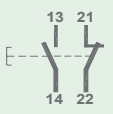

GENERAL TECHNICAL SPECIFICATIONS

| | |
|----------------------|--------------------------|
| Ambient temperature | Storage -40°C/+70°C |
| | Operational -25°C/+70°C |
| IP protection degree | IP 65 |
| Insulation category | Class II |
| Cable entry | Cable clamp M20 |
| Shafts | Stainless steel AISI 303 |

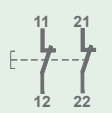
TECHNICAL SPECIFICATIONS OF THE SWITCHES FOR AUXILIARY CONTROL

| Code | PRSL0036XX | PRSL0037XX |
|----------------------------|--|--|
| Utilisation category | | AC 15 |
| Rated operational voltage | | 3 A |
| Rated operational current | | 250 Vac |
| Rated thermal current | | 10 A |
| Rated insulation voltage | | 300 Vac |
| Mechanical life | | 1x10 ⁶ operations |
| Connections | Screw-type terminals | |
| Wires | 1x2,5 mm ² , 2x1,5 mm ² (UL (c)UL: use 60°C or 75°C copper (CU) conductors and wire 16-18 AWG) | |
| Tightening torque | 0,8 Nm | |
| Switch type | Double break, snap action | Double break, slow action |
| Contacts | 1NO+1NC (All NC contacts are of the positive opening operation type ) | 1NC (All NC contacts are of the positive opening operation type ) |
| Scheme |  |  |
| Markings and homologations | CE cULus EAC | |

* Not available on all versions.

| Code | PRSL0110XX | PRSL0111XX |
|----------------------------|--|--|
| Utilisation category | AC 15 | |
| Rated operational voltage | 250 Vac | |
| Rated operational current | 3 A | |
| Rated thermal current | 10 A | |
| Rated insulation voltage | 300 Vac | |
| Mechanical life | 10x10 ⁶ operations | |
| Connections | Screw-type terminals | |
| Wires | 1x2.5 mm ² , 2x1.5 mm ² (UL (c)UL: use 60°C or 75°C copper (CU) conductors and stiff or flexible wire 14-22 AWG) | |
| Tightening torque | 0.5 Nm | |
| Switch type | Double break, snap action | Double break, slow action |
| Contacts | 1NO+1NC (All NC contacts are of the positive opening operation type ) | 1NC (All NC contacts are of the positive opening operation type ) |
| Scheme |  |  |
| Markings and homologations | CE cULus ENEC | |

TECHNICAL SPECIFICATIONS OF THE SWITCHES FOR DIRECT CONTROL

| Code | PRSL0455PI |
|----------------------------|--|
| Utilisation category | AC 3 |
| Rated operational current | 400 Vac |
| Rated operational voltage | 10 A |
| Rated thermal current | 20 A |
| Rated insulation voltage | 660 Vac |
| Mechanical life | 1x10 ⁶ operations |
| Connections | Screw-type terminals |
| Wires | 2x1.5 mm ² , 1x2.5 mm ² |
| Tightening torque | 0.8 Nm |
| Switch type | Two-pole |
| Contacts | 2NC |
| Scheme |  |
| Markings and homologations | CE |

TECHNICAL SPECIFICATIONS OF THE POTENTIOMETERS

| Code of potentiometer with support | PA020001 | PA020002 |
|------------------------------------|------------------------------|-------------------------------|
| Ohmic value | 10 k Ω | 10 k Ω mechanical stop |
| Resolution | Infinite | |
| Independant linearity | $\pm 1\%$ | |
| Life time | 10x10 ⁶ movements | |
| Operational ambient temperature | -55°C/+105°C | |
| Continuos rotation (without stop) | 360° | |
| Continuos rotation (with stop) | 333° $\pm 5^\circ$ | |
| Actual electrical angle | 310° $\pm 5^\circ$ | |
| Ohmic value tolerance | $\pm 20\%$ | |

| Code of potentiometer with support | PA020006 | PA020007 | PA020008 |
|--------------------------------------|-----------------------------|---------------|----------------|
| Ohmic value | 4.7 k Ω | 10 k Ω | 2.2 k Ω |
| Independant linearity (ref. AEA -3°) | $\pm 0,25\%$ | | |
| Life time | 3x10 ⁶ movements | | |
| Operational ambient temperature | -55°C/+125°C | | |
| Mechanical angle | 360° continuous | | |
| Actual Electrical Angle (AEA) | 355° $\pm 5^\circ$ | | |
| Ohmic value tolerance | $\pm 5\%$ | | |
| Temperature drift | < 50 PPM/°C | | |


| Code of potentiometer with support | PA020003 | PA020004 | PA020005 |
|--------------------------------------|-----------------------------|------------------------|------------------------|
| Ohmic value | 10 k Ω | 10 k Ω | 5 k Ω |
| Connections | 4 turrets | 3 turrets | 4 turrets |
| Independant linearity (over AEA -3°) | $\leq \pm 1\%$ | $\leq \pm 0.35\%$ | $\leq \pm 1\%$ |
| Life time | 5x10 ⁶ movements | | |
| Operational ambient temperature | -55°C/+125°C | | |
| Mechanical angle | 360° continuous | | |
| Actual Electrical Angle (AEA) | 340° $\pm 5^\circ$ | | |
| Ohmic value tolerance | Max $\pm 20\%$ at 20°C | Max $\pm 10\%$ at 20°C | Max $\pm 20\%$ at 20°C |

| Code of potentiometer with support | PA020009 |
|------------------------------------|-------------------------------|
| Ohmic value | 2 k Ω |
| Resolution | Better than 0.008° |
| Linearity | $\pm 0.075\%$ |
| Independant linearity | $\pm 0.075\%$ |
| Life time | 100x10 ⁶ movements |
| Operational ambient temperature | -40°C/+100°C |
| Mechanical angle | 360° continuous |
| Actual electrical travel | 350° $\pm 2^\circ$ |
| Ohmic value tolerance | $\pm 20\%$ |

TECHNICAL SPECIFICATIONS OF THE ENCODERS

| | | |
|---------------------------------|--|-----------------|
| Code with support | PA030001 | PA030002 |
| Resolution | 36 pulses/rev. | 150 pulses/rev. |
| Operational ambient temperature | -40°C/+85°C | |
| Code | Incremental | |
| Supply voltage | 4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load) | |
| Output voltage | Low: 500 mV max. at 10 mA High: (Vin - 0.6) at -10 mA (Vin - 1.3) at -25 mA | |
| Output current | 25 mA max. load per output channel | |
| Output format | Two channel (A, B) quadrature with Index (Z) | |
| Phase sense | A leads B clockwise (CW) from the mounting end of the encoder | |
| Accuracy | +/- 0.8 arc-min. | |
| Outputs | Push pull | |
| Electrical protection | Protection against reverse polarity and output short-circuit | |

CERTIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/30/UE Electromagnetic Compatibility (EMC) Directive |
| | 2006/42/CE Machinery Directive |
| | 2014/35/UE Low Voltage Directive (LVD) |
| Conformity to CE Standards | EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements |
| | EN 60529 Degrees of protection provided by enclosures |
| Conformity to cULus Standards | CSA-C22.2 No 14-13 Industrial Control Equipment |
| | UL 508 Industrial Control Equipment |
| Markings and homologations | CE  |

GENERAL TECHNICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

| | |
|------------------------|-------------------------|
| Ambient temperature | Storage -40°C/+80°C |
| | Operational -40°C/+80°C |
| IP protection degree | IP 20 |
| Free rotation | 360° |
| Maximum rotation speed | 800 rpm |

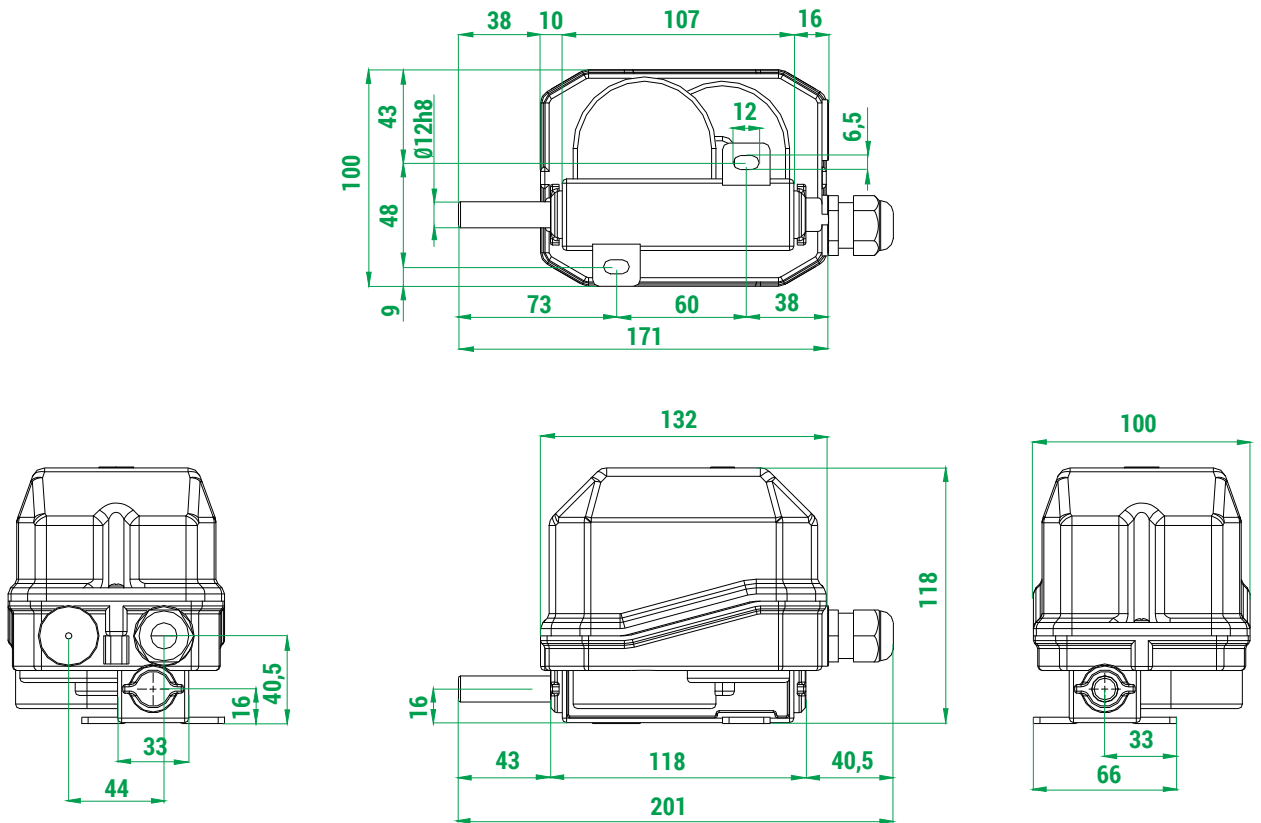
ELECTRICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

| | | | |
|-------------------------------------|--|------------------|---------------|
| Code | PA01AA01 | PA01AB01 | PA01AC01 |
| Analog output | Current 4 ÷ 20 mA | Voltage 0 ÷ 10 V | PWM 0 ÷ 100 % |
| Power supply | 12 ÷ 48 Vdc/12 ÷ 48 Vac | | |
| Protection against reverse polarity | Yes | | |
| Absorption | 50 mA | | |
| Resolution | 10 bit | | |
| Linearity | +/-0.5° | | |
| Max. hysteresis | 0.1° | | |
| Zero Point setting | Through button/wire | | |
| Signal increment direction | CW (standard)/CCW (on request) | | |
| Connections | Terminal board | | |
| Terminal wires | 0.14 mm ² - 1.5 mm ² | | |
| Terminal tightening torque | 0.22 Nm - 0.25 Nm | | |

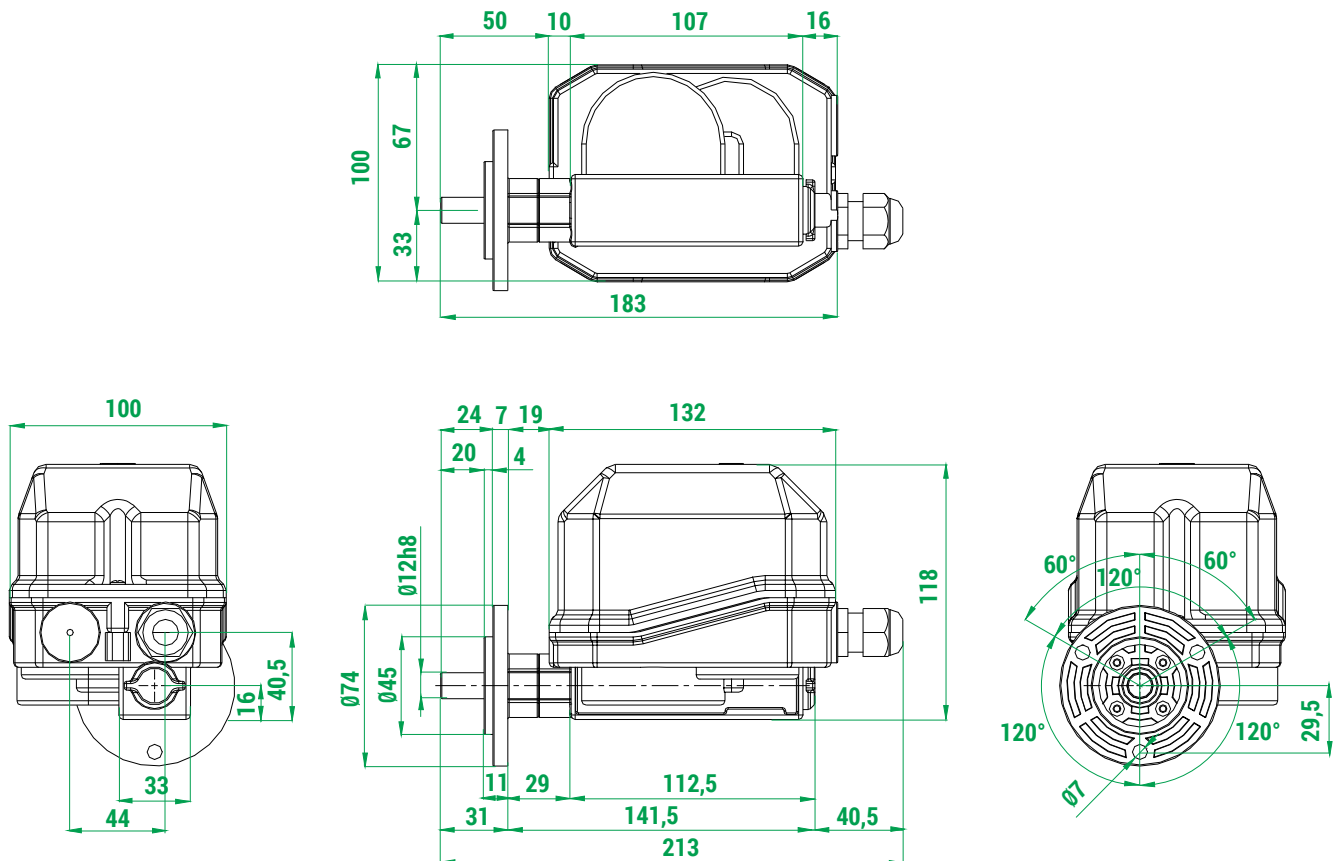
OVERALL DIMENSIONS (mm)

Standard


4





With flange



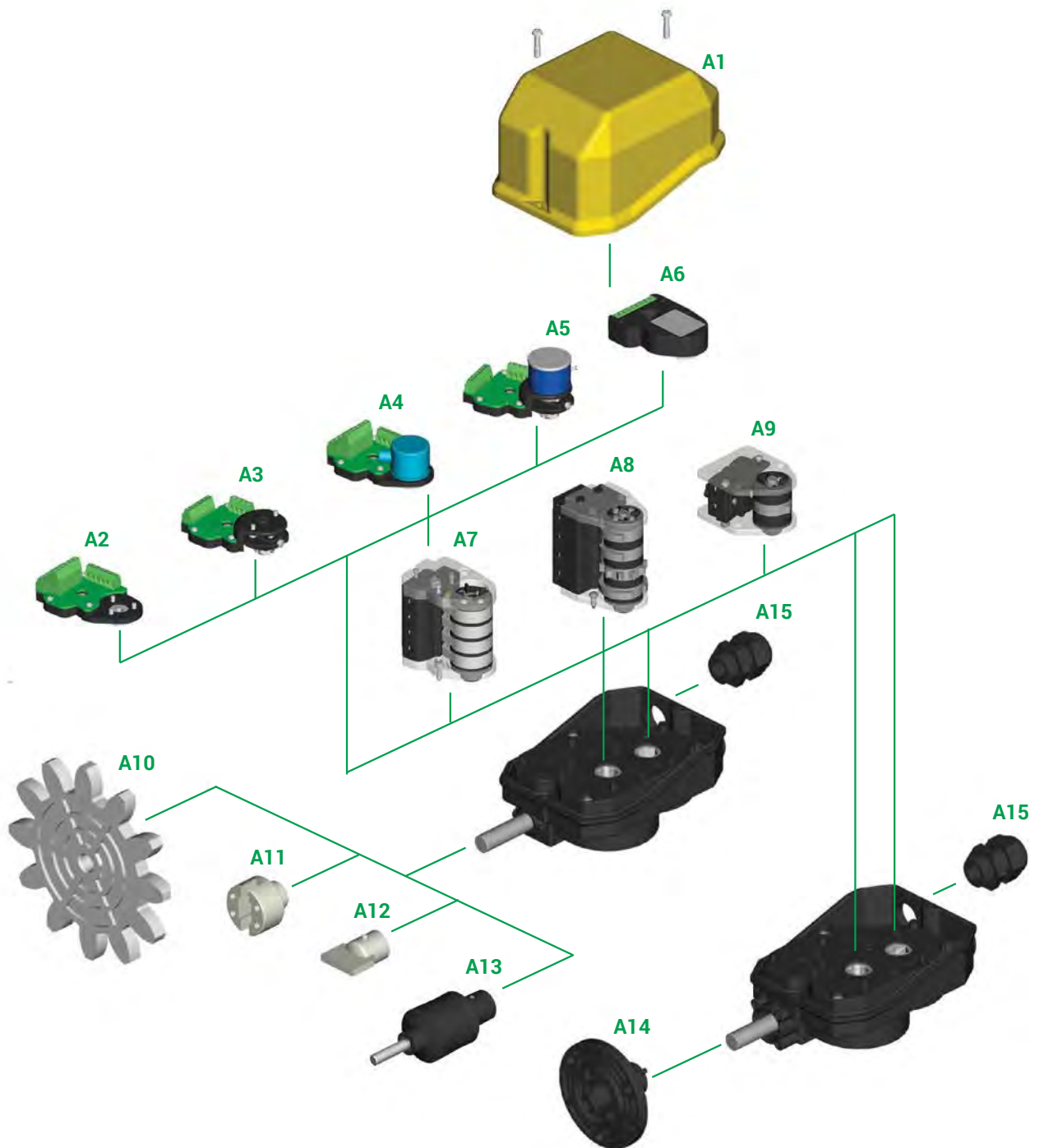
STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7140PI .

| Rated revolution ratio | No. of cams and switches | Switches | |
|------------------------|--------------------------|--|--|
| | | PRSL0036XX 1NO+1NC  | PRSL0037XX 1NC  |
| | | Code | Code |
| 1:1 | 2 | PF090300010003 | PF090300010004 |
| | 3 | PF090300010002 | PF090300010005 |
| | 4 | PF090300010001 | PF090300010006 |
| 1:5 | 2 | PF090300050002 | PF090300050004 |
| | 3 | PF090300050003 | PF090300050005 |
| | 4 | PF090300050001 | PF090300050006 |
| 1:10 | 2 | PF090300100003 | PF090300100005 |
| | 3 | PF090300100004 | PF090300100006 |
| | 4 | PF090300100002 | PF090300100007 |
| 1:15 | 2 | PF090300150004 | PF090300150007 |
| | 3 | PF090300150003 | PF090300150008 |
| | 4 | PF090300150002 | PF090300150001 |
| 1:20 | 2 | PF090300200002 | PF090300200004 |
| | 3 | PF090300200003 | PF090300200005 |
| | 4 | PF090300200001 | PF090300200006 |
| 1:25 | 2 | PF090300250006 | PF090300250007 |
| | 3 | PF090300250003 | PF090300250008 |
| | 4 | PF090300250001 | PF090300250002 |
| 1:50 | 2 | PF090300500002 | PF090300500028 |
| | 3 | PF090300500003 | PF090300500017 |
| | 4 | PF090300500006 | PF090300500007 |
| 1:75 | 2 | PF090300750007 | PF090300750009 |
| | 3 | PF090300750008 | PF090300750010 |
| | 4 | PF090300750004 | PF090300750006 |
| 1:100 | 2 | PF090301000002 | PF090301000001 |
| | 3 | PF090301000006 | PF090301000013 |
| | 4 | PF090301000003 | PF090301000004 |
| 1:150 | 2 | PF090301500002 | PF090301500001 |
| | 3 | PF090301500011 | PF090301500009 |
| | 4 | PF090301500008 | PF090301500003 |
| 1:200 | 2 | PF090302000006 | PF090302000007 |
| | 3 | PF090302000002 | PF090302000004 |
| | 4 | PF090302000003 | PF090302000008 |
| 1:250 | 2 | PF090302500003 | PF090302500009 |
| | 3 | PF090302500007 | PF090302500010 |
| | 4 | PF090302500008 | PF090302500011 |
| 1:300 | 2 | PF090303000004 | PF090303000008 |
| | 3 | PF090303000006 | PF090303000009 |
| | 4 | PF090303000007 | PF090303000010 |

ASSEMBLY DRAWING

4



Refer to the following tables for descriptions of components: "Standard cam sets", "Potentiometers, encoders and sensors" and "Accessories".







