

#### Main characteristics

- Optimised mechanical structure
- Strokes from 50 to 4000mm
- Sliding or floating magnetic cursor
- Availability of several analogue outputs (voltage or current) for direct position and speed measurement or reverse measurement (only position)
- Single or double cursors models availability
- Power supply 24Vdc  $\pm 20\%$
- Resistance to vibration (DIN IEC68T2/6 15g)
- IP67 protection
- Work temperature:  $-30...+85^{\circ}\text{C}$
- Electromagnetic compatibility EMC 2014/30/EU
- Compliant to the directive RoHS 2011/65/EU

Contactless linear position transducer with HYPERWAVE magnetostriuctive technology.

The absence of electrical contact on the cursor eliminates all wear and guarantees almost unlimited life. High performance in terms of environmental IP protection and EMC immunity.

High accuracy of the measurement with reference to the non linearity, repeatability and hysteresis. High resistance to vibrations, mechanical shocks for use in a harsh industrial environment.



This symbol present on the product label stands for further indications on product manual. For correct and safe installation, follow the instructions and observe the warnings contained in this manual. No hazards shall arise by any reasonably foreseeable misuse in a way not intended, and not described in this manual.

The complete manual is available for download from the website [www.gefran.com](http://www.gefran.com)  
UL file number E216851

| TECHNICAL DATA                        |  |
|---------------------------------------|--|
| Model                                 | From 50 to 4000 mm                         |
| Measurement taken                     | Displacement / Speed                       |
| Position read sampling time (typical) | From 0,5 ms to 3 ms (depending on stroke)  |
| Speed measurement range               | min 0 .. 0,1 m/s<br>max 0 .. 10 m/s        |
| Accuracy speed                        | < 2% (in all F.S. )                        |
| Shock test DIN IEC68T2-27             | 100g - 11ms - single shock                 |
| Vibrations DIN IEC68T2-6              | 15g / 10...2000Hz                          |
| Displacement speed                    | $\leq 10$ m/s                              |
| Max. acceleration                     | $\leq 100$ m/s <sup>2</sup> displacement   |
| Resolution                            | 16 bit<br>(max electrical noise 5 mVpp)    |
| Cursor (see note)                     | Sliding cursor<br>Floating separate cursor |
| Working temperature (*)               | $-30...+85^{\circ}\text{C}$                |
| Storage temperature                   | $-40...+100^{\circ}\text{C}$               |
| Coefficient of temperature            | 0.005% F.S. / $^{\circ}\text{C}$           |
| Protection                            | IP67                                       |

(\*) See possible restrictions in the paragraphs "Electrical connections" and "Accessories on request".