COMPONENTS

Standard cam sets






| Ref. | Drawing | No. and type of cams | No. and type of switches | Code |
|------|---|----------------------|---------------------------|------------|
| A7 |  | 2 cams A | 2 switches PRSL0110XX | FCL20001 |
| | | 2 cams A | 2 switches PRSL0111XX | FCL20002 |
| | | Cams A+C | 2 switches PRSL0110XX | FCL20003 |
| | | Cams A+C | 2 switches PRSL0111XX | FCL20004 |
| | | 2 cams C | 2 switches PRSL0110XX | FCL20005 |
| | | 2 cams C | 2 switches PRSL0111XX | FCL20006 |
| | | Cams D+D+B+F | 4 switches PRSL0110XX | FCL40001 |
| | | Cams D+D+B+F | 4 switches PRSL0111XX | FCL40002 |
| | | 4 cams A | 4 switches PRSL0110XX | FCL40003 |
| | | 4 cams A | 4 switches PRSL0111XX | FCL40004 |
| | | Cams A+A+C+C | 4 switches PRSL0110XX | FCL40005 |
| | | Cams A+A+C+C | 4 switches PRSL0111XX | FCL40006 |
| | | 4 cams C | 4 switches PRSL0110XX | FCL40007 |
| | | 4 cams C | 4 switches PRSL0111XX | FCL40008 |
| | | Cams C+C+C+E | 4 switches PRSL0110XX | FCL40009 |
| | | Cams C+C+C+E | 4 switches PRSL0111XX | FCL40010 |
| | | Cams A+A+E+E | 4 switches PRSL0110XX | FCL40011 |
| | | Cams A+A+E+E | 4 switches PRSL0111XX | FCL40012 |
| A8 |  | 2 cams A | 2 switches PRSL0036XX | PRFC0010PE |
| | | 2 cams A | 2 switches PRSL0037XX | PRFC0011PE |
| | | 2 cams C | 2 switches PRSL0036XX | PRFC0012PE |
| | | 2 cams C | 2 switches PRSL0037XX | PRFC0013PE |
| | | 3 cams A | 3 switches PRSL0036XX | PRFC0020PE |
| | | 3 cams A | 3 switches PRSL0037XX | PRFC0021PE |
| | | 3 cams C | 3 switches PRSL0036XX | PRFC0022PE |
| | | 3 cams C | 3 switches PRSL0037XX | PRFC0024PE |
| | | 4 cams A | 4 switches PRSL0036XX | PRFC0030PE |
| | | 4 cams A | 4 switches PRSL0037XX | PRFC0031PE |
| | | 4 cams C | 4 switches PRSL0036XX | PRFC0032PE |
| | | 4 cams C | 4 switches PRSL0037XX | PRFC0034PE |
| A9 |  | 1 cam A | 1 interruttore PRSL0455PI | PRFC0101PE |
| | | 2 cam A | 2 switches PRSL0455PI | PRFC0103PE |

Other sets with 2/3/4 switches PRSL0036XX/PRSL0037XX/PRSL0110XX/PRSL0111XX or with 1 or 2 switches PRSL0455PI are available on request.





Cam reference chart for sets with switches PRSL0110XX and PRSL0111XX

| Cam | | | Code | Switching angle with PRSL0110XX | Switching angle with PRSL0111XX |
|-----|---|-------------|------------|---------------------------------|---------------------------------|
| A |  | 1 point | PRSL7194PI | 21,5° ±0,5° | 23,0° ±0,5° |
| B |  | 10 points | PRSL7193PI | 21,5° ±0,5° | 23,0° ±0,5° |
| C |  | 60° sector | PRSL7195PI | 82,0° ±0,5° | 86,0° ±0,5° |
| D |  | 72° sector | PRSL7196PI | 94,0° ±0,5° | 97,5° ±0,5° |
| E |  | 180° sector | PRSL7191PI | 204,5° ±0,5° | 203,0° ±0,5° |
| F |  | 305° sector | PRSL7192PI | 328,5° ±0,5° | 327,0° ±0,5° |


Cam reference chart for sets with switches PRSL0036XX, PRSL0037XX and PRSL0455PI

| Cam | | | Code | Switching angle with PRSL036XX | Switching angle with PRSL037XX |
|-----|--|-------------|------------|--------------------------------|--------------------------------|
| A |  | 1 point | PRSL7140PI | 21,0° ±0,5° | 25,0° ±0,5° |
| B |  | 10 points | PRSL7142PI | 16,5° ±0,5° | 21,5° ±0,5° |
| C |  | 60° sector | PRSL7141PI | 80,0° ±0,5° | 86,0° ±0,5° |
| E |  | 180° sector | PRSL7144PI | 199,5° ±0,5° | 205,5° ±0,5° |
| H |  | 335° sector | PRSL7143PI | 343,5° ±0,5° | 349,0° ±0,5° |

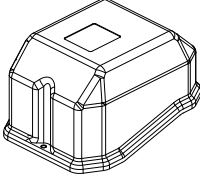
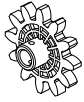


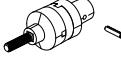


Potentiometers, encoders and sensors

| Ref. | Drawing | Description | Code |
|-----------------------------------|---|--|----------|
| A2 |  | Support for encoder | PA030000 |
| A3 |  | Support for potentiometer | PA020000 |
| A4 |  | Encoder 36 pulses./rev. with support | PA030001 |
| | | Encoder 150 pulses./rev. with support | PA030002 |
| A5 |  | Potentiometer 10 kΩ with support | PA020001 |
| | | Potentiometer 10 kΩ mechanical stop with support | PA020002 |
| | | Potentiometer 10 kΩ ±10% 4 pins with support | PA020003 |
| | | Potentiometer 10 kΩ ±10% 3 pins with support | PA020004 |
| | | Potentiometer 5 kΩ ±10% with support | PA020005 |
| | | Potentiometer 4.7 kΩ with support | PA020006 |
| | | Potentiometer 10 kΩ with support | PA020007 |
| Potentiometer 2.2 kΩ with support | PA020008 | | |
| | | Potentiometer 2KΩ with support | PA020009 |

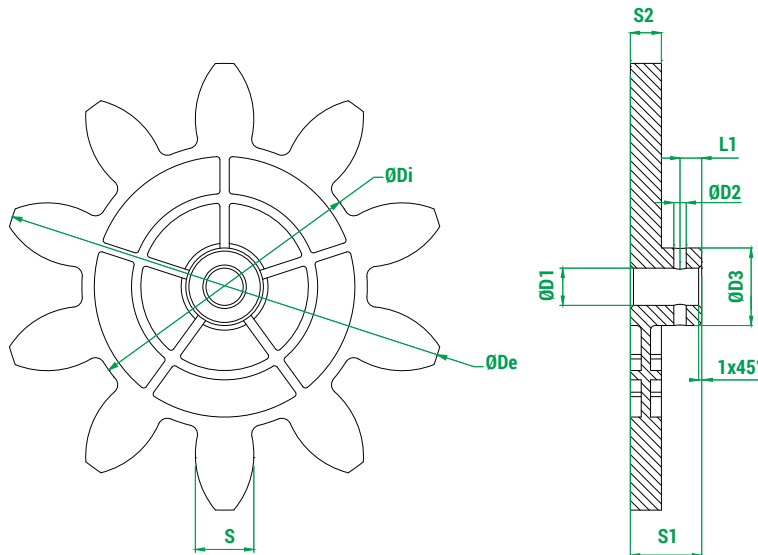
Potentiometers, encoders and sensors

| | | | |
|----|---|--|----------|
| A6 |  | Absolute encoder Yankee - current output | PA01AA01 |
| | | Absolute encoder Yankee - voltage output | PA01AB01 |
| | | Absolute encoder Yankee - PWM output | PA01AC01 |

Accessories

| Ref. | Drawing | Description | Code |
|------|---|--------------------------|------------------------|
| A1 |  | Cover | PRSL5582PI |
| A10 |  | Pinion gear | See pinion gear tables |
| A11 |  | Female coupling with pin | PRSL0920PI |
| A12 |  | Male coupling with pin | PRSL0919PI |
| A13 |  | Coupling with pin | PRSL0981PI |
| A14 |  | Flange with pin | PRSL0947PI |
| A15 |  | Cable clamp M20 | PRPS0064PE |

Moulded pinion gears



Legend

Z Number of teeth

M Module

Dp Primitive diameter

De External diameter

Di Internal diameter

a Addendum

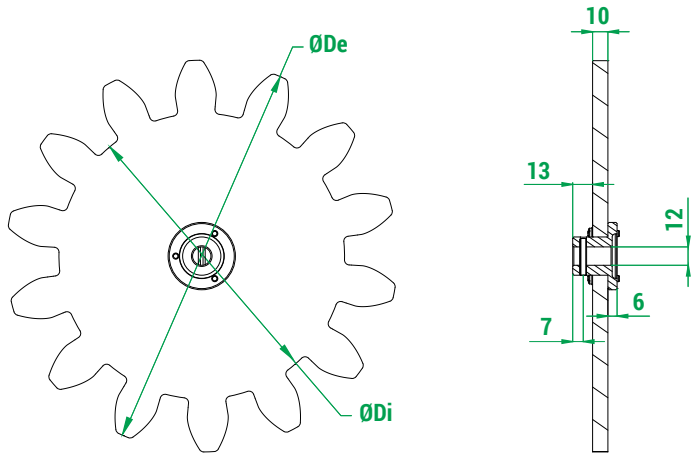
d Dedendum

Alpha Pressure angle

| Code | Z | M | Dp | De | Di | a | d | S | Alpha | D1 | D2 | D3 | S1 | S2 | L1 |
|------------|----|-------|--------|--------|--------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|
| PRSL0915PI | 8 | 20.00 | 160.00 | 200.00 | 113.20 | 20.00 | 23.40 | 31.41 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0912PI | 10 | 12.00 | 120.00 | 144.00 | 92.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 25.00 | 23.00 | 10.00 | 7.00 |
| PRSL0913PI | 10 | 14.00 | 140.00 | 168.00 | 107.24 | 14.00 | 16.38 | 21.99 | 20.00 | 12.00 | 4.00 | 24.60 | 23.00 | 10.00 | 7.00 |
| PRSL0914PI | 10 | 16.00 | 160.00 | 192.00 | 122.67 | 16.00 | 18.67 | 25.13 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0917PI | 11 | 6.00 | 66.00 | 78.00 | 51.96 | 6.00 | 7.02 | 9.42 | 20.00 | 12.00 | 4.00 | 19.00 | 23.00 | 8.00 | 7.00 |
| PRSL0916PI | 12 | 5.00 | 60.00 | 70.00 | 48.30 | 5.00 | 5.83 | 7.85 | 20.00 | 12.00 | 4.00 | 20.00 | 23.00 | 8.00 | 7.00 |
| PRSL0918PI | 12 | 8.00 | 96.00 | 112.00 | 77.28 | 8.00 | 9.36 | 12.56 | 20.00 | 12.00 | 3.90 | 21.50 | 23.50 | 10.00 | 7.00 |
| PRSL0911PI | 12 | 10.00 | 120.00 | 140.00 | 96.67 | 10.00 | 11.67 | 15.71 | 20.00 | 12.00 | 4.00 | 25.00 | 23.50 | 10.00 | 7.00 |
| PRSL0944PI | 12 | 12.00 | 144.00 | 168.00 | 116.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |

Measuring unit: mm.

Waterjet cut pinion gears



Legend

| | |
|-------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | Alpha |
|------------|----|-------|--------|--------|--------|-------|-------|-------|
| PRSL0857PI | 8 | 18.00 | 144.00 | 180.00 | 102.00 | 18.00 | 21.00 | 20.00 |
| PRSL0855PI | 8 | 24.00 | 192.00 | 240.00 | 136.00 | 24.00 | 28.00 | 20.00 |
| PRSL0992PI | 9 | 10.00 | 90.00 | 110.00 | 66.67 | 10.00 | 11.67 | 20.00 |
| PRSL0879PI | 9 | 16.00 | 144.00 | 176.00 | 106.67 | 16.00 | 18.67 | 20.00 |
| PRSL0854PI | 9 | 18.00 | 162.00 | 198.00 | 120.00 | 18.00 | 21.00 | 20.00 |
| PRSL0871PI | 9 | 20.00 | 180.00 | 220.00 | 133.33 | 20.00 | 23.33 | 20.00 |
| PRSL0849PI | 9 | 24.00 | 216.00 | 264.00 | 160.00 | 24.00 | 28.00 | 20.00 |
| PRSL0846PI | 10 | 10.00 | 100.00 | 120.00 | 76.67 | 10.00 | 11.67 | 20.00 |
| PRSL0993PI | 10 | 18.00 | 180.00 | 216.00 | 138.00 | 18.00 | 21.00 | 20.00 |
| PRSL0970PI | 10 | 22.00 | 220.00 | 264.00 | 168.52 | 22.00 | 25.74 | 20.00 |
| PRSL0856PI | 10 | 24.00 | 240.00 | 288.00 | 184.00 | 24.00 | 28.00 | 20.00 |
| PRSL0861PI | 11 | 12.00 | 132.00 | 156.00 | 104.00 | 12.00 | 14.00 | 20.00 |
| PRSL0998PI | 11 | 18.00 | 198.00 | 234.00 | 156.00 | 18.00 | 21.00 | 20.00 |
| PRSL0997PI | 11 | 20.00 | 220.00 | 260.00 | 173.36 | 20.00 | 23.32 | 20.00 |
| PRSL0859PI | 11 | 24.00 | 264.00 | 312.00 | 204.00 | 24.00 | 30.00 | 20.00 |
| PRSL0863PI | 12 | 14.00 | 168.00 | 196.00 | 133.00 | 14.00 | 17.50 | 20.00 |
| PRSL0897PI | 12 | 16.00 | 192.00 | 224.00 | 154.67 | 16.00 | 18.67 | 20.00 |
| PRSL0972PI | 12 | 18.00 | 216.00 | 252.00 | 173.88 | 18.00 | 21.06 | 20.00 |
| PRSL0845PI | 12 | 20.00 | 240.00 | 280.00 | 193.34 | 20.00 | 23.32 | 20.00 |
| PRSL0878PI | 12 | 24.00 | 288.00 | 336.00 | 232.00 | 24.00 | 28.00 | 20.00 |
| PRSL0860PI | 13 | 6.00 | 78.00 | 90.00 | 63.00 | 6.00 | 7.50 | 20.00 |
| PRSL0853PI | 13 | 12.00 | 156.00 | 178.59 | 126.00 | 11.29 | 15.00 | 20.00 |
| PRSL0898PI | 13 | 16.00 | 208.00 | 240.00 | 170.67 | 16.00 | 18.66 | 20.00 |
| PRSL0862PI | 14 | 10.00 | 140.00 | 169.00 | 125.00 | 15.00 | 7.50 | 20.00 |
| PRSL0896PI | 14 | 16.00 | 224.00 | 256.00 | 186.67 | 16.00 | 18.67 | 20.00 |
| PRSL0999PI | 14 | 18.00 | 252.00 | 288.00 | 210.00 | 18.00 | 21.00 | 20.00 |
| PRSL0848PI | 14 | 20.00 | 280.00 | 320.00 | 233.33 | 20.00 | 23.33 | 20.00 |
| PRSL0858PI | 15 | 18.00 | 270.00 | 306.00 | 228.00 | 18.00 | 21.00 | 20.00 |
| PRSL0847PI | 16 | 20.00 | 320.00 | 360.00 | 273.33 | 20.00 | 23.33 | 20.00 |
| PRSL0973PI | 17 | 10.00 | 170.00 | 190.00 | 145.00 | 10.00 | 12.50 | 22.89 |
| PRSL0974PI | 17 | 14.00 | 238.00 | 266.00 | 203.00 | 14.00 | 17.50 | 22.89 |
| PRSL0851PI | 20 | 6.00 | 120.00 | 132.00 | 105.00 | 6.00 | 7.50 | 22.89 |
| PRSL0844PI | 25 | 1.00 | 25.00 | 27.00 | 22.50 | 1.00 | 1.25 | 22.89 |

Measuring unit: mm.

GF4C - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

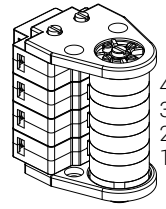
4

Instructions

(See next pages for list of components and legends)

- 1 Version:** tick the required version.
- 2 Revolution ratio:** write the required revolution ratio for each output.
 ATTENTION: refer to table "Configurations with sets of cams/ switches" for possible configurations.
- 3 Standard cam sets:** write the code of the cam set required for each output.
 ATTENTION: refer to table "Configurations with sets of cams/ switches" for possible configurations.
- 4 Customized cam sets:** for non standard cam sets, fill in the scheme choosing the cams and the switches required.
 ATTENTION: refer to table "Configurations with sets of cams/ switches" for possible configurations.
 Customized cams are available on request.
- 5 Potentiometers, encoders, Yankee:** write the code of the potentiometer, encoder or Yankee required. Refer to table "Configurations with potentiometers, encoders and Yankee" for possible configurations.
- 6 Cable clamps:** choose the number of cable clamps required.
- 7 Coupling, flange, pinion gear:** tick the box when coupling, flange or pinion gear are required.
 When a standard pinion gear is required, write the code number listed in the pinion gear table in the catalogue.
 When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.
- 8 Shaft:** tick the shaft type required.
 Customized shafts are available on request.

Customized cam sets 4



| | | |
|----------|----------|-------------|
| Output 1 | Cam code | Switch code |
| 4 | _____ | _____ |
| 3 | _____ | _____ |
| 2 | _____ | _____ |
| 1 | _____ | _____ |
| Output 2 | Cam code | Switch code |
| 4 | _____ | _____ |
| 3 | _____ | _____ |
| 2 | _____ | _____ |
| 1 | _____ | _____ |

Potentiometers, encoders, Yankee 5

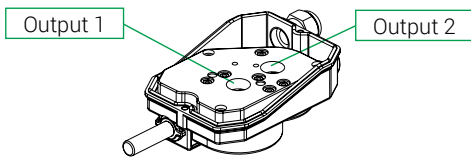
| | | |
|------|----------|----------|
| | Output 1 | Output 2 |
| Code | _____ | _____ |

Version 1

- Version IP00 (without cover)
- Version IP65

Cable clamps 6

- No. 1 cable clamp M20
- No. 2 cable clamps M20



- | | |
|--|-------------------------------------|
| <input type="checkbox"/> Male coupling | <input type="checkbox"/> Coupling 7 |
| <input type="checkbox"/> Female coupling | <input type="checkbox"/> Flange |
| <input type="checkbox"/> Pinion gear | |

Pinion gear code _____

Revolution ratio 2

| | |
|---|---|
| Output 1 | Output 2 |
| <input type="checkbox"/> 1:1 <input type="checkbox"/> 1:25 <input type="checkbox"/> 1:200 | 1: <input type="text"/> |
| <input type="checkbox"/> 1:5 <input type="checkbox"/> 1:50 <input type="checkbox"/> 1:250 | Not all revolution ratios are available |
| <input type="checkbox"/> 1:10 <input type="checkbox"/> 1:70 <input type="checkbox"/> 1:300 | |
| <input type="checkbox"/> 1:15 <input type="checkbox"/> 1:100 <input type="checkbox"/> 1:450 | |
| <input type="checkbox"/> 1:20 <input type="checkbox"/> 1:150 <input type="checkbox"/> 1: <input type="text"/> | |

Customized pinion gear

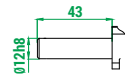
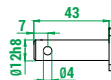
No. of teeth _____

Module _____

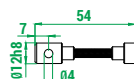
Primitive diameter _____

8

- Standard shaft
- Standard shaft without hole



- Flexible shaft



Standard cam sets 3

Cam set code

_____ Output 1

_____ Output 2



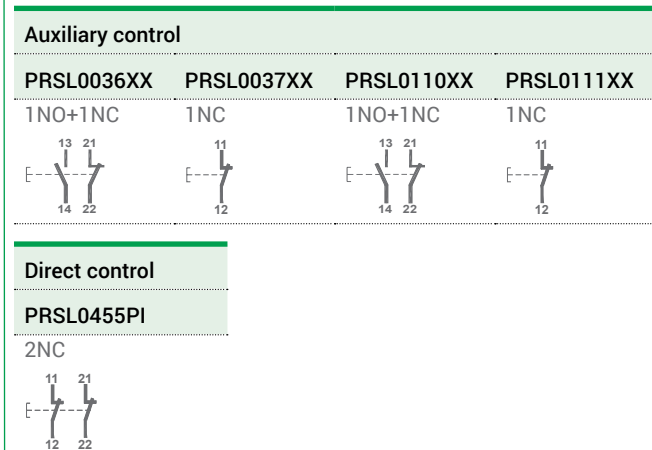
3 Legend - Standard cam sets

| No. & type of switches | No. & type of cams | Code |
|------------------------|--------------------|------------|
| 2 x PRSL0036XX | 2 cams A | PRFC0010PE |
| | 2 cams C | PRFC0012PE |
| 2 x PRSL0037XX | 2 cams A | PRFC0011PE |
| | 2 cams C | PRFC0013PE |
| 3 x PRSL0036XX | 3 cams A | PRFC0020PE |
| | 3 cams C | PRFC0022PE |
| 3 x PRSL0037XX | 3 cams A | PRFC0021PE |
| | 3 cams C | PRFC0024PE |
| 4 x PRSL0036XX | 4 cams A | PRFC0030PE |
| | 4 cams C | PRFC0032PE |
| 4 x PRSL0037XX | 4 cams A | PRFC0031PE |
| | 4 cams C | PRFC0034PE |
| 2 x PRSL0110XX | 2 cams A | FCL20001 |
| | Cams A+C | FCL20003 |
| | 2 cams C | FCL20005 |
| | Cams D+D+B+F | FCL40001 |
| 4 x PRSL0110XX | 4 cams A | FCL40003 |
| | Cams A+A+C+C | FCL40005 |
| | 4 cams C | FCL40007 |
| | Cams C+C+C+E | FCL40009 |
| | Cams A+A+E+E | FCL40011 |
| | 2 cams A | FCL20002 |
| 2 x PRSL0111XX | Cams A+C | FCL20004 |
| | 2 cams C | FCL20006 |
| 4 x PRSL0111XX | Cams D+D+B+F | FCL40002 |
| | 4 cams A | FCL40004 |
| | Cams A+A+C+C | FCL40006 |
| | 4 cams C | FCL40008 |
| | Cams C+C+C+E | FCL40010 |
| 1 x PRSL0455XPI | 1 cam A | PRFC0101PE |
| 2 x PRSL0455XPI | 2 cams A | PRFC0103PE |

7 Legend - Potentiometers, encoders and Yankee

| Description | Code |
|--|----------|
| Potentiometer 10 kΩ with support | PA020001 |
| Potentiometer 10 kΩ mechanical stop with support | PA020002 |
| Potentiometer 10 kΩ ±10% 4 pins with support | PA020003 |
| Potentiometer 10 kΩ ±10% 3 pins with support | PA020004 |
| Potentiometer 5 kΩ ±10% with support | PA020005 |
| Potentiometer 4,7 kΩ with support | PA020006 |
| Potentiometer 10 kΩ with support | PA020007 |
| Potentiometer 2,2 kΩ with support | PA020008 |
| Potentiometer 2KΩ with support | PA020009 |
| Encoder 36 pulses/rev. with support | PA030001 |
| Encoder 150 pulses/rev. with support | PA030002 |
| Yankee - current output | PA01AA01 |
| Yankee - voltage output | PA01AB01 |
| Yankee - PWM output | PA01AC01 |

4 Legend - Switches



4 Legend - Standard cams

| Cam | | Code for switches PRSL0036XX, PRSL0037XX, PRFC0455PI | Switching angle with PRSL0036XX | Switching angle with PRSL0037XX | Code for switches PRSL0110XX, PRSL0111XX | Switching angle with PRSL0110XX | Switching angle with PRSL0111XX |
|-----|--|--|---------------------------------|---------------------------------|--|---------------------------------|---------------------------------|
| A | | PRSL7140PI | 21,0° ±0,5° | 25,0° ±0,5° | PRSL7194PI | 21,5° ±0,5° | 23,0° ±0,5° |
| B | | PRSL7142PI | 16,5° ±0,5° | 21,5° ±0,5° | PRSL7193PI | 21,5° ±0,5° | 23,0° ±0,5° |
| C | | PRSL7141PI | 80,0° ±0,5° | 86,0° ±0,5° | PRSL7195PI | 82,0° ±0,5° | 86,0° ±0,5° |
| D | | / | / | / | PRSL7196PI | 94,0° ±0,5° | 97,5° ±0,5° |
| E | | PRSL7144PI | 199,5° ±0,5° | 205,5° ±0,5° | PRSL7191PI | 204,5° ±0,5° | 203,0° ±0,5° |
| F | | / | / | / | PRSL7192PI | 328,5° ±0,5° | 327,0° ±0,5° |
| H | | PRSL7143PI | 343,5° ±0,5° | 349,0° ±0,5° | / | / | / |

4 Table - Configurations with sets of cams/switches

Sets of cams with switches PRSL0036XX and PRSL0037XX

When using sets of cams with switches PRSL0036XX and PRSL0037XX:

- it is possible to mount up to 4 switches on output 2
- it is possible to mount up to 3 switches on output 1.

It is possible to mount 4 switches on output 1 only when output 2 is left empty.

Sets of cams with switches PRSL0110XX and PRSL0111XX

When using sets of cams with switches PRSL0110XX and PRSL0111XX, it is possible to mount up to 4 switches on each output.

Sets of cams with switches PRSL0455PI

When using sets of cams with switches PRSL0455PI, it is possible to mount only 1 switch on each output.

It is possible to mount 2 switches on output 1 only when output 2 is left empty.

5 Table - Configurations with potentiometers, encoders and Yankee

With sets of cams/switches PRSL0036XX and PRSL0037XX

When using sets of cams with switches PRSL0036XX and PRSL0037XX, it is possible to mount potentiometers, encoders and Yankee only on the output where there is no set of cams/switches. It is not possible to mount potentiometers, encoders nor Yankee on top of a set of cams/switches.

* Potentiometers marked with * can be mounted on output 1 or on output 2, but the other output must be left empty.

With sets of cams/switches PRSL0110XX and PRSL0111XX

Potentiometers, encoders and Yankee can be mounted on output 1 and 2 alone (No. of switches = 0), or on top of a set of cams with switches PRSL0110XX and PRSL0111XX according to the possible configurations shown in the following table.

* Potentiometers marked with * can be mounted on output 1 or on output 2, but the other output must be left empty.

| Potentiometers, encoders and Yankee | Output 1 | | | | | Output 2 | | | | |
|--|---------------------------------------|-----|-----|-----|----|---------------------------------------|-----|-----|-----|----|
| | No. of switches PRSL0110XX-PRSL0111XX | | | | | No. of switches PRSL0110XX-PRSL0111XX | | | | |
| | 0 | 1 | 2 | 3 | 4 | 0 | 1 | 2 | 3 | 4 |
| PA020001 | YES | YES | NO | NO | NO | YES | YES | NO | NO | NO |
| PA020002 | YES | YES | NO | NO | NO | YES | YES | NO | NO | NO |
| PA020003 | YES | YES | YES | NO | NO | YES | YES | YES | NO | NO |
| PA020004 | YES | YES | YES | NO | NO | YES | YES | YES | NO | NO |
| PA020005 | YES | YES | YES | NO | NO | YES | YES | YES | NO | NO |
| PA020006* | YES | YES | NO | NO | NO | YES | YES | NO | NO | NO |
| PA020007* | YES | YES | NO | NO | NO | YES | YES | NO | NO | NO |
| PA020008* | YES | YES | NO | NO | NO | YES | YES | NO | NO | NO |
| PA020009* | YES | NO | NO | NO | NO | YES | NO | NO | NO | NO |
| PA030001 | YES | YES | YES | NO | NO | YES | YES | YES | NO | NO |
| PA030002 | YES | YES | YES | NO | NO | YES | YES | YES | NO | NO |
| PA01AA01 | YES | YES | YES | YES | NO | YES | YES | YES | YES | NO |
| PA01AB01 | YES | YES | YES | YES | NO | YES | YES | YES | YES | NO |
| PA01AC01 | YES | YES | YES | YES | NO | YES | YES | YES | YES | NO |

OSCAR

Rotary limit switch



Rotary limit switch used to control and measure the movement of industrial machines or the position of the nacelle or pitch angle of wind turbines. Oscar features two different outputs with different revolution ratios and it can be equipped with different movement detection devices.

FEATURES

- It consists of a gear motor that transfers movement to the cams and the to other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages.
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 10 million operations.
- IP protection degree: Oscar is classified IP66 / IP67 / IP69K.
- NEMA protection degree: Oscar is classified Type 4X*.
- Extreme temperature resistance: -53°C to +80°C.
- It features transmission and gear driving shafts made of stainless steel AISI 430F or AISI 303, worm gear transmission shaft rotating on ball bearings, self-lubricating technopolymer gears and driving bushes, technopolymer base and cover.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

OPTIONS

- Revolution ratios from 1:1 to 1:1550, achieved by combining different secondary output stages.
- Each of the two outputs can be set to a different revolution ratio to enable diversified control of the machine when special requirements need to be met.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1 NC contact.
- It can be equipped with 2 cam sets (with up to 10 switches), potentiometers and encoders (alone or on top of cam sets with up to 3 switches), Egon 36-AL absolute encoders (alone or on top of cam sets with up to 2 switches) and Yankee absolute encoders (on top of cam sets with up to 4 switches).
- Available with cover rise for XL version with 2 cam sets (with up to 12 switches), potentiometers and encoders (alone or on top of cam sets with up to 5 switches), Egon 36-AL absolute

encoders (alone or on top of cam sets with up to 4 switches) and Yankee absolute encoders (on top of cam sets with up to 6 switches).

- Dedicated cable glands or connectors.
- Available with anti-moisture plug fitted to the base by means of a lock nut, improving transpiration while maintaining protection against water.
- Available with flanges, pinion gears and couplings.
- Plates with universal adapters to replace existing systems.

INCREASED SAFETY SYSTEM "LIMA"

- Lima is designed to be integrated in equipment complying with the standard ISO 13849 on control system safety rules.
- Lima can be connected to a control unit or to a PLC to control the rotation of the limit switch shaft (thus of the equipments connected to it).
- Lima has two separate detection systems, without direct contact, using different technologies to ensure control redundancy.
- Lima allows the two detection systems to be wired by using two separate cables, through an 8-pin terminal board.

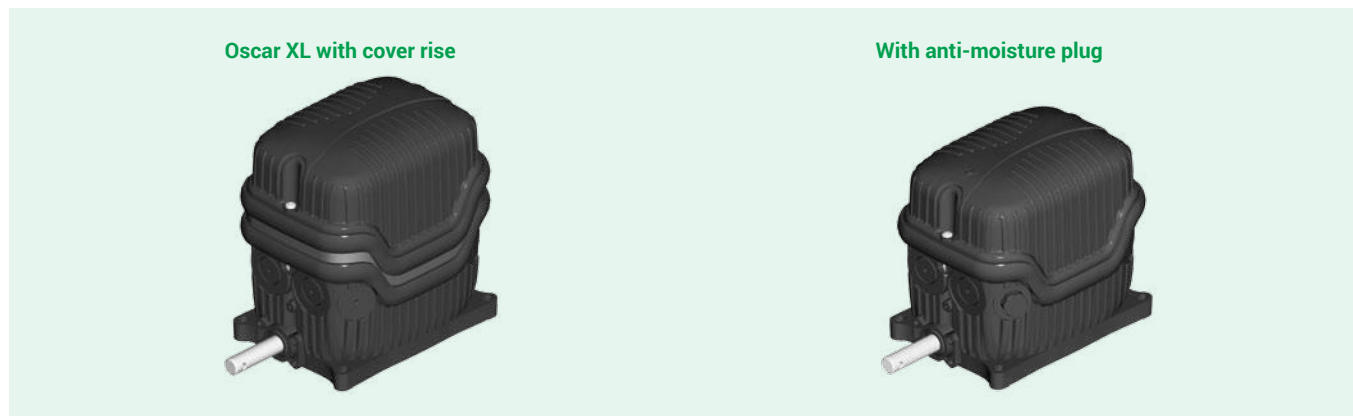
CERTIFICATIONS

- CE marking, cULus* marking and EAC* certification.
- Complying with accident prevention regulation BGV C 1 (only for Germany).
- HALT TEST (Highly Accelerated Life Test) passed, simulating conditions largely exceeding standard operating conditions.

Use the online configurator (<https://configuratore.terworld.com>) or fill in the "request form" for accurate product configuration.

* Not available on all versions.

POSSIBLE ASSEMBLIES



CERTIFICATIONS



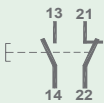


| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/35/UE Low Voltage Directive |
| | 2006/42/CE Machinery Directive |
| | EN 60204-1 Safety of machinery - Electrical equipment of machines |
| Conformity to CE Standards | EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines |
| | EN 60947-1 Low-voltage switchgear and controlgear |
| | EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices |
| | EN 60529 Degrees of protection provided by enclosures |
| Conformity to cULus Standards | CSA-C22.2 No 14-13 Industrial Control Equipment |
| | UL 508 Industrial Control Equipment |
| BGV C 1 | Regulations for the prevention of accidents BGV C 1 (only for Germany) |
| HALT TEST | Highly Accelerated Life Test, simulation of conditions largely exceeding the standard operating conditions (data available on request) |
| Markings and homologations | CE cULus* EAC* |

GENERAL TECHNICAL SPECIFICATIONS

| | |
|------------------------|---|
| Ambient temperature | Storage -53°C/+80°C |
| | Operational -53°C/+80°C |
| IP protection degree | IP66 / IP67 / IP69K |
| | IP66 / IP67 (version with cover rise) |
| NEMA protection degree | Type 4X* |
| Insulation category | Class II |
| Rotation speed | Max. 800 rpm (Output 1 >1:22, Output 2 >1:22 or =1:1) |
| | Max. 200 rpm (Output 1 ≤1:22, Output 2 ≤1:22 or =1:1) |
| Cable entry | Cable gland M20 - M16 (8 max) |
| Shafts | Stainless steel AISI 430F (non-cULus version) |
| | Stainless steel AISI 303 |

* Not available on all versions.

TECHNICAL SPECIFICATIONS OF THE SWITCHES

| Code | PRSL0110XX | PRSL0111XX |
|----------------------------|--|--|
| Utilisation category | AC 15 | |
| Rated operational voltage | 250 Vac | |
| Rated operational current | 3 A | |
| Rated thermal current | 10 A | |
| Rated insulation voltage | 300 Vac | |
| Mechanical life | 10x10 ⁶ operations | |
| Connections | Screw-type terminals | |
| Wires | 1x2.5 mm ² , 2x1.5 mm ² (UL (c)UL: use 60°C or 75°C copper (CU) conductors and stiff or flexible wire 14-22 AWG) | |
| Tightening torque | 0.5 Nm | |
| Microswitch type | Double break, snap action | Double break, slow action |
| Contacts | 1NO+1NC (All NC contacts are of the positive opening operation type ) | 1NC (All NC contacts are of the positive opening operation type ) |
| Scheme |  |  |
| Markings and homologations | CE  EAC | |

Switches PRSL0100XX available on request.

TECHNICAL SPECIFICATIONS OF THE POTENTIOMETERS

| Code of potentiometer with support | PA020001 | PA020002 |
|------------------------------------|------------------------------|-----------------------|
| Ohmic value | 10 kΩ | 10 kΩ mechanical stop |
| Resolution | Infinite | |
| Independent linearity | ±1% | |
| Life time | 10x10 ⁶ movements | |
| Power rating | Max. 1 W | |
| Operational ambient temperature | -55°C/+105°C | |
| Continuous rotation (without stop) | 360° | |
| Continuous rotation (with stop) | 333° ±5° | |
| Actual electrical angle | 310° ±5° | |
| Ohmic value tolerance | ±20% | |

| Code of potentiometer with support | PA020003 | PA020004 | PA020005 |
|--------------------------------------|-----------------------------|-------------------|-------------------|
| Ohmic value | 10 kΩ | 10 kΩ | 5 kΩ |
| Connections | 4 turrets | 3 turrets | 4 turrets |
| Independent linearity (ref. AEA -3°) | ≤±1% | ≤±0.35% | ≤±1% |
| Power rating | Max. 0.3 W | | |
| Life time | 5x10 ⁶ movements | | |
| Operational ambient temperature | -55°C/+125°C | | |
| Mechanical angle | 360° continuous | | |
| Actual Electrical Angle (AEA) | 340°±5° | | |
| Ohmic value tolerance | Max. ±20% at 20°C | Max. ±10% at 20°C | Max. ±20% at 20°C |

| Code of potentiometer with support | PA020006 | PA020007 | PA020008 |
|--------------------------------------|-----------------------------|----------|----------|
| Ohmic value | 4,7 kΩ | 10 kΩ | 2.2 kΩ |
| Independant linearity (ref. AEA -3°) | ±0.25% | | |
| Power rating | Max. 4 W | | |
| Life time | 3x10 ⁶ movements | | |
| Operational ambient temperature | -55°C/+125°C | | |
| Mechanical angle | 360° continuous | | |
| Actual Electrical Angle (AEA) | 355°±5° | | |
| Ohmic value tolerance | ±5% | | |
| Temperature drift | < 50 PPM/°C | | |

| Code of potentiometer with support | PA020009 |
|------------------------------------|-------------------------------|
| Ohmic value | 2 kΩ |
| Resolution | Better then 0.008° |
| Linearity | ±0.075% |
| Independant linearity | ±0.075% |
| Power rating | Max. 0.4 W |
| Life time | 100x10 ⁶ movements |
| Operational ambient temperature | -40°C/+100°C |
| Mechanical angle | 360° continuous |
| Actual electrical travel | 350° ±2° |
| Ohmic value tolerance | ±20% |

TECHNICAL SPECIFICATIONS OF THE ENCODERS

| Code with support | PA030001 | PA030002 |
|---------------------------------|--|-----------------|
| Resolution | 36 pulses/rev. | 150 pulses/rev. |
| Operational ambient temperature | -40°C/+85°C | |
| Code | Incremental | |
| Supply voltage | 4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load) | |
| Output voltage | Low: 500 mV max. at 10 mA High: (Vin - 0.6) at -10 mA (Vin - 1.3) at -25 mA | |
| Output current | 25 mA max. load per output channel | |
| Output format | Two channel (A, B) quadrature with Index (Z) | |
| Phase sense | A leads B clockwise (CW) from the mounting end of the encoder | |
| Accuracy | +/- 0.8 arc-min. | |
| Outputs | Push pull | |
| Electrical protection | Protection against reverse polarity and output short-circuit | |

CERTIFICATIONS OF THE ABSOLUTE ENCODER EGON 36-AL

| | |
|------------------------------------|---|
| Conformity to Community Directives | 2014/35/UE Low Voltage Directive (LVD) |
| | 2014/30/UE Electromagnetic Compatibility (EMC) Directive |
| | 2006/42/CE Machinery Directive |
| Conformity to CE Standards | EN 60204-1 Safety of machinery - Electrical equipment of machines |
| | EN 60947-1 Low-voltage switchgear and controlgear |
| | EN 60529 Degrees of protection provided by enclosures |
| | EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements - General requirements |
| | EN 61326-2-3 Electrical equipment for measurement, control and laboratory use - EMC requirements - Particular requirements - Test configurations, operational conditions and performance criteria for transducers with integrated or remote signal conditioning |
| Markings and homologations | CE |


GENERAL TECHNICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER EGON 36-AL

| | |
|----------------------|-------------------------|
| Ambient temperature | Storage -25°C/+85°C |
| | Operational -25°C/+85°C |
| IP protection degree | IP42 |
| Shaft diameter | 6 mm |

ELECTRICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER EGON 36-AL

| | |
|--|-------------------------------------|
| Power supply | 12...30 Vdc |
| Analog output | Current 4...20 mA |
| | Voltage 1...5 V |
| Consumption | Voltage 2...10 V |
| | 35 mA simple version |
| | 55 mA redundant version |
| Single-turn resolution | 12 bit (4096 points for revolution) |
| Protection against input/output over-current | Yes |
| Protection against input/output over-voltage | Yes |
| Accuracy | ± 0.5% |
| Linearity | ± 0.25% |
| Redundancy | 2 complementary outputs (analog) |

CERTIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/30/UE Electromagnetic Compatibility (EMC) Directive |
| | 2006/42/CE Machinery Directive |
| | 2014/35/UE Low Voltage Directive (LVD) |
| Conformity to CE Standards | EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements |
| | EN 60529 Degrees of protection provided by enclosures |
| Conformity to cULus Standards | CSA-C22.2 No 14-13 Industrial Control Equipment |
| | UL 508 Industrial Control Equipment |
| Markings and homologations | CE  |


GENERAL TECHNICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

| | |
|----------------------|-------------------------|
| Ambient temperature | Storage -40°C/+80°C |
| | Operational -40°C/+80°C |
| IP protection degree | IP 20 |
| Free rotation | 360° |
| Rotation speed | Max. 800 rpm |

ELECTRICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

| Code | PA01AA01 | PA01AB01 | PA01AC01 |
|-------------------------------------|--|------------------|---------------|
| Output | Current 4 ÷ 20 mA | Voltage 0 ÷ 10 V | PWM 0 ÷ 100 % |
| Power supply | 12 ÷ 48 Vdc/12 ÷ 48 Vac | | |
| Protection against reverse polarity | Yes | | |
| Absorption | 50 mA | | |
| Resolution | 10 bit | | |
| Linearity | +/-0.5° | | |
| Hysteresis | Max. 0.1° | | |
| Zero Point setting | Through button/wire | | |
| Signal increment direction | CW (standard)/CCW (on request) | | |
| Connections | Terminal board | | |
| Terminal wires | 0.14 mm ² - 1.5 mm ² | | |
| Terminal tightening torque | 0.22 Nm - 0.25 Nm | | |

CERTIFICATIONS OF OSCAR WITH INCREASED SAFETY SYSTEM "LIMA"

| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/35/UE Low Voltage Directive |
| | 2006/42/CE Machinery Directive |
| Conformity to CE Standards | EN 60204-1 Safety of machinery - Electrical equipment of machines |
| | EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines |
| | EN 60947-1 Low-voltage switchgear and controlgear |
| | EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices |
| | EN 60529 Degrees of protection provided by enclosures |
| Markings and homologations | CE  (pending) |

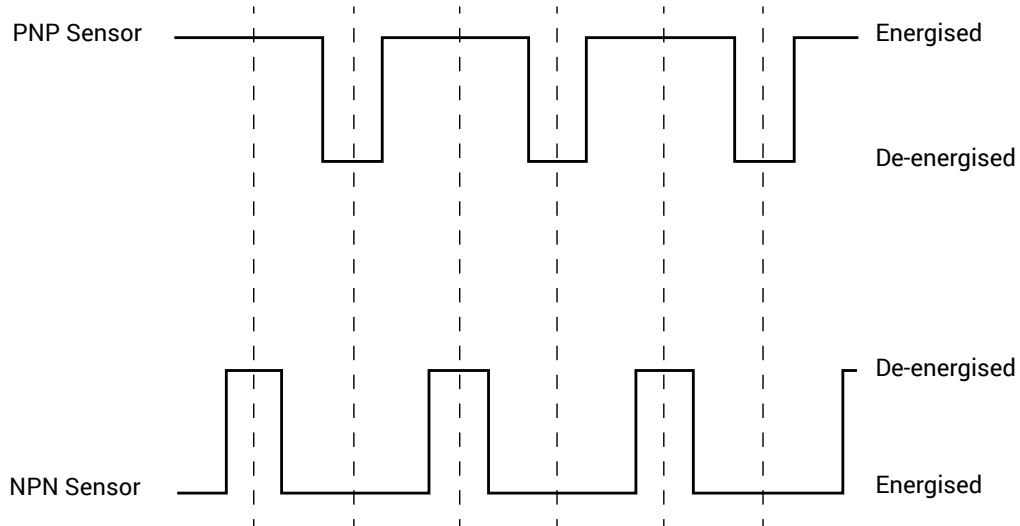
GENERAL TECHNICAL SPECIFICATIONS OF OSCAR WITH LIMA

| | |
|------------------------|---|
| Ambient temperature | Storage -25°C/+75°C |
| | Operational -25°C/+75°C |
| IP protection degree | IP66 / IP67 / IP69K |
| | IP66 / IP67 (version with cover rise) |
| NEMA protection degree | Type 4X |
| Insulation category | Class II |
| Rotation speed | Max. 800 rpm (Output 1 >1:22, Output 2 >1:22 or =1:1) |
| | Max. 200 rpm (Output 1 ≤1:22, Output 2 ≤1:22 or =1:1) |
| Cable entry | Cable gland M20 - M16 (max. 8) |
| Sensor connection | Self-lifting screw terminal board - 8 PIN (4 for each sensor) |

OUTPUT TECHNICAL SPECIFICATIONS OF OSCAR WITH LIMA

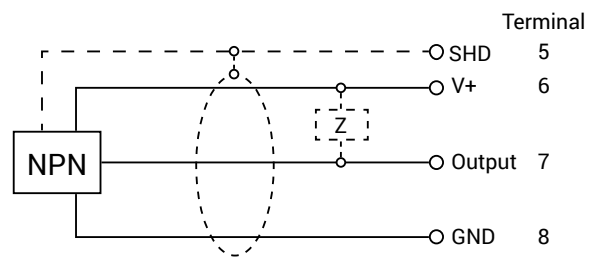
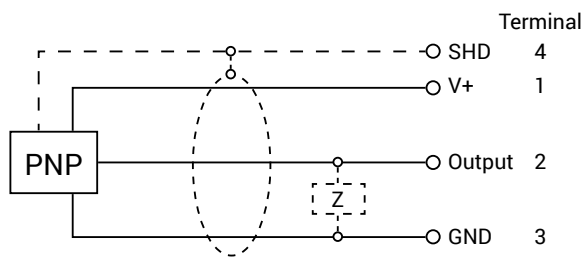
| | |
|-------------------------------|------------------------------|
| Resolution signal | 5 pulses/rev. |
| Supply amplitude range | 10-30 Vdc |
| Switching frequency | Max. 66.6 Hz |
| Current consumption (no load) | Max. 12 mA (for each sensor) |
| Voltage drop | < 2 Vdc |
| Output current | < 100 mA (for each sensor) |
| Short circuit protection | Yes |
| Reverse polarity protection | Yes |
| MTTF(d) PNP sensor | 533 years |
| MTTF(d) NPN sensor | 626 years |

OUTPUT SIGNAL OF OSCAR WITH LIMA

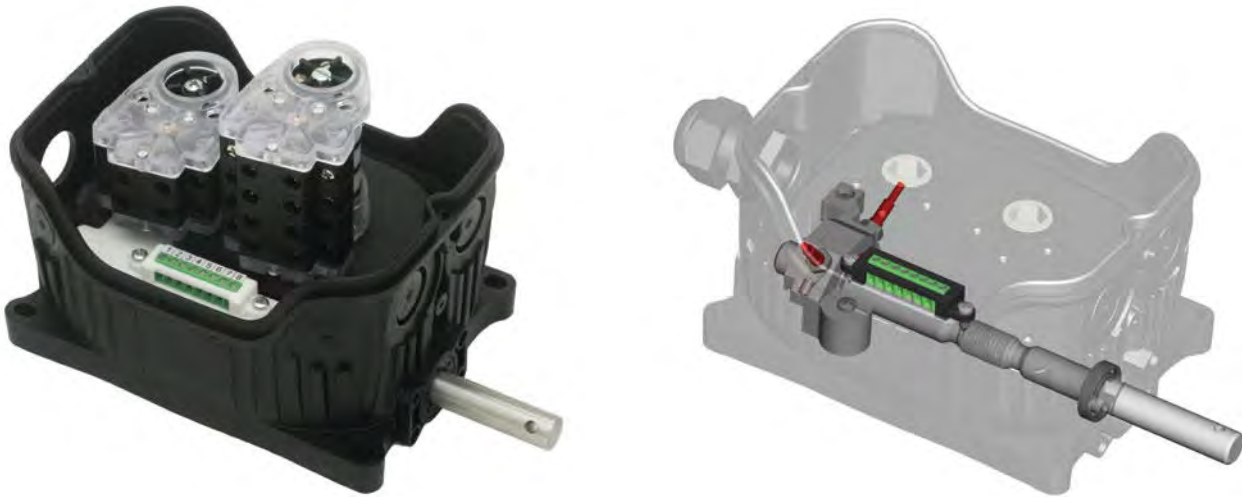


CONNECTION DIAGRAM OF LIMA

| Sensor | Terminal | Function | Value |
|--------|----------|---------------|-----------|
| PNP | 1 | V+ sensor | 10-30 Vdc |
| | 2 | Output sensor | PNP |
| | 3 | GND sensor | - |
| | 4 | SHD sensor | - |
| NPN | 5 | SHD sensor | - |
| | 6 | V+ sensor | 10-30 Vdc |
| | 7 | Output sensor | NPN |
| | 8 | GND sensor | - |



EXAMPLE OF USE OF OSCAR LIMIT SWITCH WITH INCREASED SAFETY SYSTEM "LIMA"



Oscar limit switch equipped with Lima can be used, just like standard limit switches, for material handling in construction plants (e.g. to control up/down lifting of winches), with the additional possibility to control the limit switch shaft rotation when using Lima connected to a special control unit designed to manage the following functions:

- **Load drop**

Type of function: inhibition.