#### Note:

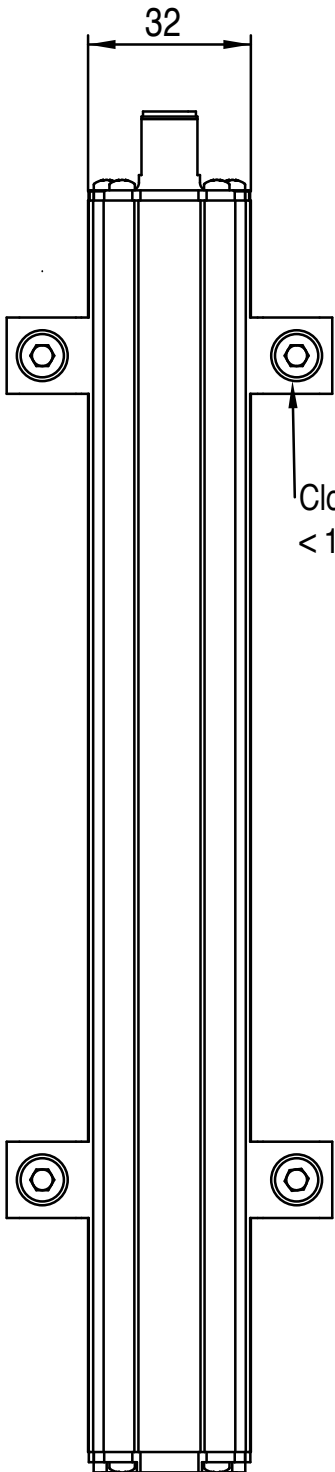
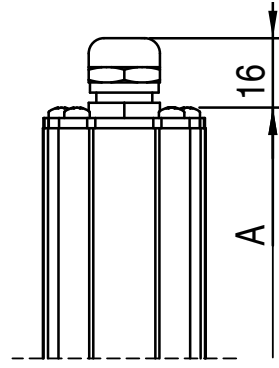
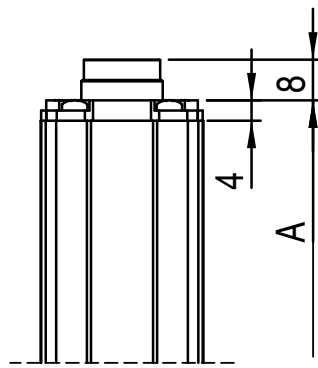
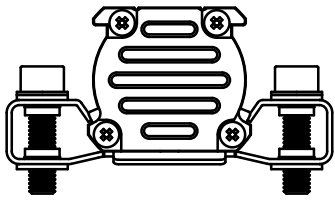
- 1) For strokes > 2500 mt use sliding or floating cursors with max. distance of 4mm
- 2) For multi-cursor versions, the cursors have to work under the same distance and temperature conditions

| ELECTRICAL DATA                           |                   |                                      |
|---|-------------------|--------------------------------------|
| Output signal                             | 0...10V (N/P/Y)   | 4...20mA (E/F/H)<br>0...20mA (B/C/D) |
| Nominal power supply                      | 24 Vdc $\pm 20\%$ | 24 Vdc $\pm 20\%$                    |
| Max. power ripple                         | 1Vpp              | 1Vpp                                 |
| Max. consumption (**)                     | 70mA              | 90mA                                 |
| Max. output load                          | 5k $\Omega$       | < 500 $\Omega$                       |
| Max. output noise                         | < 5mVpp           | < 5mVpp                              |
| Max. output value                         | 12V               | 30mA                                 |
| Alarm output value                        | 10.5V             | 21mA                                 |
| Electrical isolation                      | 500V (*)          | 500V (*)                             |
| Protection against polarity inversion     | Yes               | Yes                                  |
| Protection against overvoltage            | Yes               | Yes                                  |
| Protection against power supply in output | Yes               | Yes                                  |