Trigger event: the control system verifies that the limit switch shaft speed does not exceed the selected set point speed.

Reaction: brake prompt closure, preventing load to drop free.

Safety function: Lima generates a signal depending on the limit switch shaft speed; the control unit compares the measured speed with the selected set point value. If the measured speed exceeds the set-point value by a selected threshold, the control unit stops the motor and activates the brake.

- **Standstill shaft**

Type of function: inhibition.

Trigger event: the limit switch shaft speed is greater than 0, but no valid speed command has been entered.

Reaction: brake prompt closure.

Safety function: the control system verifies that the limit switches shaft speed is equal to 0 when a valid speed set-point is not entered.

- **Shaft in motion**

Type of function: inhibition.

Trigger event: the measured limit switch shaft speed is 0, but a valid speed command has been entered.

Reaction: brake prompt closure.

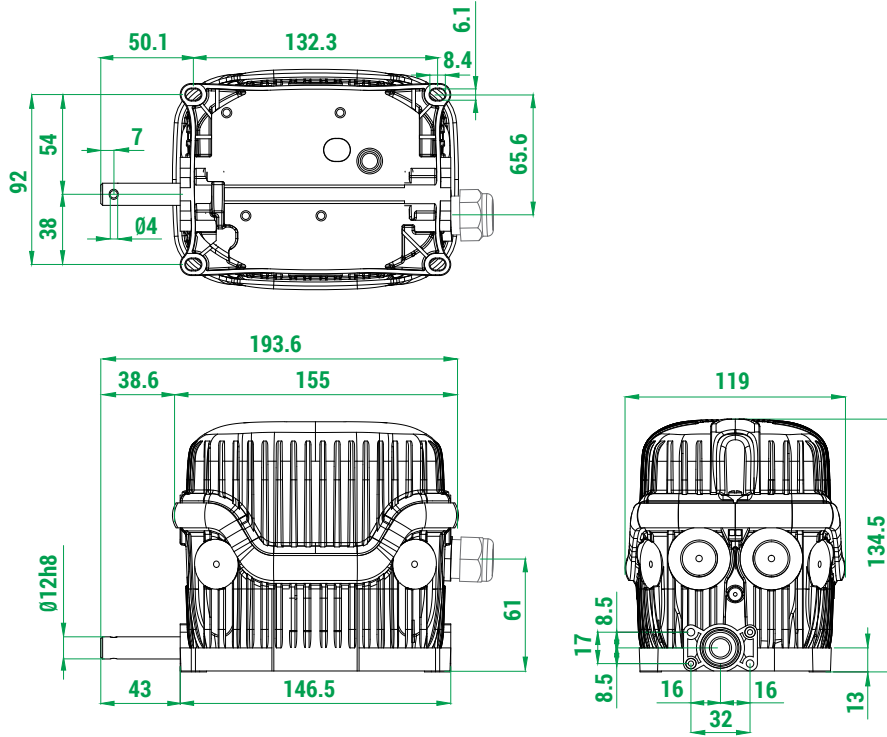
Safety function: the control system verifies that the limit switches shaft speed is greater than 0 when a valid speed set-point is entered.

This function is used to check that the limit switch shaft is coupled to the gear unit, therefore detecting any shaft or limit switch connection system break.

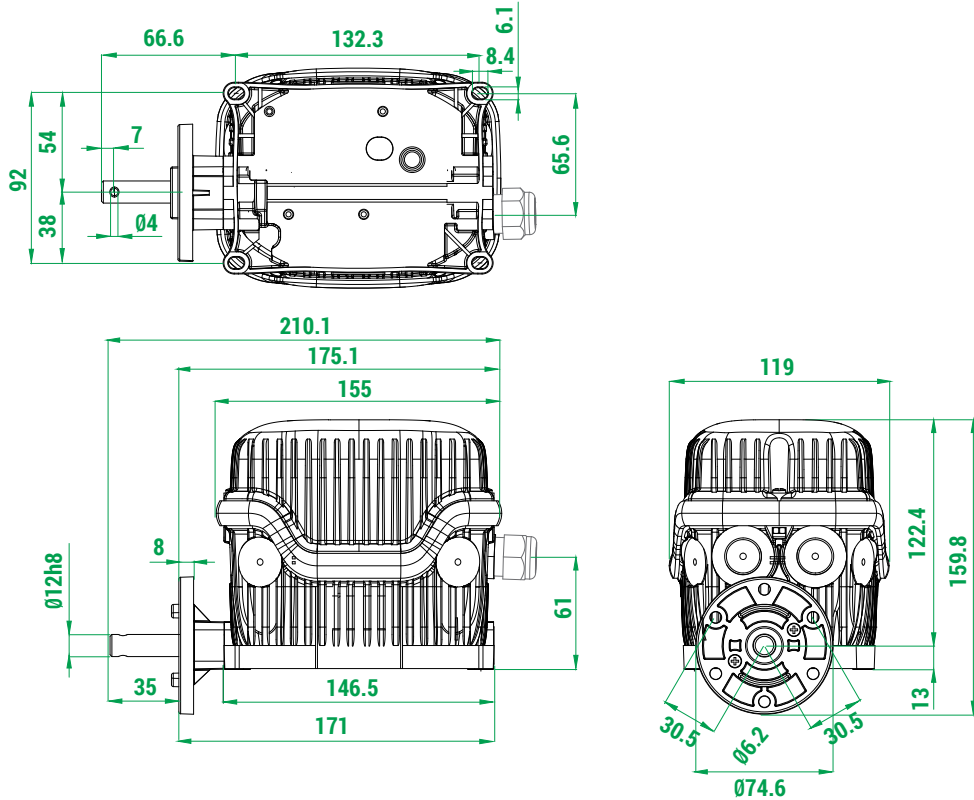
NOTE: The function of Lima is that of providing a signal depending on the limit switch shaft speed. The example above is intended to describe a possible application of the limit switch Oscar equipped with Lima.

OVERALL DIMENSIONS (mm)

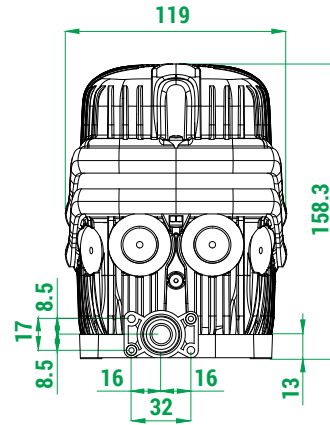
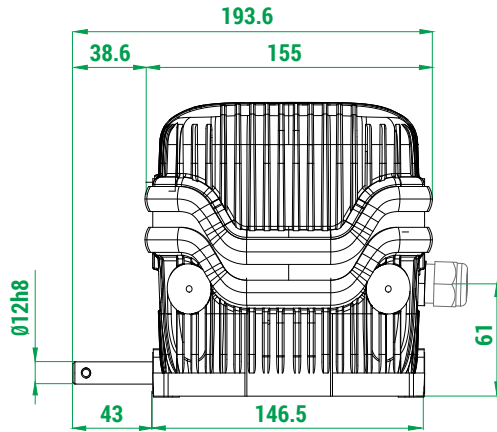
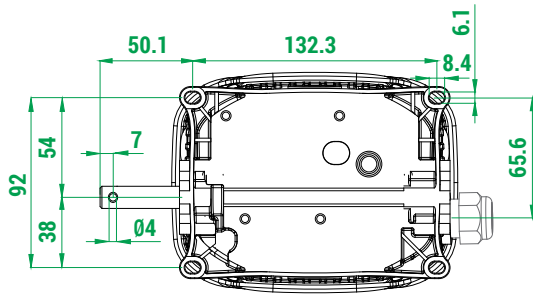
Standard



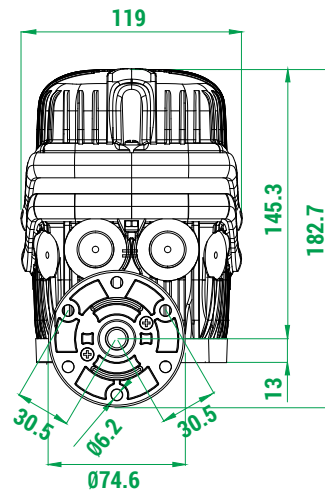
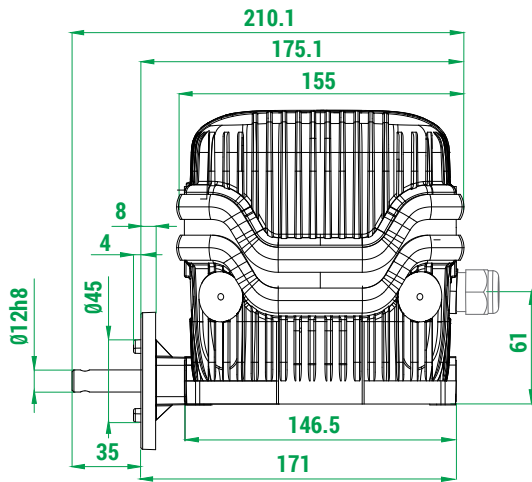
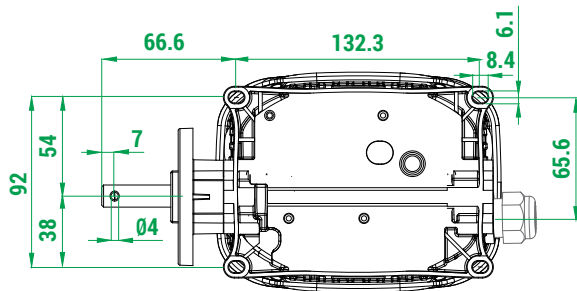
With flange




Oscar XL with cover rise







Oscar XL with cover rise and flange



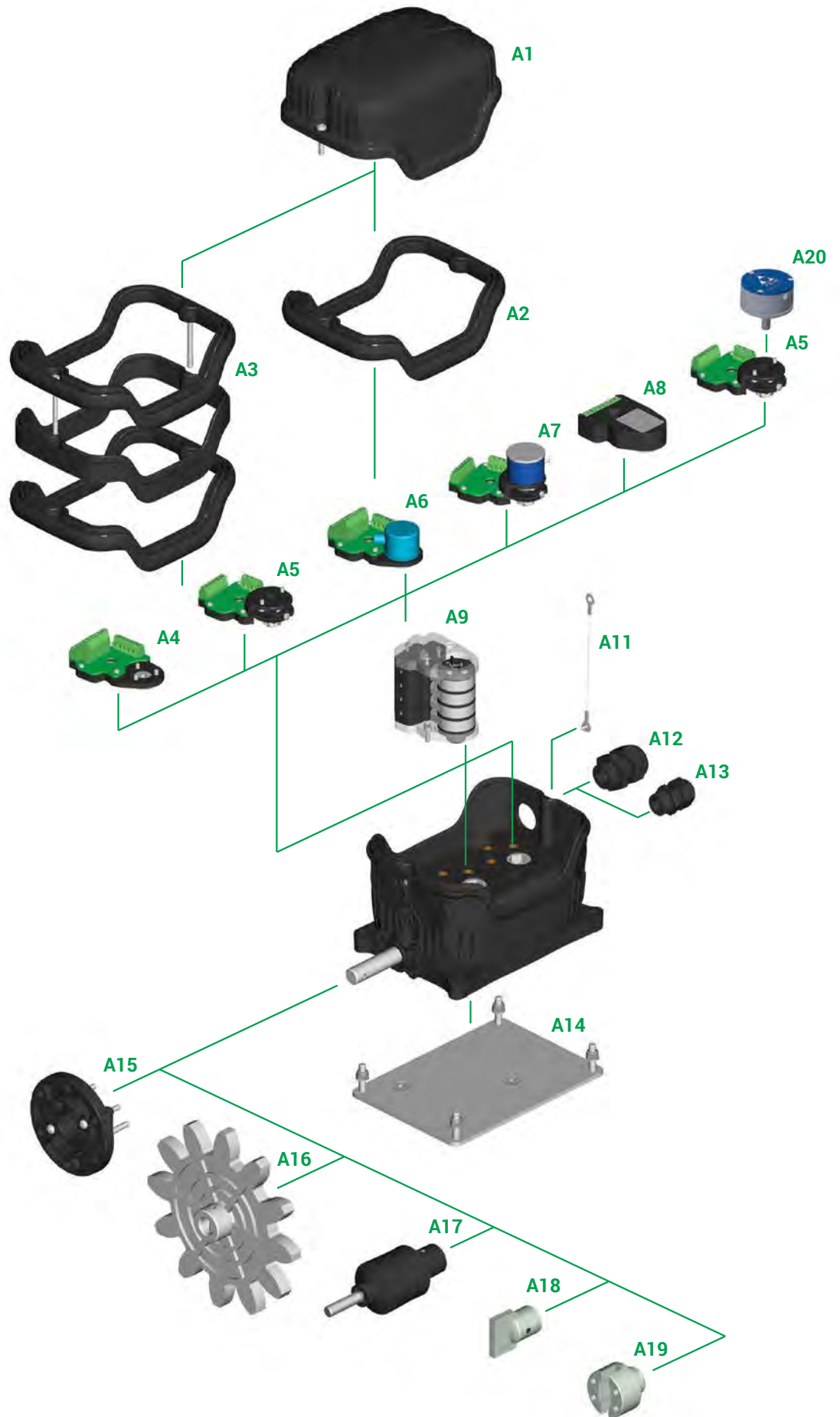
STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7194PI  and shafts made of stainless steel AISI 430F. Standard limit switches are not cULus certified.

| Output 1 rated revolution ratio | Real revolution ratio | Output 2 rated revolution ratio | No. of cams and switches | Switches | |
|---------------------------------|-----------------------|---------------------------------|--------------------------|---|---|
| | | | | PRSL0110XX 1NO+1NC | PRSL0111XX 1NC |
| | | | |  |  |
| | | | | Code | Code |
| 1:1 | 1:1 | 1:1 | 2 | PFC9067L0001007 | PFC9067L0001013 |
| | | 1:1 | 4 | PFC9067L0001008 | PFC9067L0001012 |
| | | 1:1 | 4+2 | PFC9067L0001010 | PFC9067L0001014 |
| | | 1:1 | 4+4 | PFC9067L0001011 | PFC9067L0001015 |
| 1:5 | 1:5.83 | 1:5 | 2 | PFC9067L0005007 | PFC9067L0005008 |
| | | 1:1 | 2 | PFC9067L0005009 | PFC9067L0005010 |
| | | 1:5 | 4 | PFC9067L0005011 | PFC9067L0005012 |
| | | 1:1 | 4 | PFC9067L0005013 | PFC9067L0005014 |
| | | 1:5 | 4+2 | PFC9067L0005015 | PFC9067L0005016 |
| | | 1:5 | 4+4 | PFC9067L0005017 | PFC9067L0005018 |
| 1:10 | 1:11.66 | 1:10 | 2 | PFC9067L0011002 | PFC9067L0011003 |
| | | 1:1 | 2 | PFC9067L0011004 | PFC9067L0011005 |
| | | 1:10 | 4 | PFC9067L0011006 | PFC9067L0011007 |
| | | 1:1 | 4 | PFC9067L0011008 | PFC9067L0011009 |
| | | 1:10 | 4+2 | PFC9067L0011010 | PFC9067L0011011 |
| | | 1:10 | 4+4 | PFC9067L0011012 | PFC9067L0011013 |
| 1:15 | 1:17 | 1:15 | 2 | PFC9067L0017005 | PFC9067L0017006 |
| | | 1:1 | 2 | PFC9067L0017007 | PFC9067L0017008 |
| | | 1:15 | 4 | PFC9067L0017009 | PFC9067L0017010 |
| | | 1:1 | 4 | PFC9067L0017011 | PFC9067L0017012 |
| | | 1:15 | 4+2 | PFC9067L0017013 | PFC9067L0017014 |
| | | 1:15 | 4+4 | PFC9067L0017015 | PFC9067L0017016 |
| 1:20 | 1:22.15 | 1:20 | 2 | PFC9067L0022018 | PFC9067L0022019 |
| | | 1:1 | 2 | PFC9067L0022020 | PFC9067L0022022 |
| | | 1:20 | 4 | PFC9067L0022023 | PFC9067L0022024 |
| | | 1:1 | 4 | PFC9067L0022026 | PFC9067L0022021 |
| | | 1:20 | 4+2 | PFC9067L0022027 | PFC9067L0022028 |
| | | 1:20 | 4+4 | PFC9067L0022029 | PFC9067L0022030 |
| 1:25 | 1:31.00 | 1:25 | 2 | PFC9067L0031032 | PFC9067L0031033 |
| | | 1:1 | 2 | PFC9067L0031034 | PFC9067L0031035 |
| | | 1:25 | 4 | PFC9067L0031031 | PFC9067L0031036 |
| | | 1:1 | 4 | PFC9067L0031037 | PFC9067L0031038 |
| | | 1:25 | 4+2 | PFC9067L0031039 | PFC9067L0031040 |
| | | 1:25 | 4+4 | PFC9067L0031041 | PFC9067L0031042 |
| 1:50 | 1:62 | 1:50 | 2 | PFC9067L0062004 | PFC9067L0062014 |
| | | 1:1 | 2 | PFC9067L0062012 | PFC9067L0062015 |
| | | 1:50 | 4 | PFC9067L0062005 | PFC9067L0062016 |
| | | 1:1 | 4 | PFC9067L0062013 | PFC9067L0062017 |
| | | 1:50 | 4+2 | PFC9067L0062006 | PFC9067L0062021 |
| | | 1:50 | 4+4 | PFC9067L0062007 | PFC9067L0062022 |

| Output 1 rated revolution ratio | Real revolution ratio | Output 2 rated revolution ratio | No. of cams and switches | Switches | |
|--|-----------------------------|--|-----------------------------|---|---|
| | | | | PRSL0110XX 1NO+1NC | PRSL0111XX 1NC |
| | | | |  |  |
| Code | Code | | | | |
| 1:70 | 1:73.63 | 1:70 | 2 | PFC9067L0073004 | PFC9067L0073009 |
| | | 1:1 | 2 | PFC9067L0073005 | PFC9067L0073010 |
| | | 1:70 | 4 | PFC9067L0073003 | PFC9067L0073011 |
| | | 1:1 | 4 | PFC9067L0073006 | PFC9067L0073012 |
| | | 1:70 | 4+2 | PFC9067L0073007 | PFC9067L0073013 |
| | | 1:70 | 4+4 | PFC9067L0073008 | PFC9067L0073014 |
| 1:100 | 1:107 | 1:100 | 2 | PFC9067L0107014 | PFC9067L0107025 |
| | | 1:1 | 2 | PFC9067L0107019 | PFC9067L0107026 |
| | | 1:100 | 4 | PFC9067L0107015 | PFC9067L0107004 |
| | | 1:1 | 4 | PFC9067L0107020 | PFC9067L0107018 |
| | | 1:100 | 4+2 | PFC9067L0107016 | PFC9067L0107027 |
| | | 1:100 | 4+4 | PFC9067L0107017 | PFC9067L0107028 |
| 1:150 | 1:156.50 | 1:150 | 2 | PFC9067L0156004 | PFC9067L0156011 |
| | | 1:1 | 2 | PFC9067L0156007 | PFC9067L0156012 |
| | | 1:150 | 4 | PFC9067L0156005 | PFC9067L0156013 |
| | | 1:1 | 4 | PFC9067L0156008 | PFC9067L0156014 |
| | | 1:150 | 4+2 | PFC9067L0156006 | PFC9067L0156015 |
| | | 1:150 | 4+4 | PFC9067L0156009 | PFC9067L0156016 |
| 1:200 | 1:214.20 | 1:200 | 2 | PFC9067L0214004 | PFC9067L0214010 |
| | | 1:1 | 2 | PFC9067L0214006 | PFC9067L0214011 |
| | | 1:200 | 4 | PFC9067L0214005 | PFC9067L0214002 |
| | | 1:1 | 4 | PFC9067L0214007 | PFC9067L0214012 |
| | | 1:200 | 4+2 | PFC9067L0214008 | PFC9067L0214013 |
| | | 1:200 | 4+4 | PFC9067L0214009 | PFC9067L0214014 |
| 1:250 | 1:254.30 | 1:250 | 2 | PFC9067L0254004 | PFC9067L0254014 |
| | | 1:1 | 2 | PFC9067L0254007 | PFC9067L0254015 |
| | | 1:250 | 4 | PFC9067L0254005 | PFC9067L0254016 |
| | | 1:1 | 4 | PFC9067L0254008 | PFC9067L0254017 |
| | | 1:250 | 4+2 | PFC9067L0254009 | PFC9067L0254018 |
| | | 1:250 | 4+4 | PFC9067L0254010 | PFC9067L0254019 |
| 1:300 | 1:313 | 1:300 | 2 | PFC9067L0313023 | PFC9067L0313030 |
| | | 1:1 | 2 | PFC9067L0313025 | PFC9067L0313031 |
| | | 1:300 | 4 | PFC9067L0313024 | PFC9067L0313032 |
| | | 1:1 | 4 | PFC9067L0313026 | PFC9067L0313033 |
| | | 1:300 | 4+2 | PFC9067L0313027 | PFC9067L0313034 |
| | | 1:300 | 4+4 | PFC9067L0313028 | PFC9067L0313035 |
| 1:450 | 1:471.20 | 1:450 | 2 | PFC9067L0471002 | PFC9067L0471008 |
| | | 1:1 | 2 | PFC9067L0471003 | PFC9067L0471009 |
| | | 1:450 | 4 | PFC9067L0471004 | PFC9067L0471001 |
| | | 1:1 | 4 | PFC9067L0471005 | PFC9067L0471010 |
| | | 1:450 | 4+2 | PFC9067L0471006 | PFC9067L0471011 |
| | | 1:450 | 4+4 | PFC9067L0471007 | PFC9067L0471012 |


ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Standard cam sets", "Potentiometers and encoders" and "Accessories".