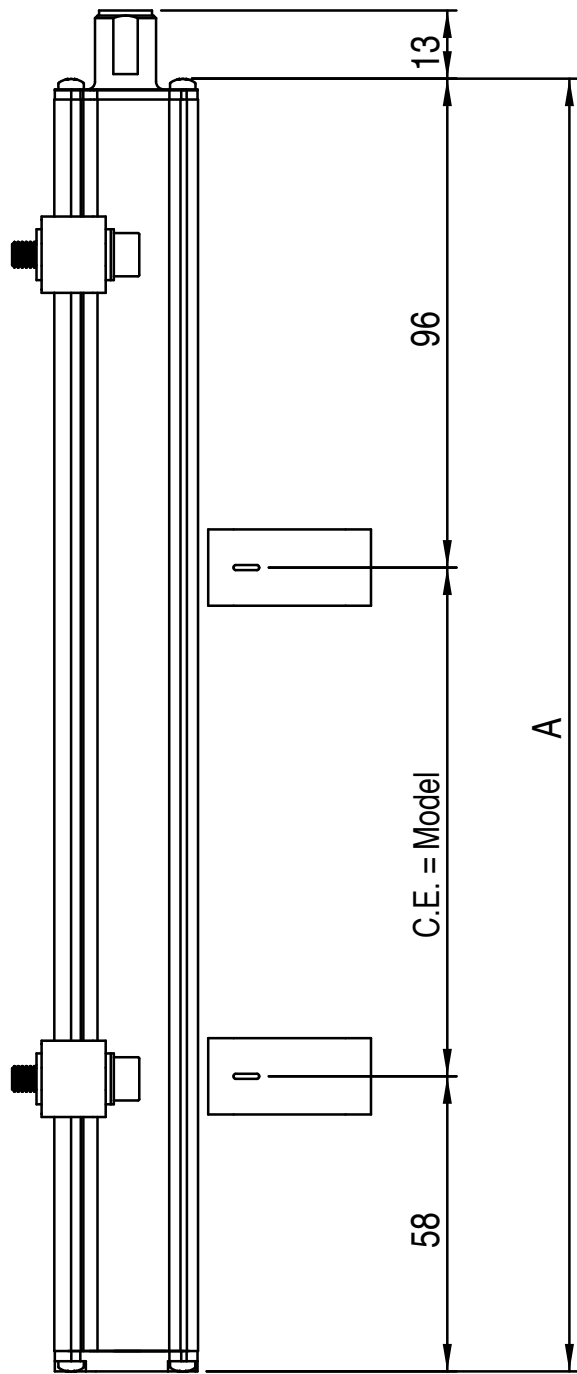
(\*) It includes a 30V 0,4J voltage suppressor

(\*\*) The devices must be supplied with a Class 2 Power Supply (as for NEC) or LPS Power Supply (as for EN 60950). If devices are permanently connected to the machine it's requested an external switch or circuit breaker and external overcurrent protection.

# MECHANICAL DIMENSIONS

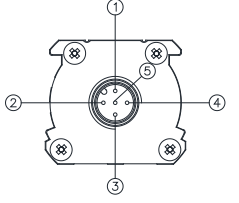
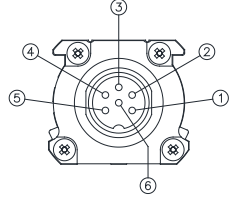
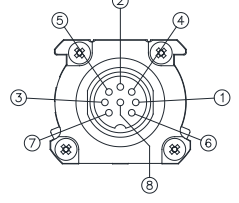
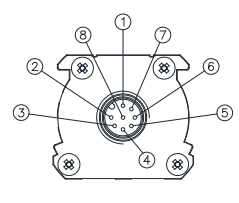
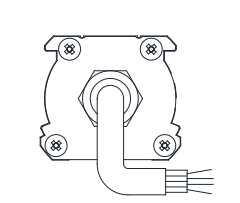


Closing force  
< 1.1 Nm



C.E. = Model

| <b>ELECTRICAL / MECHANICAL DATA</b> |        |   |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------------------------------|--------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>Model</b>                        |        | 50  | 75  | 100 | 130 | 150 | 350 | 360 | 400 | 450 | 500 | 550 | 600  | 650  | 1200 | 1250 | 1300 | 1400 | 2250 | 2500 | 2750 | 3000 | 3250 | 3500 | 3750 | 4000 |
|                                     |        | 175   | 200 | 225 | 250 | 300 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1100 | 1500 | 1750 | 2000 |      |      |      |      |      |      |      |      |      |
| Sampling time                       | ms     | 0,5   |     |     |     |     | 1   |     |     |     |     |     |      | 1,5  |      |      | 2    |      |      | 3    |      |      |      |      |      |      |
| Electrical stroke                   | mm     | <b>Model</b>  |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Independent linearity               | ± %/FS | Typical: $\pm 0,01$ % FS (min $\pm 0,060$ mm) with sliding cursor<br>max: $\leq \pm 0,02$ % FS with floating cursor at a distance between 2 and 5 mm<br>max: $\leq \pm 0,04$ % FS with floating cursor at a distance between 5 and 7 mm |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Max.dimensions (A)                  | mm     | <b>Model + 154</b>  |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Repeatability                       | mm     | <0,01 (limited by the resolution of the output value)   |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Hysteresis                          | mm     | <0,01 (limited by the resolution of the output value)   |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| <b>ELECTRICAL CONNECTIONS</b>   |   |   |  |   |
|---|---|---|--|---|
| OUTPUT WPA-A-A  | OUTPUT WPA-A-B  | OUTPUT WPA-A-C  | OUTPUT WPA-A-H   | OUTPUT WPA-A-F/R  |
|  |  |  |  |  |

| Function   | CONNECTORS |           |              |           | CABLES                   | OPTIONAL CABLES FOR |                     |
|--|------------|-----------|--------------|-----------|--------------------------|---------------------|---------------------|
|  | WPA-A-A    | WPA-A-B   | WPA-A-C(***) | WPA-A-H   | WPA-A-F/R                | WPA-A-A             | WPA-A-H             |
|  | 5 pin M12  | 6 pin M16 | 8 pin M16    | 8 pin M12 | Standard cable           | Pre-assembled 5 pin | Pre-assembled 8 pin |
| <b>Output cursor 1</b> 0...10V<br>4...20mA<br>0...20mA   | 1          | 1         | 5 (1*)       | 5         | Grey                     | Brown               | Green               |
| <b>GND</b><br><b>Output cursor 1</b><br>(0V)   | 2          | 2         | 2            | 1         | Pink                     | White               | Yellow              |
| <b>Inverse output cursor 1</b><br><b>Output cursor 2</b><br><b>Output speed</b><br>0...10V<br>4...20mA<br>0...20mA | 3          | 3         | 3            | 3         | Yellow                   | Blue                | Pink                |
| <b>GND</b><br><b>Output cursor 1</b><br><b>Output cursor 2</b><br><b>Output speed</b><br>(0V)                      | 2          | 4         | 6            | 2         | Pink                     | White               | Grey                |
| <b>Power supply+</b>   | 5          | 5         | 7            | 7         | Brown                    | Grey                | Brown               |
| <b>Power supply GND</b>  | 4          | 6         | 8            | 6         | White                    | Black               | Blue                |
| <b>n.c.</b>  | -          | -         | 4            | 4         | -                        | -                   | Red                 |
| <b>n.c.</b>  | -          | -         | 1(5*)        | 8         | -                        | -                   | White               |
| <b>Temperature ratings</b>   | -25+80 °C  | -30+85 °C | -30+85 °C    | -30+85 °C | -30+80 °C /<br>-30+75 °C | -25+80 °C           | -25+80 °C           |

(\*) = for version 4...20mA / 0...20mA

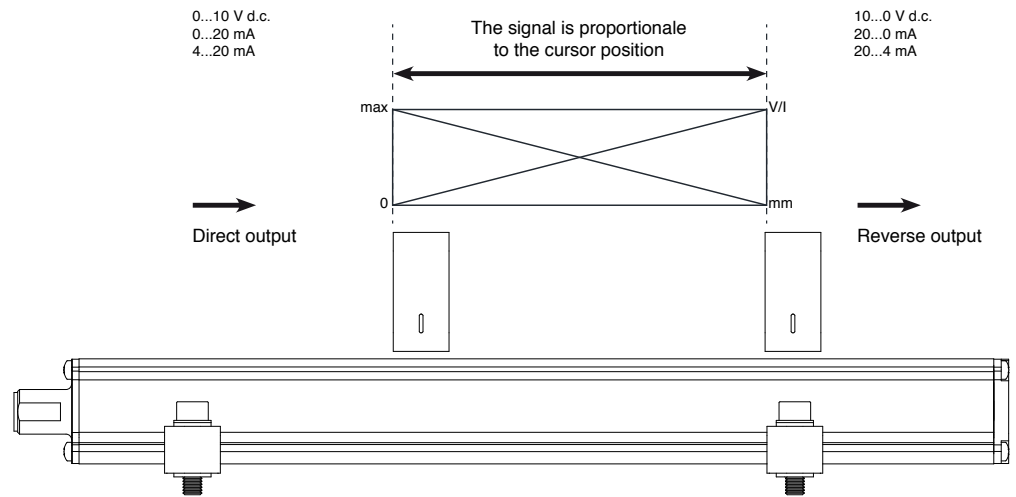
(\*\*) The operating temperature ranges, except where expressly indicated, are also applicable in the UL scope.