COMPONENTS

Standard cam sets







| Ref. | Drawing | No. and type of cams | No. and type of switches | Code |
|------|---|----------------------|--------------------------|----------|
| A9 |  | 2 cams A | 2 PRSL0110XX switches | FCL20001 |
| | | 2 cams A | 2 PRSL0111XX switches | FCL20002 |
| | | Cams A+C | 2 PRSL0110XX switches | FCL20003 |
| | | Cams A+C | 2 PRSL0111XX switches | FCL20004 |
| | | 2 cams C | 2 PRSL0110XX switches | FCL20005 |
| | | 2 cams C | 2 PRSL0111XX switches | FCL20006 |
| | | Cams D+D+B+F | 4 PRSL0110XX switches | FCL40001 |
| | | Cams D+D+B+F | 4 PRSL0111XX switches | FCL40002 |
| | | 4 cams A | 4 PRSL0110XX switches | FCL40003 |
| | | 4 cams A | 4 PRSL0111XX switches | FCL40004 |
| | | Cams A+A+C+C | 4 PRSL0110XX switches | FCL40005 |
| | | Cams A+A+C+C | 4 PRSL0111XX switches | FCL40006 |
| | | 4 cams C | 4 PRSL0110XX switches | FCL40007 |
| | | 4 cams C | 4 PRSL0111XX switches | FCL40008 |
| | | Cams C+C+C+E | 4 PRSL0110XX switches | FCL40009 |
| | | Cams C+C+C+E | 4 PRSL0111XX switches | FCL40010 |
| | | Cams A+A+E+E | 4 PRSL0110XX switches | FCL40011 |
| | | Cams A+A+E+E | 4 PRSL0111XX switches | FCL40012 |
| | | 5 cams A | 5 PRSL0110XX switches | FCL50006 |
| | | 5 cams A | 5 PRSL0111XX switches | FCL50005 |
| | | 5 cams C | 5 PRSL0110XX switches | FCL50001 |
| | | 5 cams C | 5 PRSL0111XX switches | FCL50010 |
| | | 6 cams A | 6 PRSL0110XX switches | FCL60003 |
| | | 6 cams A | 6 PRSL0111XX switches | FCL60006 |
| | | 6 cams C | 6 PRSL0110XX switches | FCL60001 |
| | | 6 cams C | 6 PRSL0111XX switches | FCL60010 |

Other sets with 2/3/4/5 or 6 cams/switches are available on request.

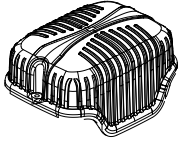
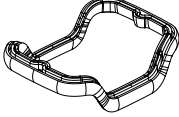
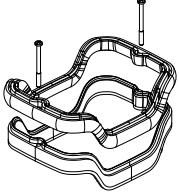



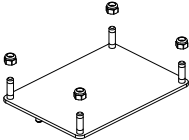
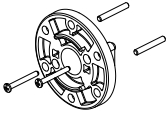




Cam reference chart

| Cam | | | Cam code for PRSL0110XX switch | Switching angle with PRSL0110XX | Cam code for PRSL0111XX switch | Switching angle with PRSL0111XX |
|-----|---|-------------|--------------------------------|---------------------------------|--------------------------------|---------------------------------|
| A |  | 1 point | PRSL7194PI | 21.5° ±0.5° | PRSL7194PI | 23.0° ±0.5° |
| B |  | 10 points | PRSL7193PI | 21.5° ±0.5° | PRSL7193PI | 23.0° ±0.5° |
| C |  | 60° sector | PRSL7195PI | 82.0° ±0.5° | PRSL7195PI | 86.0° ±0.5° |
| D |  | 72° sector | PRSL7196PI | 94.0° ±0.5° | PRSL7196PI | 97.5° ±0.5° |
| E |  | 180° sector | PRSL7191PI | 204.5° ±0.5° | PRSL7191PI | 203.0° ±0.5° |
| F |  | 305° sector | PRSL7192PI | 328.5° ±0.5° | PRSL7192PI | 327.0° ±0.5° |

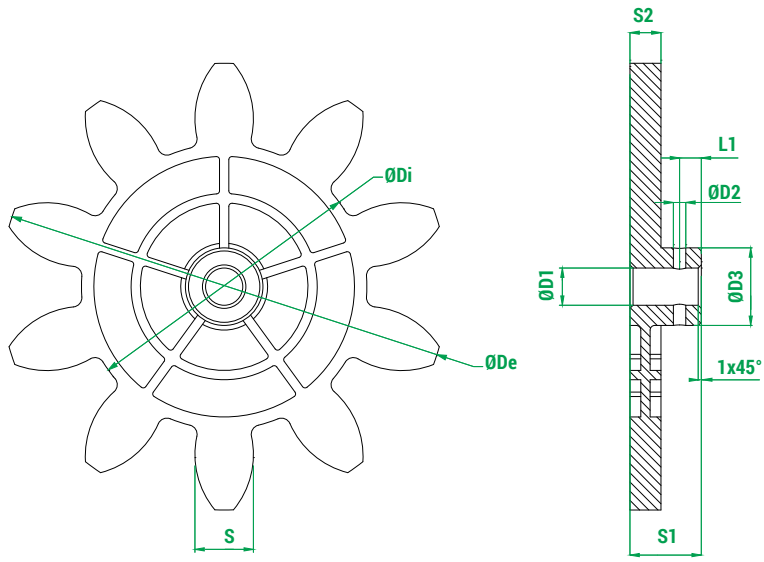
Potentiometers and encoders

| Ref. | Drawing | Description | Code |
|------|---|--|---|
| A4 |  | Support for encoder | PA030000 |
| A5 |  | Support for potentiometer | PA020000 |
| A6 |  | Encoder 36 pulses/rev. - with support | PA030001 |
| | | Encoder 150 pulses/rev. - with support | PA030002 |
| A7 |  | Potentiometer 10 kΩ - with support | PA020001 |
| | | Potentiometer 10 kΩ mechanical stop - with support | PA020002 |
| | | Potentiometer 10 kΩ ±10% 4 pins - with support | PA020003 |
| | | Potentiometer 10 kΩ ±10% 3 pins - with support | PA020004 |
| | | Potentiometer 5 kΩ ±10% - with support | PA020005 |
| | | Potentiometer 4.7 kΩ - with support | PA020006 |
| | | Potentiometer 10 kΩ - with support | PA020007 |
| | | Potentiometer 2.2 kΩ - with support | PA020008 |
| A8 |  | Potentiometer 2KΩ - with support | PA020009 |
| | | Absolute encoder Yankee - current output | PA01AA01 |
| | | Absolute encoder Yankee - voltage output | PA01AB01 |
| | | Absolute encoder Yankee - PWM output | PA01AC01 |
| A20 |  | Absolute encoder Egon 36-AL | F19XXXXXXX (Use the form on page 23 to generate codes) |

Accessories

| Ref. | Drawing | Description | Code |
|------|---|---|------------------------|
| A1 |  | Cover with screws | PA090016 |
| A2 |  | Tightening rubber | PRGU1510PE |
| A3 |  | Cover rise with tightening rubber and screws | PRSL0703PI |
| A11 |  | Cover holding wire + screw (bag with 10 pieces) | PRSL0358PI |
| A12 |  | Cable gland M20x1.5 | PRPS0063PE |
| A13 |  | Cable gland M16 | PRPS0062PE |
| A14 |  | Fixing plate | PRSL0729PI |
| A15 |  | Flange with screws and pins | PRSL0356PI |
| A16 |  | Pinion gear | See pinion gear tables |
| A17 |  | Coupling with pin | PRSL0981PI |
| A18 |  | Male coupling with pin | PRSL0919PI |
| A19 |  | Female coupling with pin | PRSL0920PI |

Moulded pinion gears

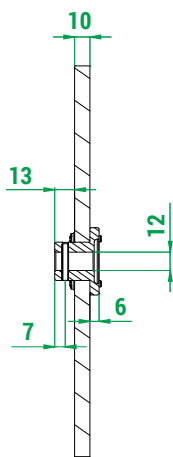
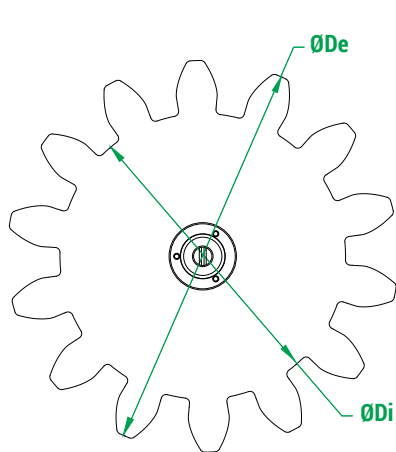


| Legend | |
|--------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | S | Alpha | D1 | D2 | D3 | S1 | S2 | L1 |
|------------|----|-------|--------|--------|--------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|
| PRSL0915PI | 8 | 20.00 | 160.00 | 200.00 | 113.20 | 20.00 | 23.40 | 31.41 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0912PI | 10 | 12.00 | 120.00 | 144.00 | 92.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 25.00 | 23.00 | 10.00 | 7.00 |
| PRSL0913PI | 10 | 14.00 | 140.00 | 168.00 | 107.24 | 14.00 | 16.38 | 21.99 | 20.00 | 12.00 | 4.00 | 24.60 | 23.00 | 10.00 | 7.00 |
| PRSL0914PI | 10 | 16.00 | 160.00 | 192.00 | 122.67 | 16.00 | 18.67 | 25.13 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0917PI | 11 | 6.00 | 66.00 | 78.00 | 51.96 | 6.00 | 7.02 | 9.42 | 20.00 | 12.00 | 4.00 | 19.00 | 23.00 | 8.00 | 7.00 |
| PRSL0916PI | 12 | 5.00 | 60.00 | 70.00 | 48.30 | 5.00 | 5.83 | 7.85 | 20.00 | 12.00 | 4.00 | 20.00 | 23.00 | 8.00 | 7.00 |
| PRSL0918PI | 12 | 8.00 | 96.00 | 112.00 | 77.28 | 8.00 | 9.36 | 12.56 | 20.00 | 12.00 | 4.00 | 21.50 | 23.50 | 10.00 | 7.00 |
| PRSL0911PI | 12 | 10.00 | 120.00 | 140.00 | 96.67 | 10.00 | 11.67 | 15.71 | 20.00 | 12.00 | 4.00 | 25.00 | 23.50 | 10.00 | 7.00 |
| PRSL0944PI | 12 | 12.00 | 144.00 | 168.00 | 116.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |

Measuring unit: mm.

Waterjet cut pinion gears



Legend

| | |
|-------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | Alpha |
|------------|----|-------|--------|--------|--------|-------|-------|-------|
| PRSL0857PI | 8 | 18.00 | 144.00 | 180.00 | 102.00 | 18.00 | 21.00 | 20.00 |
| PRSL0855PI | 8 | 24.00 | 192.00 | 240.00 | 136.00 | 24.00 | 28.00 | 20.00 |
| PRSL0992PI | 9 | 10.00 | 90.00 | 110.00 | 66.67 | 10.00 | 11.67 | 20.00 |
| PRSL0879PI | 9 | 16.00 | 144.00 | 176.00 | 106.67 | 16.00 | 18.67 | 20.00 |
| PRSL0854PI | 9 | 18.00 | 162.00 | 198.00 | 120.00 | 18.00 | 21.00 | 20.00 |
| PRSL0871PI | 9 | 20.00 | 180.00 | 220.00 | 133.33 | 20.00 | 23.33 | 20.00 |
| PRSL0849PI | 9 | 24.00 | 216.00 | 264.00 | 160.00 | 24.00 | 28.00 | 20.00 |
| PRSL0846PI | 10 | 10.00 | 100.00 | 120.00 | 76.67 | 10.00 | 11.67 | 20.00 |
| PRSL0993PI | 10 | 18.00 | 180.00 | 216.00 | 138.00 | 18.00 | 21.00 | 20.00 |
| PRSL0970PI | 10 | 22.00 | 220.00 | 264.00 | 168.52 | 22.00 | 25.74 | 20.00 |
| PRSL0856PI | 10 | 24.00 | 240.00 | 288.00 | 184.00 | 24.00 | 28.00 | 20.00 |
| PRSL0861PI | 11 | 12.00 | 132.00 | 156.00 | 104.00 | 12.00 | 14.00 | 20.00 |
| PRSL0998PI | 11 | 18.00 | 198.00 | 234.00 | 156.00 | 18.00 | 21.00 | 20.00 |
| PRSL0997PI | 11 | 20.00 | 220.00 | 260.00 | 173.36 | 20.00 | 23.32 | 20.00 |
| PRSL0859PI | 11 | 24.00 | 264.00 | 312.00 | 204.00 | 24.00 | 30.00 | 20.00 |
| PRSL0863PI | 12 | 14.00 | 168.00 | 196.00 | 133.00 | 14.00 | 17.50 | 20.00 |
| PRSL0897PI | 12 | 16.00 | 192.00 | 224.00 | 154.67 | 16.00 | 18.67 | 20.00 |
| PRSL0972PI | 12 | 18.00 | 216.00 | 252.00 | 173.88 | 18.00 | 21.06 | 20.00 |
| PRSL0845PI | 12 | 20.00 | 240.00 | 280.00 | 193.34 | 20.00 | 23.32 | 20.00 |
| PRSL0878PI | 12 | 24.00 | 288.00 | 336.00 | 232.00 | 24.00 | 28.00 | 20.00 |
| PRSL0860PI | 13 | 6.00 | 78.00 | 90.00 | 63.00 | 6.00 | 7.50 | 20.00 |
| PRSL0853PI | 13 | 12.00 | 156.00 | 178.59 | 126.00 | 11.29 | 15.00 | 20.00 |
| PRSL0898PI | 13 | 16.00 | 208.00 | 240.00 | 170.67 | 16.00 | 18.66 | 20.00 |
| PRSL0862PI | 14 | 10.00 | 140.00 | 169.00 | 125.00 | 15.00 | 7.50 | 20.00 |
| PRSL0896PI | 14 | 16.00 | 224.00 | 256.00 | 186.67 | 16.00 | 18.67 | 20.00 |
| PRSL0999PI | 14 | 18.00 | 252.00 | 288.00 | 210.00 | 18.00 | 21.00 | 20.00 |
| PRSL0848PI | 14 | 20.00 | 280.00 | 320.00 | 233.33 | 20.00 | 23.33 | 20.00 |
| PRSL0858PI | 15 | 18.00 | 270.00 | 306.00 | 228.00 | 18.00 | 21.00 | 20.00 |
| PRSL0847PI | 16 | 20.00 | 320.00 | 360.00 | 273.33 | 20.00 | 23.33 | 20.00 |
| PRSL0973PI | 17 | 10.00 | 170.00 | 190.00 | 145.00 | 10.00 | 12.50 | 22.89 |
| PRSL0974PI | 17 | 14.00 | 238.00 | 266.00 | 203.00 | 14.00 | 17.50 | 22.89 |
| PRSL0851PI | 20 | 6.00 | 120.00 | 132.00 | 105.00 | 6.00 | 7.50 | 22.89 |
| PRSL0844PI | 25 | 1.00 | 25.00 | 27.00 | 22.50 | 1.00 | 1.25 | 22.89 |

Measuring unit: mm.

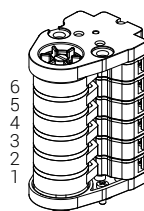
OSCAR - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

(See next pages for list of components and legends)

- 1 Version:** tick the required version.
- 2 Lima:** tick the box if you require Lima system.
- 3 Revolution ratio:** write the required revolution ratio for each output.
- 4 Standard cam sets:** write the code of the cam set required for each output, according to the legend.
- 5 Customized cam sets:** for non standard cam sets, fill in the scheme choosing the cams and the switches required, according to the legend. It is possible to assemble sets with 2, 3, 4, 5 or 6 cams/switches.
Customized cams are available on request.
- 6 Potentiometers, encoders, Egon 36-AL, Yankee:** write the code of the potentiometer, encoder, Egon 36-AL or Yankee required, according to the legend.
ATTENTION: potentiometer PA020009 can be mounted only alone, i.e. with no sets of cams/switches.
Please refer to the table on the next pages for all other possible configurations.
To generate Egon 36-AL codes, use the form on the next pages.
- 7 Coupling, flange, pinion gear:** tick the appropriate box when coupling, flange or pinion gear are required.
When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.
When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.
- 8 Shaft:** tick the type of shaft required. Limit switches with Lima are available only with shafts made of high resistance stainless steel AISI 303
- Customized shafts are available on request.
- 9 Cable glands:** tick type and position of the cable glands (max. 8).

Customized cam sets 5



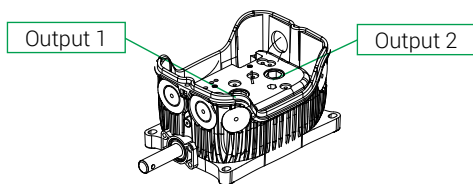
| | |
|-----------------|-------------|
| Output 1 | |
| Cam code | Switch code |
| 6 _____ | _____ |
| 5 _____ | _____ |
| 4 _____ | _____ |
| 3 _____ | _____ |
| 2 _____ | _____ |
| 1 _____ | _____ |
| Output 2 | |
| Cam code | Switch code |
| 6 _____ | _____ |
| 5 _____ | _____ |
| 4 _____ | _____ |
| 3 _____ | _____ |
| 2 _____ | _____ |
| 1 _____ | _____ |

Version 1

- Version
- Version
- Version with anti-moisture plug

ATTENTION: Limit switches with Lima are only CE marked.
ATTENTION: Limit switches with shafts made of stainless steel AISI 430F are not cULus certified.

Lima 2



Revolution ratio 3

| | | | | |
|-------------------------------|--------------------------------|--|---|--|
| Output 1 | | | Output 2 | |
| <input type="checkbox"/> 1:1 | <input type="checkbox"/> 1:25 | <input type="checkbox"/> 1:200 | <input type="checkbox"/> 1:1 | |
| <input type="checkbox"/> 1:5 | <input type="checkbox"/> 1:50 | <input type="checkbox"/> 1:250 | <input type="checkbox"/> Revolution ratio equal to output 1 | |
| <input type="checkbox"/> 1:10 | <input type="checkbox"/> 1:70 | <input type="checkbox"/> 1:300 | | |
| <input type="checkbox"/> 1:15 | <input type="checkbox"/> 1:100 | <input type="checkbox"/> 1:450 | | |
| <input type="checkbox"/> 1:20 | <input type="checkbox"/> 1:150 | <input type="checkbox"/> 1: <input style="width: 40px; border: 1px solid black;" type="text"/> | | |

Standard cam sets 4

Cam set code _____

_____ Output 1

_____ Output 2

Potentiometers, encoders, Egon 36-AL, Yankee 6

| | | |
|------|----------|----------|
| | Output 1 | Output 2 |
| Code | _____ | _____ |

- | | |
|--|---|
| <input type="checkbox"/> Male coupling | <input type="checkbox"/> Coupling 7 |
| <input type="checkbox"/> Female coupling | <input type="checkbox"/> Flange |
| <input type="checkbox"/> Pinion gear | |

Pinion gear code _____

Customized pinion gear

No. of teeth _____

Module _____

Primitive diameter _____

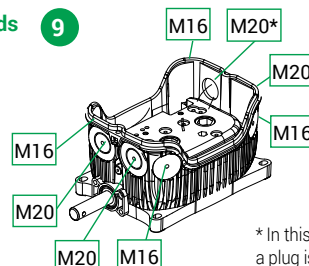
Standard shaft 8

- | | |
|--|---|
| | <input type="checkbox"/> Stainless steel AISI 430F shaft |
| | <input type="checkbox"/> High resistance stainless steel AISI 303 shaft |

Flexible shaft

- | | |
|--|---|
| | <input type="checkbox"/> Stainless steel AISI 430F shaft |
| | <input type="checkbox"/> High resistance stainless steel AISI 303 shaft |

Cable glands 9



* In this position an M20 cable gland or a plug is mandatory.

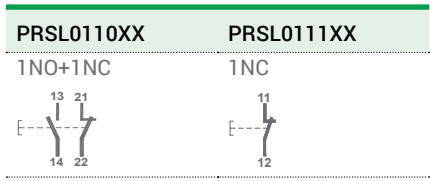
4 Legend - Standard cam sets

| No. & type of switches | No. & type of cams | Code |
|------------------------|--------------------|----------|
| 2 x PRSL0110XX | 2 cams A | FCL20001 |
| | Cams A+C | FCL20003 |
| | 2 cams C | FCL20005 |
| 4 x PRSL0110XX | Cams D+D+B+F | FCL40001 |
| | 4 cams A | FCL40003 |
| | Cams A+A+C+C | FCL40005 |
| | 4 cams C | FCL40007 |
| | Cams C+C+C+E | FCL40009 |
| | Cams A+A+E+E | FCL40011 |
| 5 x PRSL0110XX | 5 camme A | FCL50006 |
| | 5 camme C | FCL50001 |
| 6 x PRSL0110XX | 6 camme A | FCL60003 |
| | 6 camme C | FCL60001 |
| 2 x PRSL0111XX | 2 cams A | FCL20002 |
| | Cams A+C | FCL20004 |
| | 2 cams C | FCL20006 |
| 4 x PRSL0111XX | Cams D+D+B+F | FCL40002 |
| | 4 cams A | FCL40004 |
| | Cams A+A+C+C | FCL40006 |
| | 4 cams C | FCL40008 |
| | Cams C+C+C+E | FCL40010 |
| | Cams A+A+E+E | FCL40012 |
| 5 x PRSL0111XX | 5 camme A | FCL50005 |
| | 5 camme C | FCL50010 |
| 6x PRSL0111XX | 6 camme A | FCL60006 |
| | 6 camme C | FCL60010 |

6 Legend - Potentiometers, encoders and Yankee

| Description | Code |
|--|----------|
| Potentiometer 10 kΩ - with support | PA020001 |
| Potentiometer 10 kΩ mechanical stop - with support | PA020002 |
| Potentiometer 10 kΩ ±10% 4 pins - with support | PA020003 |
| Potentiometer 10 kΩ ±10% 3 pins - with support | PA020004 |
| Potentiometer 5 kΩ ±10% - with support | PA020005 |
| Potentiometer 4.7 kΩ - with support | PA020006 |
| Potentiometer 10 kΩ - with support | PA020007 |
| Potentiometer 2.2 kΩ - with support | PA020008 |
| Potentiometer 2KΩ - with support | PA020009 |
| Encoder 36 pulses/rev. - with support | PA030001 |
| Encoder 150 pulses/rev. - with support | PA030002 |
| Yankee - current output | PA01AA01 |
| Yankee - voltage output | PA01AB01 |
| Yankee - PWM output | PA01AC01 |

5 Legend - Switches



5 Legend - Cams

| Cam | Cam code for PRSL0110XX switch | Switching angle with PRSL0110XX | Cam code for PRSL0111XX switch | Switching angle with PRSL0111XX |
|-----|--------------------------------|---------------------------------|--------------------------------|---------------------------------|
| A | PRSL7194PI | 21.5° ±0.5° | PRSL7194PI | 23.0° ±0.5° |
| B | PRSL7193PI | 21.5° ±0.5° | PRSL7193PI | 23.0° ±0.5° |
| C | PRSL7195PI | 82.0° ±0.5° | PRSL7195PI | 86.0° ±0.5° |
| D | PRSL7196PI | 94.0° ±0.5° | PRSL7196PI | 97.5° ±0.5° |
| E | PRSL7191PI | 204.5° ±0.5° | PRSL7191PI | 203.0° ±0.5° |
| F | PRSL7192PI | 328.5° ±0.5° | PRSL7192PI | 327.0° ±0.5° |

6 Configuration table

The following table shows possible configurations of Oscar and Oscar XL.