The transducer case must be grounded with the cable sheathing on the control system side only.

(\*\*\*) Not available with UL certification.

## ANALOG OUTPUT

The WPA-A magnetostrictive transducers provide a direct and reverse voltage or current analogue output proportional to the magnetic cursor's position. Since the output is direct, no signal electronic processing is required if interfaced with controllers or measurement instruments.



## ORDER CODE

Position transducer

W P A A [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Analog output **A**

### Connector

M12 5-pin connector output **A**

*Available on request*

DIN45322 6-pin connector output **B**

DIN45326 8-pin connector output **C**

M12 8-pin connector output **H**

PVC cable output **F**

PUR cable output high flexibility **R**

### Model

### Output

|                             |                               |          |
|-----------------------------|-------------------------------|----------|
| 0...10Vdc                   | 1 cursor                      | <b>N</b> |
| 0...10Vdc                   | 1 cursor, position and speed  | <b>P</b> |
| 0...10Vdc                   | 2 cursors (min. stroke 360mm) | <b>Y</b> |
| 4...20mA                    | 1 cursor                      | <b>E</b> |
| 4...20mA                    | 1 cursor, position and speed  | <b>F</b> |
| 4...20mA                    | 2 cursors (min. stroke 360mm) | <b>H</b> |
| <i>Available on request</i> |                               |          |
| 0...20mA                    | 1 cursor                      | <b>B</b> |
| 0...20mA                    | 1 cursor, position and speed  | <b>C</b> |
| 0...20mA                    | 2 cursors (min. stroke 360mm) | <b>D</b> |
| 0...+5Vdc                   | 1 cursor                      | <b>K</b> |

0 0 0 0 X 0 0 0 X 0 0 X 0 X X

### Output of speed

*Only for analogic output option C, F, P*

Maximum measurable speed:  
0.1...10.0 m/s

**00.0** Function not required

| 00                           | A, B, C, H Outputs |
|------------------------------|--------------------|
| <i>Output F cable length</i> |                    |
| 00                           | 1 m                |
| 05                           | 5 m                |
| 10                           | 10 m               |
| 15                           | 15 m               |

Mechanical and/or electrical characteristics differing from those in the standard version may be arranged on request.

Es.: WPA-A-B-0400-N, PKIT090, PCUR210

Transducer model WPA, analog output, 6-pin connector, model 400, 0...10Vdc output, PKIT090 brackets, PCUR210 standard cursor.