When it is not possible to mount a set of cams together with a potentiometer/encoder, the table shows «Not available».

When the standard cover PA090008 is not high enough to hold the elements mounted inside the limit switch, it is possible to use the cover rise PRSL0703PI (the table shows «Oscar XL»).

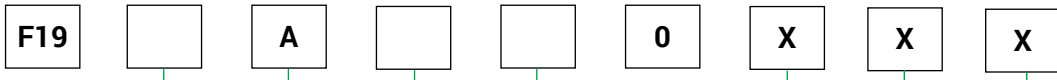
In all other cases it is possible to mount the sets of cams and potentiometer/encoder with the standard cover PA090008 (the table shows «Oscar»).

| | Set of cams with 2 switches | Set of cams with 3 switches | Set of cams with 4 switches | Set of cams with 5 switches | Set of cams with 6 switches |
|---------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Set of cams only | Oscar | Oscar | Oscar | Oscar | Oscar XL |
| Set of cams + Egon 36-AL | Oscar | Oscar XL | Oscar XL | Not available | Not available |
| Set of cams + Yankee1 | Oscar | Oscar | Oscar | Oscar XL | Oscar XL |
| Set of cams + PA020001 | Oscar | Oscar XL | Oscar XL | Not available | Not available |
| Set of cams + PA020002 | Oscar | Oscar XL | Oscar XL | Not available | Not available |
| Set of cams + PA020003 | Oscar | Oscar | Oscar XL | Oscar XL | Not available |
| Set of cams + PA020004 | Oscar | Oscar | Oscar XL | Oscar XL | Not available |
| Set of cams + PA020005 | Oscar | Oscar | Oscar XL | Oscar XL | Not available |
| Set of cams + PA020006 | Oscar | Oscar XL | Oscar XL | Not available | Not available |
| Set of cams + PA020007 | Oscar | Oscar XL | Oscar XL | Not available | Not available |
| Set of cams + PA020008 | Oscar | Oscar XL | Oscar XL | Not available | Not available |
| Set of cams + PA030001 | Oscar | Oscar | Oscar XL | Oscar XL | Not available |
| Set of cams + PA030002 | Oscar | Oscar | Oscar XL | Oscar XL | Not available |

6 Configuration form for Egon 36-AL

To generate the encoder code, fill in the boxes with the characters corresponding to the specifications required, as shown in the example. Enter the code in the space provided at point 6 (Potentiometers, encoders, Egon 36-AL, Yankee) of the «Request form for non standard limit switch».

F19 R A 1 1 0 X X X



S = normal
R = redundant

A = analog

Output 1
1 = 4...20 mA
2 = 1...5 V
3 = 2...10 V

Output 2
(only for EGON 36-AL redundant version)*
1 = 4...20 mA
2 = 1...5 V
3 = 2...10 V

* Fill in "0" for Egon36-AL normal version.
ATTENTION: if required, Output 2 must be the same as Output 1.

Characters for sequential numbers

TOP

Rotary limit switch



Rotary limit switch used to control and measure the movement of industrial machines or the position of the nacelle or pitch angle of wind turbines. Salt mist resistant and rich in options, Top is designed to meet the most demanding requirements.

FEATURES

- It consists of a gear motor that transfers movement to the cams and to the other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages (pairs of straight toothed gears).
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 10 million operations.
- IP protection degree: Top is classified IP66 / IP67 / IP69K.
- NEMA protection degree: Top is classified Type 4X*.
- Extreme temperature resistance: -40°C to +80°C.
- Salt mist resistant.
- It features base and cover made of electrostatic varnished die-cast aluminum, transmission and gear driving shafts made of stainless steel AISI 303, worm gear transmission shaft rotating on ball bearings, self-lubricating technopolymer gears and driving bushes.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

OPTIONS

- Revolution ratios from 1:1 to 1:8100, achieved by combining different secondary output stages.
- Each of the three outputs can be set to a different revolution ratio to enable diversified control of the machine when special requirements need to be met.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1 NC contact.
- It can be equipped with 3 cam sets (with up to 15 switches), potentiometers and encoders (alone or on top of cam sets with up to 2 switches), Egon 36-AL absolute encoders

(alone or on top of cam sets with up to 2 switches) and Yankee absolute encoders (on top of cam sets with up to 4 switches).

- Available with cover rise for XL version with 3 cam sets (with up to 18 switches), potentiometers and encoders (alone or on top of cam sets with up to 5 switches), Egon 36-AL absolute encoders (alone or on top of cam sets with up to 4 switches) and Yankee absolute encoders (on top of cam sets with up to 6 switches).
- Dedicated cable glands or connectors.
- Available with anti-moisture plug fitted to the base by means of a lock nut, improving transpiration while maintaining protection against water.
- Available with flanges, pinion gears and couplings.
- Plates with universal adapters to replace existing systems.

SPEED CONTROL SYSTEM

- Top can be equipped with a "Speed Control System", a speed detection system with 4 different relays (3 manually programmable for speed threshold settings, 1 used for self-diagnosis).

CERTIFICATIONS

- CE marking, cULus* marking and EAC certification.
- Top is available, upon request, with the SIL1 certification (Safety Integrity Level 1), according to Standard IEC 61508.
- Complying with accident prevention regulation BGV C 1 (only for Germany).

Use the online configurator (<https://configuratore.terworld.com>) or fill in the "request form" for accurate product configuration.

* Not available on all versions.

POSSIBLE ASSEMBLIES

Top XL with cover rise



With anti-moisture plug



With "Speed Control System"



TOP WITH "SPEED CONTROL SYSTEM"






The limit switch with Speed Control System is used to monitor the speed of the motor shaft or rotary movements and it consists of an absolute magnetic encoder and of an electronic board that processes the analogue input coming from the encoder.

The system is able to detect when the speed threshold is exceeded, both in the acceleration phase (overspeed) and in the deceleration phase (underspeed). Each of the 3 dedicated relays can be associated with a pair of speed values that delimit the range within which the monitoring system will not activate any protection by keeping the relevant contact closed.

If the rotation speed, at any time, is higher than the maximum threshold or lower than the minimum threshold set for a given relay, the latter will be opened and kept in this state until the protection reset procedure is performed.

The system is configured by means of 4 function keys located on the electronic board and a dedicated procedure.

CERTIFICATIONS

| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/35/UE Low Voltage Directive |
| | 2006/42/CE Machinery Directive |
| | 2014/30/UE Electromagnetic Compatibility (EMC) Directive (only for Top with "Speed Control System") |
| Conformity to CE Standards | EN 60204-1 Safety of machinery - Electrical equipment of machines |
| | EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines |
| | EN 60947-1 Low-voltage switchgear and controlgear |
| | EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices |
| | EN 60529 Degrees of protection provided by enclosures |
| | EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements - General requirements (only for Top with "Speed Control System") |
| Conformity to cULus Standards | EN 61326-2-3 Electrical equipment for measurement, control and laboratory use - EMC requirements - Particular requirements - Test configurations, operational conditions and performance criteria for transducers with integrated or remote signal conditioning (only for Top with "Speed Control System") |
| | CSA-C22.2 No 14-13 Industrial Control Equipment |
| SIL1* | UL 508 Industrial Control Equipment |
| | IEC 61508:2010 Part 2-4-6-7 Functional safety of electrical/electronic/programmable electronic safety-related systems |
| BGV C 1 | Regulations for the prevention of accidents BGV C 1 (only for Germany) |
| Markings and homologations |    |

GENERAL TECHNICAL SPECIFICATIONS

| | |
|------------------------|---------------------------|
| Ambient temperature | Storage -40°C/+85°C** |
| | Operational -40°C/+85°C** |
| IP protection degree | IP66 / IP67 / IP69K |
| NEMA protection degree | Type 4X* |
| Insulation category | Class I |
| Rotation speed | Max. 800 rpm |
| Cable entry | Cable gland M20 |
| Shafts | Stainless steel AISI 303 |

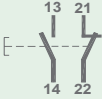

TOP WITH "SPEED CONTROL SYSTEM" - ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| Power supply | 24 Vdc \pm 15% |
| | 24 Vdc \pm 15% |
| Consumption | 80 mA max |
| Resolution | 12 bit (4096 points), for internal process use |
| Accuracy | \pm 0.5% |
| Linearity | \pm 0.25% |
| Reverse polarity and short-circuit protection | Yes |
| Relays | 4 configurable relays 24/250 Vac, 3/5 A, NC or NO |
| Speed | Min 4 rpm - Max 200 rpm |

* Not available on all versions.

** Sets of cams/switches with components suitable for temperature up to +100°C are available on request. Attention: sets with 6 cams/switches always use components suitable for temperatures -40°C / +100°C.

TECHNICAL SPECIFICATIONS OF THE SWITCHES

| Code | PRSL0110XX | PRSL0111XX |
|----------------------------|---|---|
| Utilisation category | AC 15 | |
| Rated operational voltage | 250 Vac | |
| Rated operational current | 3 A | |
| Rated thermal current | 10 A | |
| Rated insulation voltage | 300 Vac | |
| Mechanical life | 10x10 ⁶ operations | |
| Connections | Screw-type terminals | |
| Wires | 1x2.5 mm ² , 2x1.5 mm ² (UL (c)UL: use 60°C or 75°C copper (CU) conductors and stiff or flexible wire 14-22 AWG) | |
| Tightening torque | 0.5 Nm | |
| Switch type | Double break, snap action | Double break, slow action |
| Contacts | 1NO+1NC (All NC contacts are of the positive opening operation type \ominus) | 1NC (All NC contacts are of the positive opening operation type \ominus) |
| Scheme |  |  |
| Markings and homologations | CE cULus EAC | |

Switches PRSL0100XX available on request.

TECHNICAL SPECIFICATIONS OF THE POTENTIOMETERS

| Code of potentiometer with support | PA020001 | PA020002 |
|------------------------------------|------------------------------|-------------------------------|
| Ohmic value | 10 k Ω | 10 k Ω mechanical stop |
| Resolution | Infinite | |
| Independent linearity | $\pm 1\%$ | |
| Life time | 10x10 ⁶ movements | |
| Power rating | Max. 1 W | |
| Operational ambient temperature | -55°C/+105°C | |
| Continuous rotation (without stop) | 360° | |
| Continuous rotation (with stop) | 333° $\pm 5^\circ$ | |
| Actual electrical angle | 310° $\pm 5^\circ$ | |
| Ohmic value tolerance | $\pm 20\%$ | |

| Code of potentiometer with support | PA020003 | PA020004 | PA020005 |
|--------------------------------------|-----------------------------|-------------------------|-------------------------|
| Ohmic value | 10 k Ω | 10 k Ω | 5 k Ω |
| Connections | 4 turrets | 3 turrets | 4 turrets |
| Independent linearity (ref. AEA -3°) | $\leq \pm 1\%$ | $\leq \pm 0.35\%$ | $\leq \pm 1\%$ |
| Power rating | Max. 0.3 W | | |
| Life time | 5x10 ⁶ movements | | |
| Operational ambient temperature | -55°C/+125°C | | |
| Mechanical angle | 360° continuous | | |
| Actual Electrical Angle (AEA) | 340° $\pm 5^\circ$ | | |
| Ohmic value tolerance | Max. $\pm 20\%$ at 20°C | Max. $\pm 10\%$ at 20°C | Max. $\pm 20\%$ at 20°C |

| Code of potentiometer with support | PA020006 | PA020007 | PA020008 |
|--------------------------------------|-----------------------------|----------|----------|
| Ohmic value | 4,7 kΩ | 10 kΩ | 2.2 kΩ |
| Independant linearity (ref. AEA -3°) | ±0.25% | | |
| Power rating | Max. 4 W | | |
| Life time | 3x10 ⁹ movements | | |
| Operational ambient temperature | -55°C/+125°C | | |
| Mechanical angle | 360° continuous | | |
| Actual Electrical Angle (AEA) | 355°±5° | | |
| Ohmic value tolerance | ±5% | | |
| Temperature drift | < 50 PPM/°C | | |

| Code of potentiometer with support | PA020009 |
|------------------------------------|-------------------------------|
| Ohmic value | 2 kΩ |
| Resolution | Better than 0.008° |
| Linearity | ±0.075% |
| Independant linearity | ±0.075% |
| Power rating | Max. 0.4 W |
| Life time | 100x10 ⁹ movements |
| Operational ambient temperature | -40°C/+100°C |
| Mechanical angle | 360° continuous |
| Actual electrical travel | 350° ±2° |
| Ohmic value tolerance | ±20% |

TECHNICAL SPECIFICATIONS OF THE ENCODERS

| Code with support | PA030001 | PA030002 |
|---------------------------------|--|-----------------|
| Resolution | 36 pulses/rev. | 150 pulses/rev. |
| Operational ambient temperature | -40°C/+85°C | |
| Code | Incremental | |
| Supply voltage | 4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load) | |
| Output voltage | Low: 500 mV max. at 10 mA High: (Vin - 0.6) at -10 mA (Vin - 1.3) at -25 mA | |
| Output current | 25 mA max. load per output channel | |
| Output format | Two channel (A, B) quadrature with Index (Z) | |
| Phase sense | A leads B clockwise (CW) from the mounting end of the encoder | |
| Accuracy | +/- 0.8 arc-min. | |
| Outputs | Push pull | |
| Electrical protection | Protection against reverse polarity and output short-circuit | |

CERTIFICATIONS OF THE ABSOLUTE ENCODER EGON 36-AL

| | |
|------------------------------------|---|
| Conformity to Community Directives | 2014/35/UE Low Voltage Directive (LVD) |
| | 2014/30/UE Electromagnetic Compatibility (EMC) Directive |
| | 2006/42/CE Machinery Directive |
| Conformity to CE Standards | EN 60204-1 Safety of machinery - Electrical equipment of machines |
| | EN 60947-1 Low-voltage switchgear and controlgear |
| | EN 60529 Degrees of protection provided by enclosures |
| | EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements - General requirements |
| | EN 61326-2-3 Electrical equipment for measurement, control and laboratory use - EMC requirements - Particular requirements - Test configurations, operational conditions and performance criteria for transducers with integrated or remote signal conditioning |
| Markings and homologations | CE |


GENERAL TECHNICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER EGON 36-AL

| | |
|----------------------|-------------------------|
| Ambient temperature | Storage -25°C/+85°C |
| | Operational -25°C/+85°C |
| IP protection degree | IP42 |
| Shaft diameter | 6 mm |

ELECTRICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER EGON 36-AL

| | |
|--|-------------------------------------|
| Power supply | 12..30 Vdc |
| | Current 4..20 mA |
| Analogue output | Voltage 1...5 V |
| | Voltage 2...10 V |
| Consumption | 35 mA simple version |
| | 55 mA redundant version |
| Single-turn resolution | 12 bit (4096 points for revolution) |
| Protection against input/output over-current | Yes |
| Protection against input/output over-voltage | Yes |
| Accuracy | ± 0.5% |
| Linearity | ± 0.25% |
| Redundancy | 2 complementary outputs (analogue) |

CERTIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

| | |
|------------------------------------|--|
| Conformity to Community Directives | 2014/30/UE Electromagnetic Compatibility (EMC) Directive |
| | 2006/42/CE Machinery Directive |
| | 2014/35/UE Low Voltage Directive (LVD) |
| Conformity to CE Standards | EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements |
| | EN 60529 Degrees of protection provided by enclosures |
| Conformity to cULus Standards | CSA-C22.2 No 14-13 Industrial Control Equipment |
| | UL 508 Industrial Control Equipment |
| Markings and homologations | CE  |

GENERAL TECHNICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

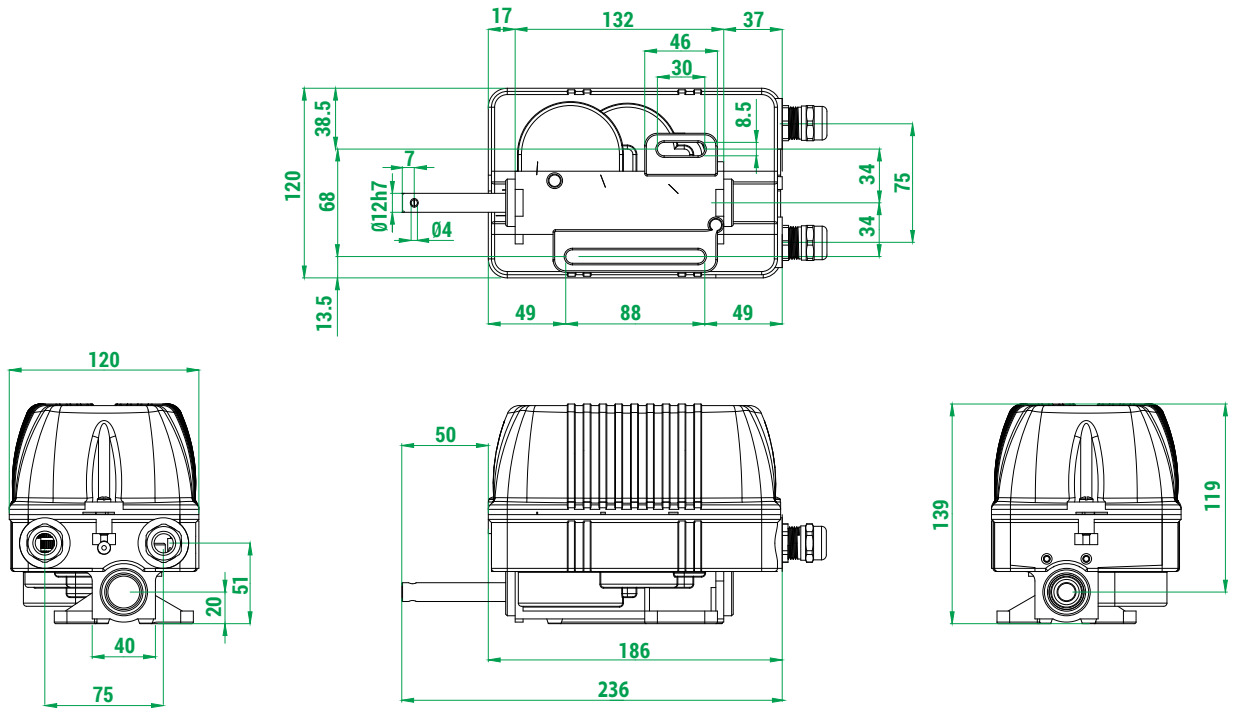
| | |
|----------------------|-------------------------|
| Ambient temperature | Storage -40°C/+80°C |
| | Operational -40°C/+80°C |
| IP protection degree | IP 20 |
| Free rotation | 360° |
| Rotation speed | Max. 800 rpm |

ELECTRICAL SPECIFICATIONS OF THE ABSOLUTE ENCODER YANKEE

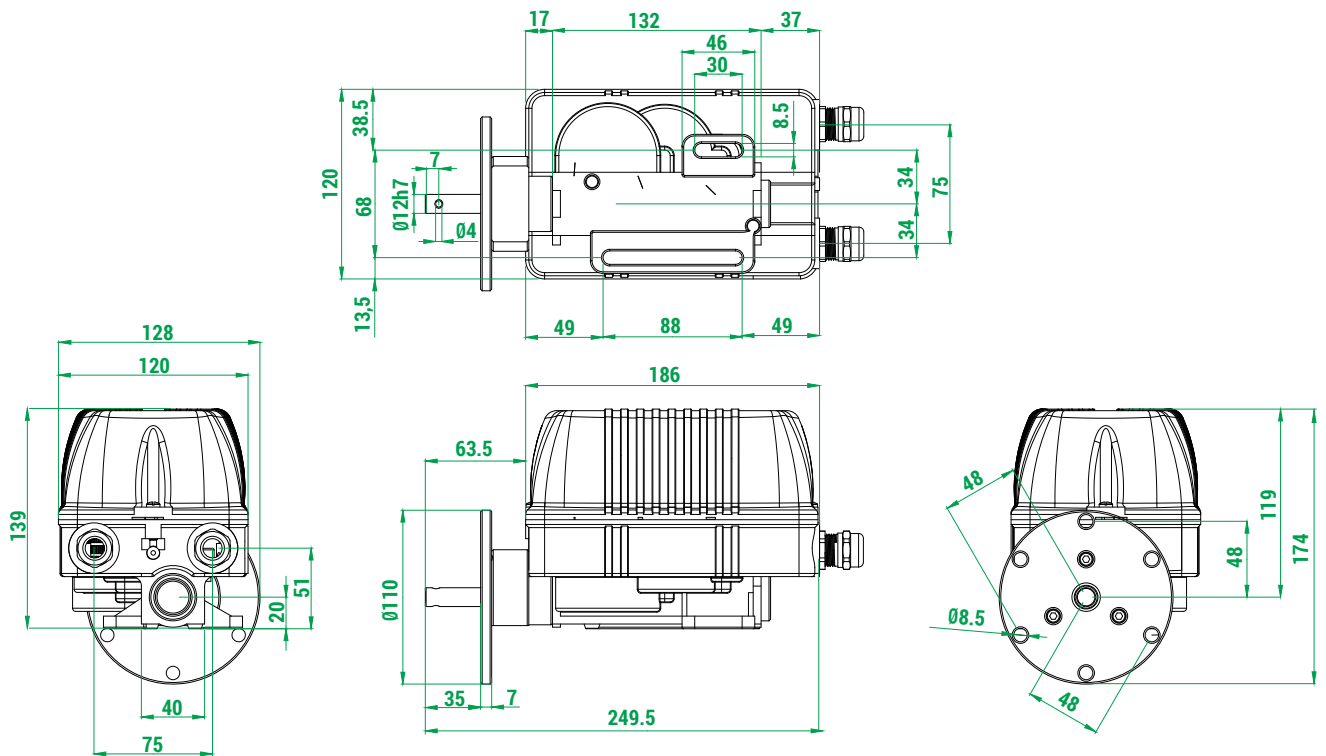
| Code | PA01AA01 | PA01AB01 | PA01AC01 |
|-------------------------------------|--|------------------|---------------|
| Output | Current 4 ÷ 20 mA | Voltage 0 ÷ 10 V | PWM 0 ÷ 100 % |
| Power supply | 12 ÷ 48 Vdc/12 ÷ 48 Vac | | |
| Protection against reverse polarity | Yes | | |
| Absorption | 50 mA | | |
| Resolution | 10 bit | | |
| Linearity | +/- 0.5° | | |
| Hysteresis | Max. 0.1° | | |
| Zero Point setting | Through button/wire | | |
| Signal increment direction | CW (standard)/CCW (on request) | | |
| Connections | Terminal board | | |
| Terminal wires | 0.14 mm ² - 1.5 mm ² | | |
| Terminal tightening torque | 0.22 Nm - 0.25 Nm | | |

OVERALL DIMENSIONS (mm)

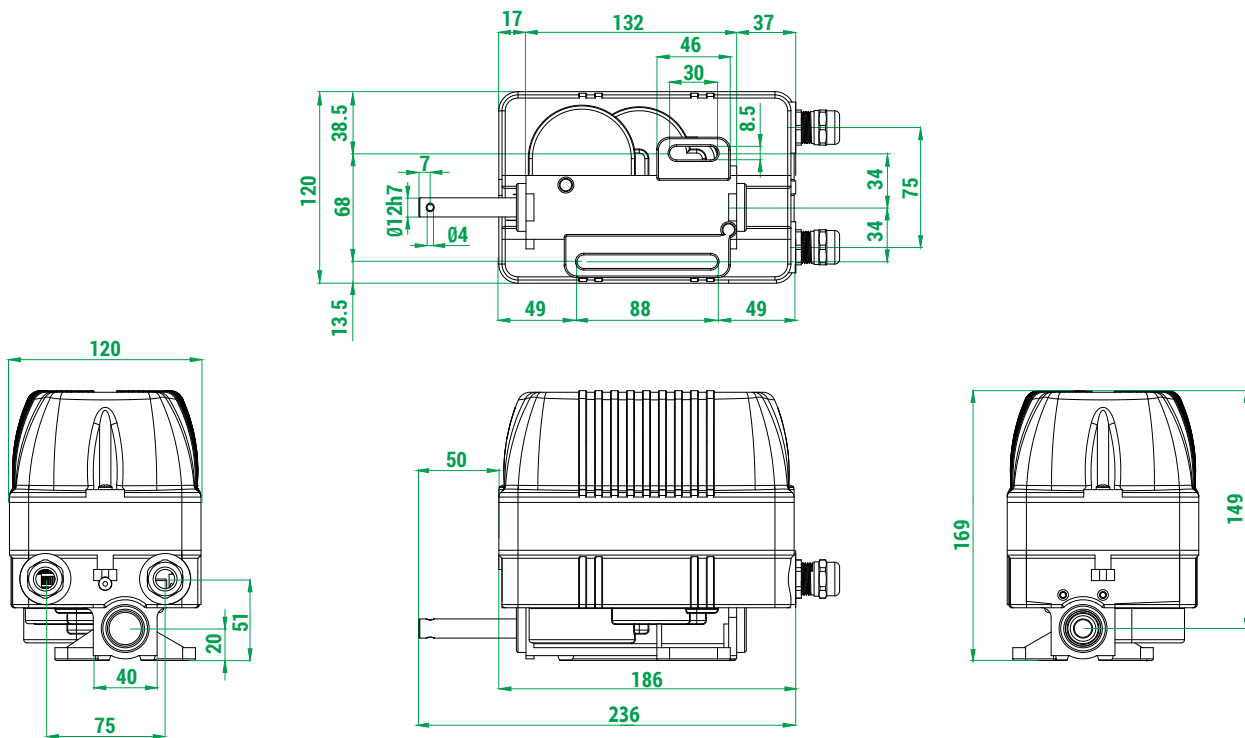
Standard



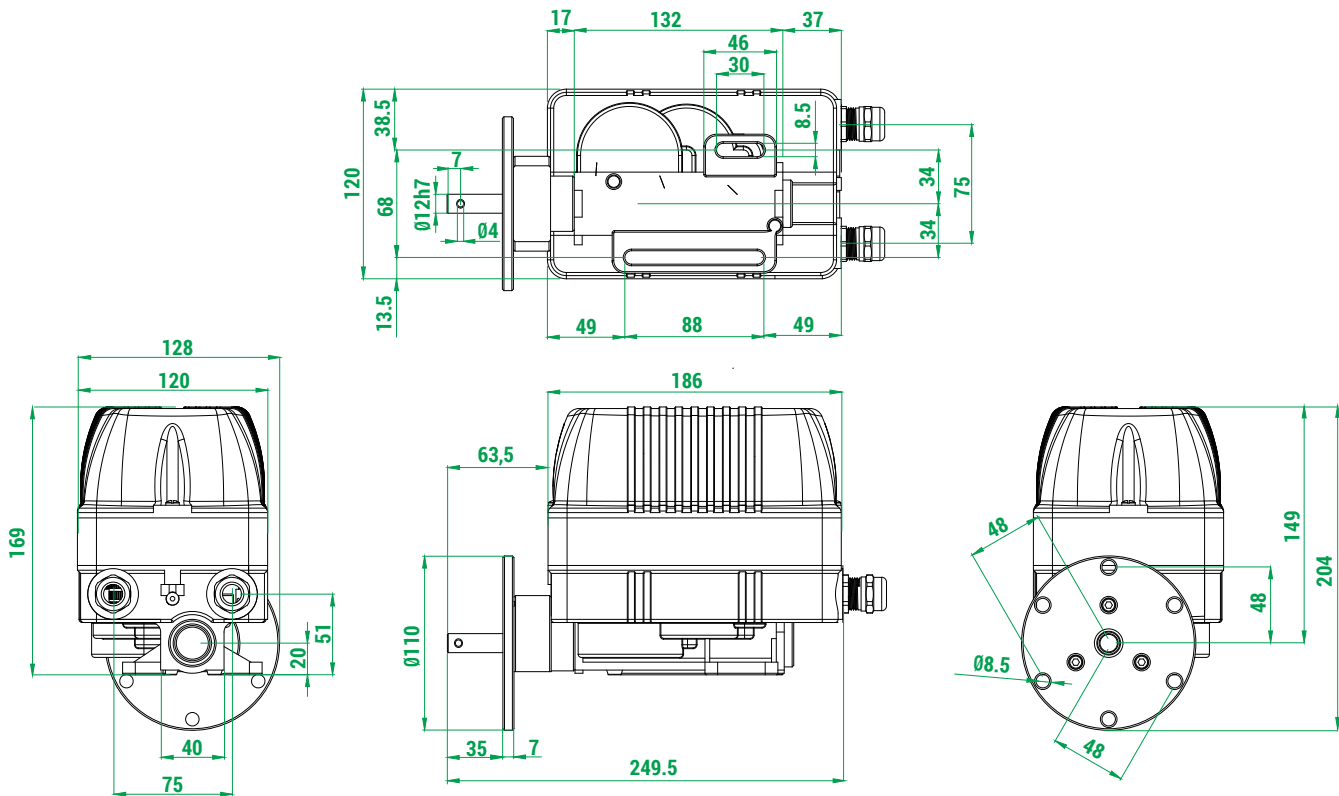
With flange



Top XL with cover rise and Top with "Speed Control System"





Top XL with cover rise and flange, Top with "Speed Control System" and flange





STANDARD LIMIT SWITCHES

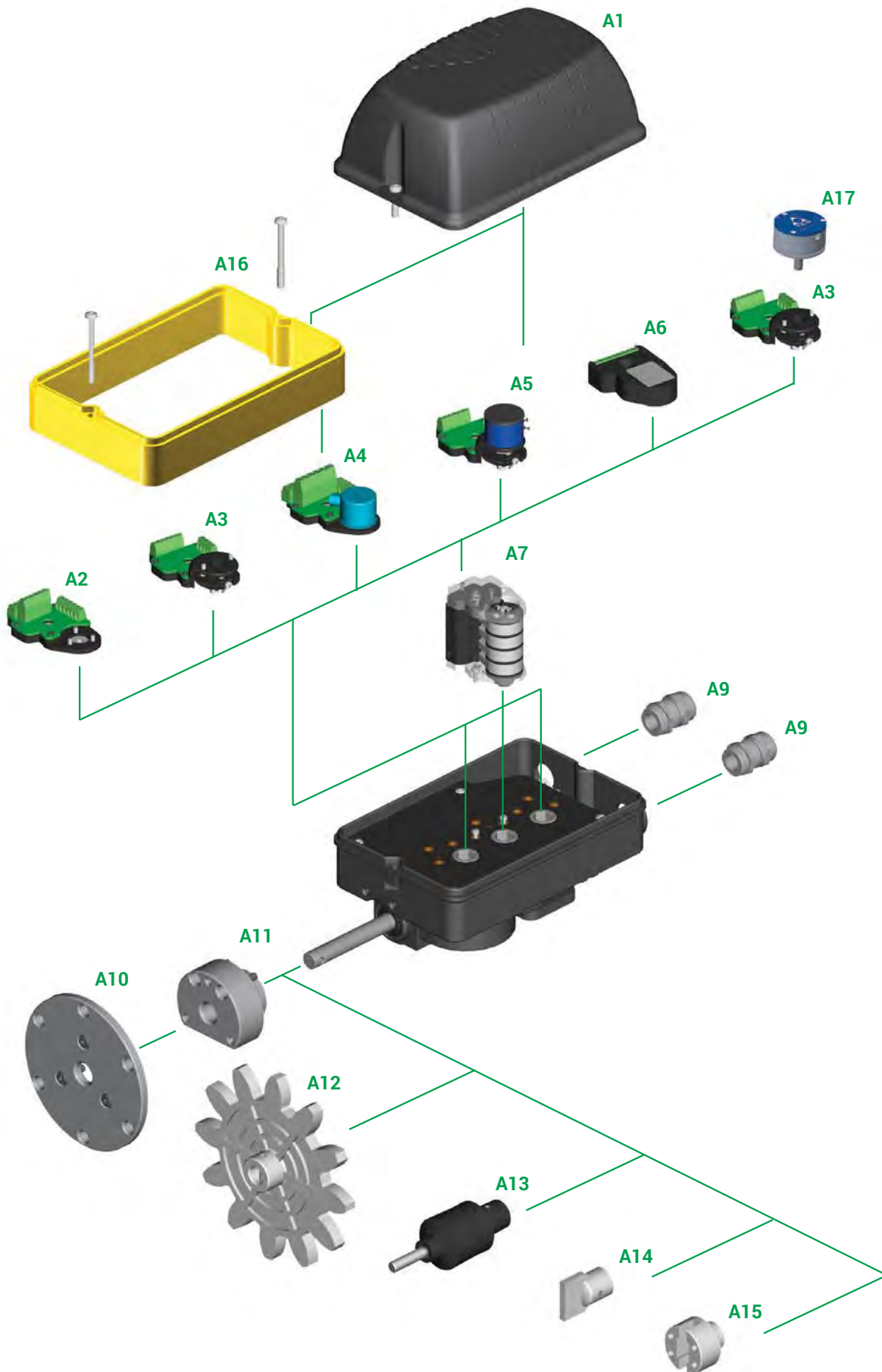
Standard limit switches are equipped with cams PRSL7194PI .

Standard limit switches are not cULus certified.

| Rated revolution ratio | Real revolution ratio | No. of cams and switches | Switches | |
|------------------------|-----------------------|--------------------------|--|--|
| | | | PRSL0110XX 1NO+1NC  | PRSL0111XX 1NC  |
| | | | Code | Code |
| 1:1 | 1:1 | 2 | PFD9067L0001002 | PFD9067L0001008 |
| | | 4 | PFD9067L0001003 | PFD9067L0001009 |
| | | 4+2 | PFD9067L0001004 | PFD9067L0001010 |
| | | 4+4 | PFD9067L0001005 | PFD9067L0001011 |
| | | 4+4+2 | PFD9067L0001006 | PFD9067L0001012 |
| | | 4+4+4 | PFD9067L0001007 | PFD9067L0001013 |
| 1:5 | 1:5 | 2 | PFD9067L0005004 | PFD9067L0005008 |
| | | 4 | PFD9067L0005005 | PFD9067L0005009 |
| | | 4+2 | PFD9067L0005006 | PFD9067L0005010 |
| | | 4+4 | PFD9067L0005002 | PFD9067L0005011 |
| | | 4+4+2 | PFD9067L0005007 | PFD9067L0005012 |
| | | 4+4+4 | PFD9067L0005003 | PFD9067L0005013 |
| 1:10 | 1:10 | 2 | PFD9067L0010008 | PFD9067L0010012 |
| | | 4 | PFD9067L0010005 | PFD9067L0010013 |
| | | 4+2 | PFD9067L0010004 | PFD9067L0010014 |
| | | 4+4 | PFD9067L0010009 | PFD9067L0010015 |
| | | 4+4+2 | PFD9067L0010010 | PFD9067L0010016 |
| | | 4+4+4 | PFD9067L0010011 | PFD9067L0010017 |
| 1:15 | 1:15.92 | 2 | PFD9067L0015003 | PFD9067L0015009 |
| | | 4 | PFD9067L0015004 | PFD9067L0015010 |
| | | 4+2 | PFD9067L0015005 | PFD9067L0015011 |
| | | 4+4 | PFD9067L0015006 | PFD9067L0015012 |
| | | 4+4+2 | PFD9067L0015007 | PFD9067L0015013 |
| | | 4+4+4 | PFD9067L0015008 | PFD9067L0015014 |
| 1:20 | 1:20 | 2 | PFD9067L0020006 | PFD9067L0020009 |
| | | 4 | PFD9067L0020002 | PFD9067L0020010 |
| | | 4+2 | PFD9067L0020003 | PFD9067L0020011 |
| | | 4+4 | PFD9067L0020007 | PFD9067L0020012 |
| | | 4+4+2 | PFD9067L0020004 | PFD9067L0020013 |
| | | 4+4+4 | PFD9067L0020008 | PFD9067L0020014 |
| 1:25 | 1:25 | 2 | PFD9067L0025009 | PFD9067L0025012 |
| | | 4 | PFD9067L0025004 | PFD9067L0025013 |
| | | 4+2 | PFD9067L0025005 | PFD9067L0025014 |
| | | 4+4 | PFD9067L0025010 | PFD9067L0025015 |
| | | 4+4+2 | PFD9067L0025006 | PFD9067L0025016 |
| | | 4+4+4 | PFD9067L0025011 | PFD9067L0025017 |
| 1:50 | 1:50 | 2 | PFD9067L0050009 | PFD9067L0050013 |
| | | 4 | PFD9067L0050010 | PFD9067L0050016 |
| | | 4+2 | PFD9067L0050011 | PFD9067L0050017 |
| | | 4+4 | PFD9067L0050012 | PFD9067L0050018 |
| | | 4+4+2 | PFD9067L0050014 | PFD9067L0050019 |
| | | 4+4+4 | PFD9067L0050015 | PFD9067L0050020 |

| Rated revolution ratio | Real revolution ratio | No. of cams and switches | Switches | |
|---------------------------|--------------------------|-----------------------------|---|---|
| | | | PRSL0110XX 1NO+1NC | PRSL0111XX 1NC |
| | | |  |  |
| | | | Code | Code |
| 1:75 | 1:75 | 2 | PFD9067L0075002 | PFD9067L0075009 |
| | | 4 | PFD9067L0075004 | PFD9067L0075003 |
| | | 4+2 | PFD9067L0075005 | PFD9067L0075010 |
| | | 4+4 | PFD9067L0075006 | PFD9067L0075011 |
| | | 4+4+2 | PFD9067L0075007 | PFD9067L0075012 |
| | | 4+4+4 | PFD9067L0075008 | PFD9067L0075013 |
| 1:100 | 1:100 | 2 | PFD9067L0100013 | PFD9067L0100020 |
| | | 4 | PFD9067L0100015 | PFD9067L0100021 |
| | | 4+2 | PFD9067L0100016 | PFD9067L0100022 |
| | | 4+4 | PFD9067L0100017 | PFD9067L0100023 |
| | | 4+4+2 | PFD9067L0100018 | PFD9067L0100024 |
| | | 4+4+4 | PFD9067L0100019 | PFD9067L0100025 |
| 1:150 | 1:150 | 2 | PFD9067L0150007 | PFD9067L0150012 |
| | | 4 | PFD9067L0150005 | PFD9067L0150013 |
| | | 4+2 | PFD9067L0150008 | PFD9067L0150014 |
| | | 4+4 | PFD9067L0150009 | PFD9067L0150015 |
| | | 4+4+2 | PFD9067L0150010 | PFD9067L0150016 |
| | | 4+4+4 | PFD9067L0150011 | PFD9067L0150017 |
| 1:200 | 1:200 | 2 | PFD9067L0200004 | PFD9067L0200009 |
| | | 4 | PFD9067L0200005 | PFD9067L0200010 |
| | | 4+2 | PFD9067L0200006 | PFD9067L0200011 |
| | | 4+4 | PFD9067L0200002 | PFD9067L0200012 |
| | | 4+4+2 | PFD9067L0200007 | PFD9067L0200013 |
| | | 4+4+4 | PFD9067L0200008 | PFD9067L0200014 |
| 1:250 | 1:250 | 2 | PFD9067L0250012 | PFD9067L0250016 |
| | | 4 | PFD9067L0250013 | PFD9067L0250010 |
| | | 4+2 | PFD9067L0250009 | PFD9067L0250017 |
| | | 4+4 | PFD9067L0250001 | PFD9067L0250028 |
| | | 4+4+2 | PFD9067L0250014 | PFD9067L0250019 |
| | | 4+4+4 | PFD9067L0250015 | PFD9067L0250011 |
| 1:300 | 1:300 | 2 | PFD9067L0300004 | PFD9067L0300010 |
| | | 4 | PFD9067L0300005 | PFD9067L0300011 |
| | | 4+2 | PFD9067L0300006 | PFD9067L0300012 |
| | | 4+4 | PFD9067L0300007 | PFD9067L0300013 |
| | | 4+4+2 | PFD9067L0300008 | PFD9067L0300014 |
| | | 4+4+4 | PFD9067L0300009 | PFD9067L0300015 |
| 1:450 | 1:450 | 2 | PFD9067L0450001 | PFD9067L0450008 |
| | | 4 | PFD9067L0450003 | PFD9067L0450002 |
| | | 4+2 | PFD9067L0450004 | PFD9067L0450009 |
| | | 4+4 | PFD9067L0450005 | PFD9067L0450010 |
| | | 4+4+2 | PFD9067L0450006 | PFD9067L0450011 |
| | | 4+4+4 | PFD9067L0450007 | PFD9067L0450012 |



ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Standard cam sets", "Potentiometers and encoders" and "Accessories".







COMPONENTS

Standard cam sets







| Ref. | Drawing | No. and type of cams | No. and type of switches | Code |
|------|---|----------------------|--------------------------|----------|
| A7 |  | 2 cams A | 2 PRSL0110XX switches | FCL20001 |
| | | 2 cams A | 2 PRSL0111XX switches | FCL20002 |
| | | Cams A+C | 2 PRSL0110XX switches | FCL20003 |
| | | Cams A+C | 2 PRSL0111XX switches | FCL20004 |
| | | 2 cams C | 2 PRSL0110XX switches | FCL20005 |
| | | 2 cams C | 2 PRSL0111XX switches | FCL20006 |
| |  | Cams D+D+B+F | 4 PRSL0110XX switches | FCL40001 |
| | | Cams D+D+B+F | 4 PRSL0111XX switches | FCL40002 |
| | | 4 cams A | 4 PRSL0110XX switches | FCL40003 |
| | | 4 cams A | 4 PRSL0111XX switches | FCL40004 |
| | | Cams A+A+C+C | 4 PRSL0110XX switches | FCL40005 |
| | | Cams A+A+C+C | 4 PRSL0111XX switches | FCL40006 |
| | | 4 cams C | 4 PRSL0110XX switches | FCL40007 |
| | | 4 cams C | 4 PRSL0111XX switches | FCL40008 |
| | | Cams C+C+C+E | 4 PRSL0110XX switches | FCL40009 |
| | | Cams C+C+C+E | 4 PRSL0111XX switches | FCL40010 |
| | | Cams A+A+E+E | 4 PRSL0110XX switches | FCL40011 |
| | | Cams A+A+E+E | 4 PRSL0111XX switches | FCL40012 |

Other sets with 2/3/4/5 or 6 cams/switches are available on request.