## CURSORS ON REQUEST

PCUR202



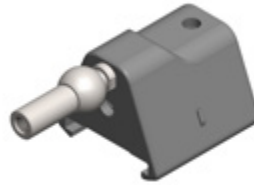
Floating Cursor

PCUR210



Sliding cursor,  
axial joint low

PCUR211

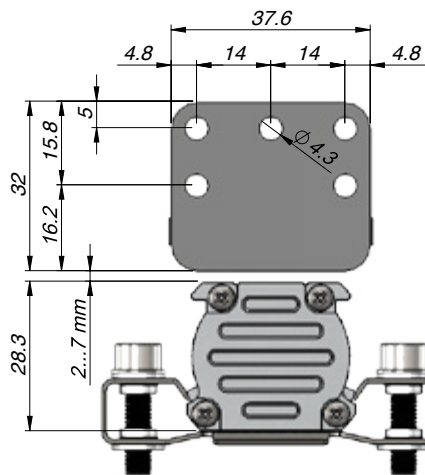
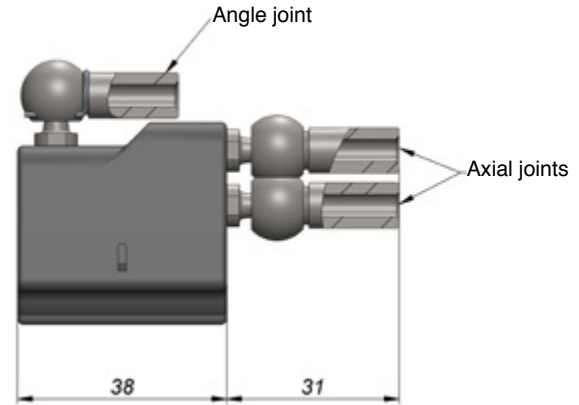
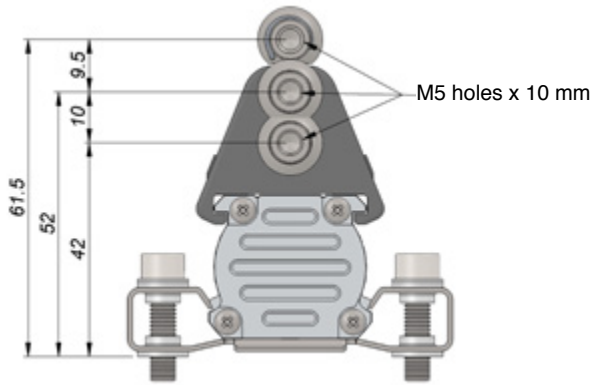


Sliding cursor,  
axial joint high

PCUR212



Sliding cursor,  
axial joint angle

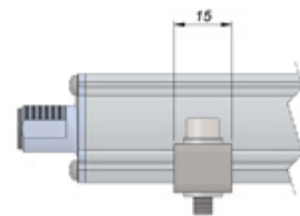


## BRACKETS ON REQUEST

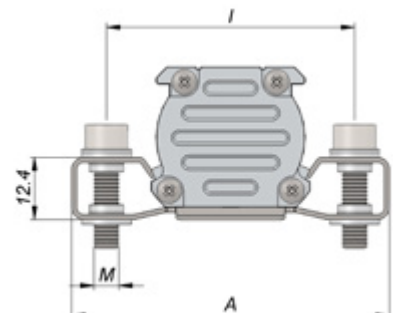


**P K I T**

| Brackets (2 brackets for every kit) |            |
|-------------------------------------|------------|
| Steel brackets, interaxis 42.5mm    | <b>090</b> |
| Steel brackets, interaxis 50mm      | <b>091</b> |



| Brackets code | Interaxis (i) | Screw (V) | Dimension (A) |
|---------------|---------------|-----------|---------------|
| PKIT090       | 42.5          | <b>M4</b> | <b>56</b>     |
| PKIT091       | 50            | <b>M5</b> | <b>63.5</b>   |



## OPTIONAL FEMALE CONNECTORS

For A-H outputs, M12 thread connector

Code: **CON031** for 5-pin output (WPA-A-A)  
**CON041** for 5-pin output (WPA-A-A)  
**CON035** for 8-pin output (WPA-A-H)  
**CON042** for 8-pin output (WPA-A-H)\*  
**CON117** for 8-pin output (WPA-A-H)

For B-C outputs, M16 thread connector

Code: **CON021** for 6-pin output (WPA-A-B)  
**CON022** for 6-pin output (WPA-A-B)\*  
**CON023** for 6-pin output (WPA-A-B)  
**CON026** for 8-pin output (WPA-A-C)  
**CON027** for 8-pin output (WPA-A-C)  
**CON028** for 8-pin output (WPA-A-C)  
**CON118** for 6-pin output (WPA-A-B)