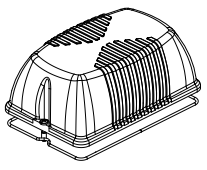

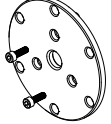


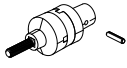
Cam reference chart

| Cam | | | Cam code for PRSL0110XX switch | Switching angle with PRSL0110XX | Cam code for PRSL0111XX switch | Switching angle with PRSL0111XX |
|-----|---|-------------|--------------------------------|---------------------------------|--------------------------------|---------------------------------|
| A |  | 1 point | PRSL7194PI | 21.5° ±0.5° | PRSL7194PI | 23.0° ±0.5° |
| B |  | 10 points | PRSL7193PI | 21.5° ±0.5° | PRSL7193PI | 23.0° ±0.5° |
| C |  | 60° sector | PRSL7195PI | 82.0° ±0.5° | PRSL7195PI | 86.0° ±0.5° |
| D |  | 72° sector | PRSL7196PI | 94.0° ±0.5° | PRSL7196PI | 97.5° ±0.5° |
| E |  | 180° sector | PRSL7191PI | 204.5° ±0.5° | PRSL7191PI | 203.0° ±0.5° |
| F |  | 305° sector | PRSL7192PI | 328.5° ±0.5° | PRSL7192PI | 327.0° ±0.5° |



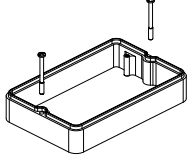
Potentiometers and encoders

| Ref. | Drawing | Description | Code |
|------|---|--|---|
| A2 |  | Support for encoder | PA030000 |
| A3 |  | Support for potentiometer | PA020000 |
| A4 |  | Encoder 36 pulses/rev. - with support | PA030001 |
| | | Encoder 150 pulses/rev. - with support | PA030002 |
| A5 |  | Potentiometer 10 kΩ - with support | PA020001 |
| | | Potentiometer 10 kΩ mechanical stop - with support | PA020002 |
| | | Potentiometer 10 kΩ ±10% 4 pins- with support | PA020003 |
| | | Potentiometer 10 kΩ ±10% 3 pins - with support | PA020004 |
| | | Potentiometer 5 kΩ ±10% - with support | PA020005 |
| | | Potentiometer 4.7 kΩ - with support | PA020006 |
| | | Potentiometer 10 kΩ - with support | PA020007 |
| | | Potentiometer 2.2 kΩ - with support | PA020008 |
| A6 |  | Absolute encoder Yankee - current output | PA01AA01 |
| | | Absolute encoder Yankee - voltage output | PA01AB01 |
| | | Absolute encoder Yankee - PWM output | PA01AC01 |
| A17 |  | Absolute encoder Egon 36-AL | F19XXXXXXXXX (Use form on page 21 to generate codes) |

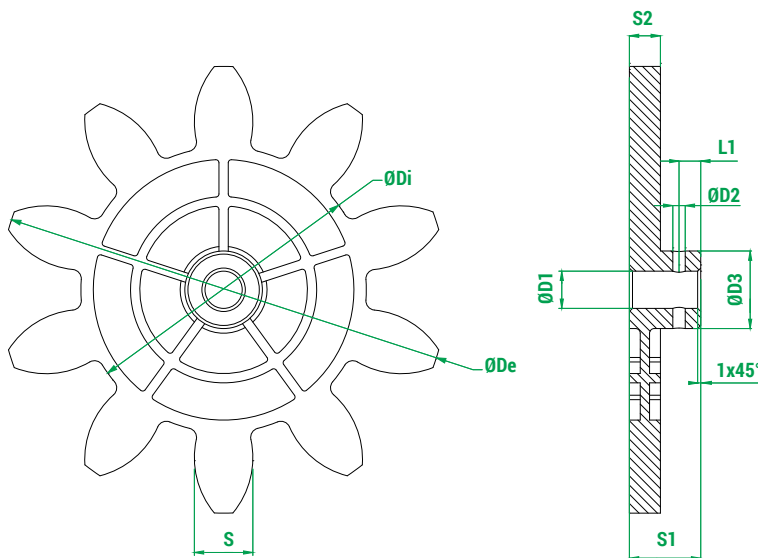
Accessories

| Ref. | Drawing | Description | Code |
|------|---|---|------------------------|
| A1 |  | Cover with gasket, screws and earth cable | PA090018 |
| A9 |  | Cable gland M20x1.5 | PRPS1075PE |
| A10 |  | Flange with screws | PRTR1300PE |
| A11 |  | Flange support | PRT03018PE |
| A12 |  | Pinion gear | See pinion gear tables |
| A13 |  | Coupling with pin | PRSL0981PI |

Accessories

| Ref. | Drawing | Description | Code |
|------|---|--|------------|
| A14 |  | Male coupling with pin | PRSL0919PI |
| A15 |  | Female coupling with pin | PRSL0920PI |
| A16 |  | Cover rise with gasket, screws and earth cable | PRSL0707PI |

Moulded pinion gears



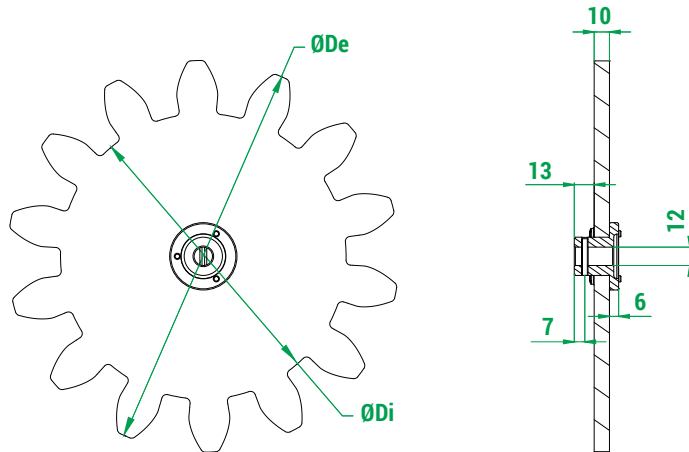
Legend

| | |
|-------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | S | Alpha | D1 | D2 | D3 | S1 | S2 | L1 |
|------------|----|-------|--------|--------|--------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|
| PRSL0915PI | 8 | 20.00 | 160.00 | 200.00 | 113.20 | 20.00 | 23.40 | 31.41 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0912PI | 10 | 12.00 | 120.00 | 144.00 | 92.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 25.00 | 23.00 | 10.00 | 7.00 |
| PRSL0913PI | 10 | 14.00 | 140.00 | 168.00 | 107.24 | 14.00 | 16.38 | 21.99 | 20.00 | 12.00 | 4.00 | 24.60 | 23.00 | 10.00 | 7.00 |
| PRSL0914PI | 10 | 16.00 | 160.00 | 192.00 | 122.67 | 16.00 | 18.67 | 25.13 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |
| PRSL0917PI | 11 | 6.00 | 66.00 | 78.00 | 51.96 | 6.00 | 7.02 | 9.42 | 20.00 | 12.00 | 4.00 | 19.00 | 23.00 | 8.00 | 7.00 |
| PRSL0916PI | 12 | 5.00 | 60.00 | 70.00 | 48.30 | 5.00 | 5.83 | 7.85 | 20.00 | 12.00 | 4.00 | 20.00 | 23.00 | 8.00 | 7.00 |
| PRSL0918PI | 12 | 8.00 | 96.00 | 112.00 | 77.28 | 8.00 | 9.36 | 12.56 | 20.00 | 12.00 | 4.00 | 21.50 | 23.50 | 10.00 | 7.00 |
| PRSL0911PI | 12 | 10.00 | 120.00 | 140.00 | 96.67 | 10.00 | 11.67 | 15.71 | 20.00 | 12.00 | 4.00 | 25.00 | 23.50 | 10.00 | 7.00 |
| PRSL0944PI | 12 | 12.00 | 144.00 | 168.00 | 116.00 | 12.00 | 14.00 | 18.85 | 20.00 | 12.00 | 4.00 | 24.00 | 23.00 | 10.00 | 7.00 |

Measuring unit: mm.

Waterjet cut pinion gears



Legend

| | |
|-------|--------------------|
| Z | Number of teeth |
| M | Module |
| Dp | Primitive diameter |
| De | External diameter |
| Di | Internal diameter |
| a | Addendum |
| d | Dedendum |
| Alpha | Pressure angle |

| Code | Z | M | Dp | De | Di | a | d | Alpha |
|------------|----|-------|--------|--------|--------|-------|-------|-------|
| PRSL0857PI | 8 | 18.00 | 144.00 | 180.00 | 102.00 | 18.00 | 21.00 | 20.00 |
| PRSL0855PI | 8 | 24.00 | 192.00 | 240.00 | 136.00 | 24.00 | 28.00 | 20.00 |
| PRSL0992PI | 9 | 10.00 | 90.00 | 110.00 | 66.67 | 10.00 | 11.67 | 20.00 |
| PRSL0879PI | 9 | 16.00 | 144.00 | 176.00 | 106.67 | 16.00 | 18.67 | 20.00 |
| PRSL0854PI | 9 | 18.00 | 162.00 | 198.00 | 120.00 | 18.00 | 21.00 | 20.00 |
| PRSL0871PI | 9 | 20.00 | 180.00 | 220.00 | 133.33 | 20.00 | 23.33 | 20.00 |
| PRSL0849PI | 9 | 24.00 | 216.00 | 264.00 | 160.00 | 24.00 | 28.00 | 20.00 |
| PRSL0846PI | 10 | 10.00 | 100.00 | 120.00 | 76.67 | 10.00 | 11.67 | 20.00 |
| PRSL0993PI | 10 | 18.00 | 180.00 | 216.00 | 138.00 | 18.00 | 21.00 | 20.00 |
| PRSL0970PI | 10 | 22.00 | 220.00 | 264.00 | 168.52 | 22.00 | 25.74 | 20.00 |
| PRSL0856PI | 10 | 24.00 | 240.00 | 288.00 | 184.00 | 24.00 | 28.00 | 20.00 |
| PRSL0861PI | 11 | 12.00 | 132.00 | 156.00 | 104.00 | 12.00 | 14.00 | 20.00 |
| PRSL0998PI | 11 | 18.00 | 198.00 | 234.00 | 156.00 | 18.00 | 21.00 | 20.00 |
| PRSL0997PI | 11 | 20.00 | 220.00 | 260.00 | 173.36 | 20.00 | 23.32 | 20.00 |
| PRSL0859PI | 11 | 24.00 | 264.00 | 312.00 | 204.00 | 24.00 | 30.00 | 20.00 |
| PRSL0863PI | 12 | 14.00 | 168.00 | 196.00 | 133.00 | 14.00 | 17.50 | 20.00 |
| PRSL0897PI | 12 | 16.00 | 192.00 | 224.00 | 154.67 | 16.00 | 18.67 | 20.00 |
| PRSL0972PI | 12 | 18.00 | 216.00 | 252.00 | 173.88 | 18.00 | 21.06 | 20.00 |
| PRSL0845PI | 12 | 20.00 | 240.00 | 280.00 | 193.34 | 20.00 | 23.32 | 20.00 |
| PRSL0878PI | 12 | 24.00 | 288.00 | 336.00 | 232.00 | 24.00 | 28.00 | 20.00 |
| PRSL0860PI | 13 | 6.00 | 78.00 | 90.00 | 63.00 | 6.00 | 7.50 | 20.00 |
| PRSL0853PI | 13 | 12.00 | 156.00 | 178.59 | 126.00 | 11.29 | 15.00 | 20.00 |
| PRSL0898PI | 13 | 16.00 | 208.00 | 240.00 | 170.67 | 16.00 | 18.66 | 20.00 |
| PRSL0862PI | 14 | 10.00 | 140.00 | 169.00 | 125.00 | 15.00 | 7.50 | 20.00 |
| PRSL0896PI | 14 | 16.00 | 224.00 | 256.00 | 186.67 | 16.00 | 18.67 | 20.00 |
| PRSL0999PI | 14 | 18.00 | 252.00 | 288.00 | 210.00 | 18.00 | 21.00 | 20.00 |
| PRSL0848PI | 14 | 20.00 | 280.00 | 320.00 | 233.33 | 20.00 | 23.33 | 20.00 |
| PRSL0858PI | 15 | 18.00 | 270.00 | 306.00 | 228.00 | 18.00 | 21.00 | 20.00 |
| PRSL0847PI | 16 | 20.00 | 320.00 | 360.00 | 273.33 | 20.00 | 23.33 | 20.00 |
| PRSL0973PI | 17 | 10.00 | 170.00 | 190.00 | 145.00 | 10.00 | 12.50 | 22.89 |
| PRSL0974PI | 17 | 14.00 | 238.00 | 266.00 | 203.00 | 14.00 | 17.50 | 22.89 |
| PRSL0851PI | 20 | 6.00 | 120.00 | 132.00 | 105.00 | 6.00 | 7.50 | 22.89 |
| PRSL0844PI | 25 | 1.00 | 25.00 | 27.00 | 22.50 | 1.00 | 1.25 | 22.89 |

Measuring unit: mm.

TOP - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

(See next pages for list of components and legends)

- 1 Version:** tick the required version.
- 2 SIL 1 certified:** tick the box if you require SIL 1 certified units.
- 3 Revolution ratio:** write the required revolution ratio for each output.
- 4 Standard cam sets:** write the code of the cam set required for each output, according to the legend.
- 5 Customized cam sets:** for non standard cam sets, fill in the scheme choosing the cams and the switches required, according to the legend. It is possible to assemble sets with 2, 3, 4, 5 or 6 cams/switches.
Customized cams are available on request.
- 6 Potentiometers, encoders, Egon 36-AL, Yankee:** write the code of the potentiometer, encoder, Egon 36-AL or Yankee required, according to the legend.
ATTENTION: potentiometer PA020009 can be mounted only alone, i.e. with no sets of cams.
Please refer to the table on the next pages for all other possible configurations.
To generate Egon 36-AL codes, use the form on the next pages.
- 7 Shaft:** tick the type of shaft required.
Customized shafts are available on request.
- 8 Coupling, flange, pinion gear:** tick the appropriate box when coupling, flange or pinion gear are required.
When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.
When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.

Version **1**

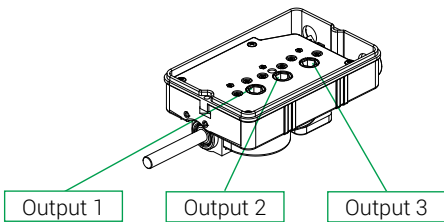
- Version **CE EAC**
- Version **cULus CE EAC**
- Version with anti-moisture plug **CE EAC**

ATTENTION: Top XL with cover rise are not cULus certified.

For ambient temperature -40° C / +100° C

SIL 1 certified **2**

ATTENTION: Top XL with cover rise are not SIL1 certified.



Revolution ratio **3**

| Output 1 | | | Output 2 | | | Output 3 | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1:1 | | | 1:50 | | | 1:300 | | |
| <input type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | |
| 1:5 | | | 1:75 | | | 1:450 | | |
| <input type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | |
| 1:10 | | | 1:100 | | | 1: <input type="text"/> | | |
| <input type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | |
| 1:15 | | | 1:150 | | | 1: <input type="text"/> | | |
| <input type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | |
| 1:20 | | | 1:200 | | | 1: <input type="text"/> | | |
| <input type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | |
| 1:25 | | | 1:250 | | | | | |
| <input type="checkbox"/> | | | <input type="checkbox"/> | | | | | |

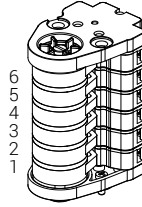
Standard cam sets **4**

Cam set code _____ Output 1

_____ Output 2

_____ Output 3

Customized cam sets **5**



| Output 1 | | Switch code | |
|----------|-------|-------------|-------|
| Cam code | | | |
| 6 | _____ | _____ | _____ |
| 5 | _____ | _____ | _____ |
| 4 | _____ | _____ | _____ |
| 3 | _____ | _____ | _____ |
| 2 | _____ | _____ | _____ |
| 1 | _____ | _____ | _____ |

| Output 2 | | Switch code | |
|----------|-------|-------------|-------|
| Cam code | | | |
| 6 | _____ | _____ | _____ |
| 5 | _____ | _____ | _____ |
| 4 | _____ | _____ | _____ |
| 3 | _____ | _____ | _____ |
| 2 | _____ | _____ | _____ |
| 1 | _____ | _____ | _____ |

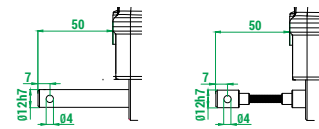
| Output 3 | | Switch code | |
|----------|-------|-------------|-------|
| Cam code | | | |
| 6 | _____ | _____ | _____ |
| 5 | _____ | _____ | _____ |
| 4 | _____ | _____ | _____ |
| 3 | _____ | _____ | _____ |
| 2 | _____ | _____ | _____ |
| 1 | _____ | _____ | _____ |

Potentiometers, encoders, Egon 36-AL, Yankee **6**

| | Output 1 | Output 2 | Output 3 |
|------|----------|----------|----------|
| Code | _____ | _____ | _____ |

Standard shaft **7**

Flexible shaft



Male coupling

Coupling **8**

Female coupling

Flange

Pinion gear

Pinion gear code _____

Customized pinion gear

No. of teeth _____

Module _____

Primitive diameter _____

TOP - REQUEST FORM FOR LIMIT SWITCH WITH "SPEED CONTROL SYSTEM"

Instructions

(See next pages for list of components and legends)

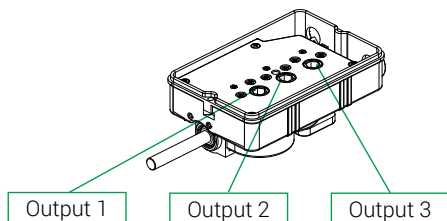
- 1 Power supply:** tick the required power supply value.
- 2 Version:** tick the required version.
- 3 Revolution ratio:** write the required revolution ratio for output 3.
- Standard cam sets:** write the code of the cam set required for output 3, according to the legend.
- 4 Customized cam sets:** for non standard cam sets, fill in the scheme choosing the cams and the switches required, according to the legend. It is possible to assemble sets with 2, 3, 4, 5 or 6 cams/switches.
Customized cams are available on request.
- 6 Potentiometers, encoders, Egon 36-AL, Yankee:** write the code of the potentiometer, encoder, Egon 36-AL or Yankee required, according to the legend.
ATTENTION: potentiometer PA020009 can be mounted only alone, i.e. with no sets of cams.
Please refer to the table on the next pages for all other possible configurations.
To generate Egon 36-AL codes, use the form on the next pages.
- 7 Shaft:** tick the type of shaft required.
Customized shafts are available on request.
- 8 Coupling, flange, pinion gear:** tick the appropriate box when coupling, flange or pinion gear are required.
When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.
When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.

Power supply **1**

- 24 Vdc
 48 Vdc

Version **2**

- Standard
 Safety



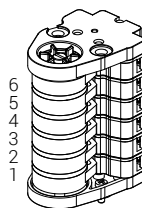
Revolution ratio **3**

| Output 1 | Output 2 | Output 3 | | |
|----------|----------|-------------------------------|--------------------------------|--|
| 1:1 | Empty | <input type="checkbox"/> 1:1 | <input type="checkbox"/> 1:25 | <input type="checkbox"/> 1:200 |
| | | <input type="checkbox"/> 1:5 | <input type="checkbox"/> 1:50 | <input type="checkbox"/> 1:250 |
| | | <input type="checkbox"/> 1:10 | <input type="checkbox"/> 1:70 | <input type="checkbox"/> 1:300 |
| | | <input type="checkbox"/> 1:15 | <input type="checkbox"/> 1:100 | <input type="checkbox"/> 1:450 |
| | | <input type="checkbox"/> 1:20 | <input type="checkbox"/> 1:150 | <input type="checkbox"/> 1: <input type="text"/> |

Standard cam sets **4**

Cam set code _____ Output 3

Customized cam sets **5**



| Output 3 | Cam code | Switch code |
|----------|----------|-------------|
| 6 | _____ | _____ |
| 5 | _____ | _____ |
| 4 | _____ | _____ |
| 3 | _____ | _____ |
| 2 | _____ | _____ |
| 1 | _____ | _____ |

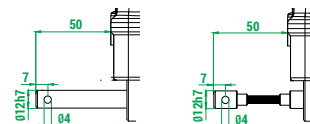
Potentiometers, encoders, Egon 36-AL, Yankee **6**

Output 3

Code _____

Standard shaft **7**

Flexible shaft



Male coupling

Coupling **8**

Female coupling

Flange

Pinion gear

Pinion gear code _____

Customized pinion gear

No. of teeth _____

Module _____

Primitive diameter _____

Remarks

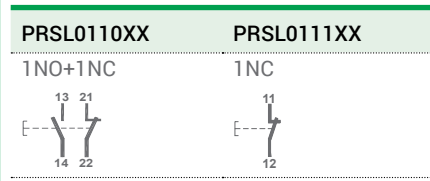
4 Legend - Standard cam sets

| No. & type of switches | No. & type of cams | Code |
|------------------------|--------------------|----------|
| 2 x PRSL0110XX | 2 cams A | FCL20001 |
| | Cams A+C | FCL20003 |
| 4 x PRSL0110XX | 2 cams C | FCL20005 |
| | Cams D+D+B+F | FCL40001 |
| | 4 cams A | FCL40003 |
| | Cams A+A+C+C | FCL40005 |
| | 4 cams C | FCL40007 |
| | Cams C+C+C+E | FCL40009 |
| 2 x PRSL0111XX | Cams A+A+E+E | FCL40011 |
| | 2 cams A | FCL20002 |
| | Cams A+C | FCL20004 |
| 4 x PRSL0111XX | 2 cams C | FCL20006 |
| | Cams D+D+B+F | FCL40002 |
| | 4 cams A | FCL40004 |
| | Cams A+A+C+C | FCL40006 |
| | 4 cams C | FCL40008 |
| | Cams C+C+C+E | FCL40010 |
| | Cams A+A+E+E | FCL40012 |

6 Legend - Potentiometers, encoders and Yankee

| Description | Code |
|--|----------|
| Potentiometer 10 kΩ - with support | PA020001 |
| Potentiometer 10 kΩ mechanical stop - with support | PA020002 |
| Potentiometer 10 kΩ ±10% 4 pins - with support | PA020003 |
| Potentiometer 10 kΩ ±10% 3 pins - with support | PA020004 |
| Potentiometer 5 kΩ ±10% - with support | PA020005 |
| Potentiometer 4.7 kΩ - with support | PA020006 |
| Potentiometer 10 kΩ - with support | PA020007 |
| Potentiometer 2.2 kΩ - with support | PA020008 |
| Potentiometer 2KΩ - with support | PA020009 |
| Encoder 36 pulses/rev. - with support | PA030001 |
| Encoder 150 pulses/rev. - with support | PA030002 |
| Yankee - current output | PA01AA01 |
| Yankee - voltage output | PA01AB01 |
| Yankee - PWM output | PA01AC01 |

5 Legend - Switches



5 Legend - Cams

| Cam | Cam code for PRSL0110XX switch | Switching angle with PRSL0110XX | Cam code for PRSL0111XX switch | Switching angle with PRSL0111XX |
|-----|--------------------------------|---------------------------------|--------------------------------|---------------------------------|
| A | PRSL7194PI | 21.5° ±0.5° | PRSL7194PI | 23.0° ±0.5° |
| B | PRSL7193PI | 21.5° ±0.5° | PRSL7193PI | 23.0° ±0.5° |
| C | PRSL7195PI | 82.0° ±0.5° | PRSL7195PI | 86.0° ±0.5° |
| D | PRSL7196PI | 94.0° ±0.5° | PRSL7196PI | 97.5° ±0.5° |
| E | PRSL7191PI | 204.5° ±0.5° | PRSL7191PI | 203.0° ±0.5° |
| F | PRSL7192PI | 328.5° ±0.5° | PRSL7192PI | 327.0° ±0.5° |

6 Configuration table

The following table shows possible configurations of Top and Top XL.

When it is not possible to mount a set of cams together with a potentiometer/encoder, the table shows «Not available.»

When the standard cover PA090018 is not high enough to hold the elements mounted inside the limit switch, it is possible to use the cover rise PRSL0707PI (the table shows «Top XL»).

In all other cases it is possible to mount the sets of cams and potentiometer/encoder with the standard cover PA090018 (the table shows «Top»).

| | Set of cams with 2 switches | Set of cams with 3 switches | Set of cams with 4 switches | Set of cams with 5 switches | Set of cams with 6 switches |
|---------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Set of cams only | Top | Top | Top | Top | Top XL |
| Set of cams + Egon 36-AL | Top | Top XL | Top XL | Not available | Not available |
| Set of cams + Yankee1 | Top | Top | Top | Top XL | Top XL |
| Set of cams + PA020001 | Top | Top XL | Top XL | Not available | Not available |
| Set of cams + PA020002 | Top | Top XL | Top XL | Not available | Not available |
| Set of cams + PA020003 | Top | Top XL | Top XL | Top XL | Not available |
| Set of cams + PA020004 | Top | Top XL | Top XL | Top XL | Not available |
| Set of cams + PA020005 | Top | Top XL | Top XL | Top XL | Not available |
| Set of cams + PA020006 | Top | Top XL | Top XL | Not available | Not available |
| Set of cams + PA020007 | Top | Top XL | Top XL | Not available | Not available |
| Set of cams + PA020008 | Top | Top XL | Top XL | Not available | Not available |
| Set of cams + PA030001 | Top | Top XL | Top XL | Top XL | Not available |
| Set of cams + PA030002 | Top | Top XL | Top XL | Top XL | Not available |

6 Configuration form for Egon 36-AL

To generate the encoder code, fill in the boxes with the characters corresponding to the specifications required, as shown in the example. Enter the code in the space provided at point 6 (Potentiometers, encoders, Egon 36-AL, Yankee) of the «Request form for non standard limit switch».

F19 R A 1 1 0 X X X

F19 [] A [] [] 0 X X X

S = normal
R = redundant

A = analog

Output 1
1 = 4...20 mA
2 = 1...5 V
3 = 2...10 V

Output 2
(only for EGON 36-AL redundant version)*
1 = 4...20 mA
2 = 1...5 V
3 = 2...10 V

* Fill in "0" for Egon36-AL normal version.
ATTENTION: if required, Output 2 must be the same as Output 1.

Characters for sequential numbers



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