Connector extraction length: 10mm

|   |  |   |   |   |                      |
|---|--|---|---|---|----------------------|
| <p><b>CON031</b><br/><b>CON035</b><br/>IP67 - IEC 48B</p> | <p><b>CON041</b><br/><b>CON042/CON117</b><br/>IP67</p> | <p><b>CON021</b><br/><b>CON026</b><br/>IP40 - EMC</p> | <p><b>CON022/CON118/CON027</b><br/>IP67 - EMC</p> | <p><b>CON023</b><br/><b>CON028</b><br/>IP67 - EMC</p> |                      |
| <b>Temperature ratings</b>                                |  |   |   |   |                      |
| <b>CON031/CON035</b>                                      | <b>CON041</b>  | <b>CON042/CON117</b>                                  | <b>CON021/CON026</b>                              | <b>CON022/CON118/CON027</b>                           | <b>CON023/CON028</b> |
| -30+85 °C   | -25+85 °C  | -30+85 °C   | -30+85 °C   | -30+85 °C   | -30+85 °C            |

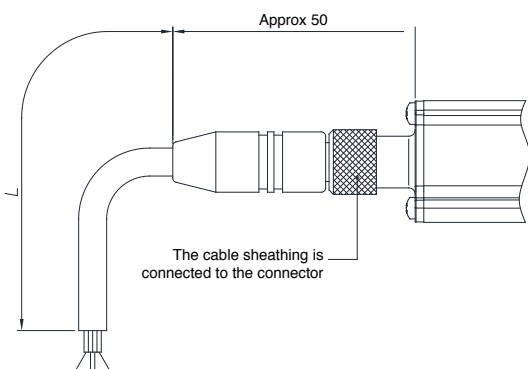
\* Not available with UL certification.

### Note

1. The IP protection class specified in this document is valid with the use of the proper female connector that has to be correctly installed and wired with the appropriate protections.
2. The operating temperature ranges, except where expressly indicated, are also applicable in the UL scope.
3. For cULus applications extension cables, a 6 pole 26AWG Style 2464 cable is advised

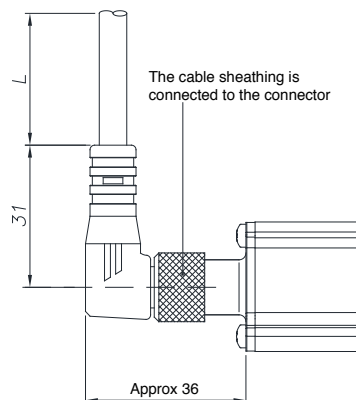
## OPTIONAL CABLES OUTPUT

### PRE-ASSEMBLED CABLE WITH STRAIGHT CONNECTOR



| 5-pin cable code |    | WPA-A-A        |                       |
|------------------|----|----------------|-----------------------|
| Length "L"       |    | CODE           |                       |
|                  |    | Straight cable | Cable to 90°          |
| 2                | mt | <b>CAV011</b>  | <b>CAV021</b>         |
| 5                | mt | <b>CAV012</b>  | <b>CAV022</b>         |
| 10               | mt | <b>CAV013</b>  | <b>CAV023</b>         |
| 15               | mt | <b>CAV015</b>  | <b>CAV024*/CAV280</b> |

### PRE-ASSEMBLED CABLE WITH 90° CONNECTOR



| 8-pin cable code |    | WPA-A-H               |               |
|------------------|----|-----------------------|---------------|
| Length "L"       |    | CODE                  |               |
|                  |    | Straight cable        | Cable to 90°  |
| 2                | mt | <b>CAV002</b>         | <b>CAV005</b> |
| 5                | mt | <b>CAV003</b>         | <b>CAV006</b> |
| 10               | mt | <b>CAV004*/CAV281</b> | <b>CAV007</b> |
| 15               | mt | <b>CAV009*/CAV282</b> | <b>CAV008</b> |

\* Not available with UL certification.

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