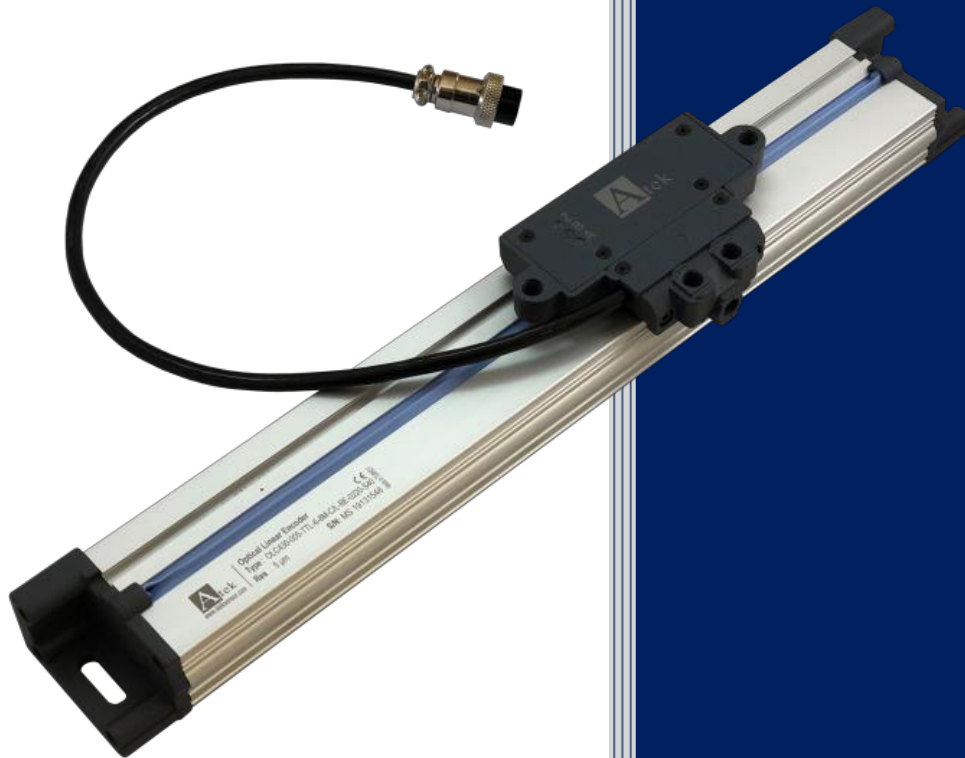




# OLC 43X

## COMPACT SYSTEM

### OPTICAL LINEAR ENCODERS



- Incremental optical system
- Different measuring lengths from 50 mm to 1000 mm
- Reader sensor which is beared with steel shafts and rollers
- Gasket protected aluminium body
- Selectable reference signal which can be selected at every 10 mm
- 3 pcs LED indicators
- 5µm resolution
- IP54 protection class
- Compact design
- Wide mounting tolerance when connected with joint
- 60 m/min traversing speed

# USER

# MANUAL

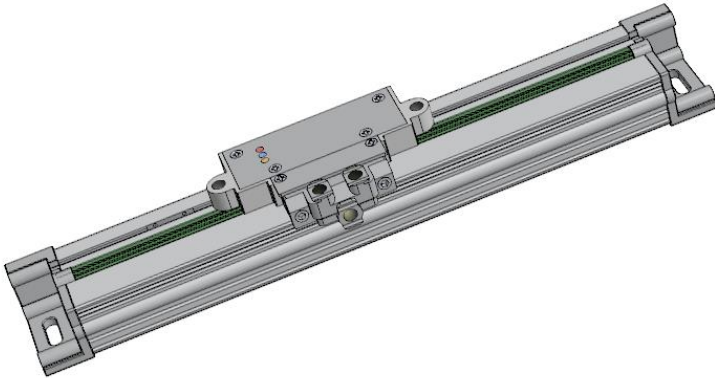
## 1. WARNINGS

1. The installation of the product is carried out by the customer who purchases the product, according to the wiring diagrams, installation information, etc. in this manual.
2. Maintenance and repair should be done by the technicians authorized by the manufacturer firm.
3. There must be minimum distance between the sensor and control unit. Avoid additions except the suitable connector unless it needs.
4. Not to damage the sensor supply directions and voltage must be paid attention (For TTL sensor max. 5V; PP, HTL, HPL sensor max. 30V). Don't energize before all connections completed.
5. Keep away the sensor cable from as high power energy cables, contactor, motor, switched power supplies, inductive and capacitive noisy supplies.
6. Shielding edge of the sensor cable must be ground connected.
7. There is no part in the product that can be replaced by the user or repaired in case of a fault. Please contact the service in these cases
8. Transport and storage should be at their original packaging and an ambient temperature of  $-20^{\circ}\text{C}$  /  $+70^{\circ}\text{C}$  in such a way that they will not be exposed to oil, dust, humidity, impact, vibration, falling or water.
9. During use of the product, oil, dust, liquid, etc. avoid contact with substances.
10. Chemicals such as alcohol, thinner etc. should not be used for cleaning the product. The product should be wiped with a damp cloth.
11. The product may be damaged and may become unusable if used outside of the specifications in the user manual.
12. The product will be out of warranty if used outside of the specifications in the user manual and opened or repaired other than authorized services.



## 2. GENERAL INFORMATIONS

The OLC 43X series optical linear encoders consist of a gasket protected aluminium body and reader sensor moving in this body. It is frictionless because of making non-contact measuring with glass scale. With its selectable reference signal at every 10 mm and its 5µm resolution, it is very suitable for high precision measurements. With gasketed structure, it has extra protection against dust, dirt and chip.



### General Using Areas

- Manuel Benches
- Press Brakes and Bending Machines
- Robotic and Material Packaging
- Linear Bearing Systems
- Automation and Robotic Applications

### PRODUCT CODE

|  |  |  |   |   |
|--|--|--|---|---|
| <b>Model</b><br>OLC 430 : L+150mm<br>OLC 431 : L+130mm   | <b>Supply and Output</b><br>PP : 10...30 VDC Supply<br>: 10...30VDC Output<br>TTL : 5 VDC Supply<br>: 5 VDC TTL RS422 Line Driver Output<br>HTL : 10...30 VDC Supply<br>: 5 VDC TTL RS422 Line Driver Output<br>HPL : 5...30 VDC Supply<br>: 5...30 VDC Push-Pull Output<br>OCL : NPN Open Collector<br>OCP : PNP Open Collector | <b>Cable Length*</b><br>3M : 3m cable<br>5M : 5m cable<br>10M : 10m cable<br>*Optionally other lengths up to 100 meters. | <b>Cable Type/ Direction*</b><br>C : PUR Cable R : From right<br>L : From left  | <b>Measuring Length (stroke)*</b><br>Different measuring lengths from 50 mm to 1000 mm  |
| <b>OLC 43X</b> - <b>XXX</b> - <b>XXX</b> - <b>X</b> - <b>XX</b> - <b>XX</b> - <b>X/X</b> - <b>XX</b> - <b>XX</b> | <b>Resolution</b><br>005 : 5µm   | <b>Output Signals</b><br>2 (A,B)<br>3 (A,B,Z)<br>4 (A,/A,B,/B)<br>6 (A,/A,B,/B,Z,/Z)                                     | <b>Socket Type*</b><br>No code: No socket on cable<br>SK: 0,5 m cable and M16 / 8 pin female socket + (X-0,5) meters cable and M16 / 8 pin male socket<br>(X: Cable length selected in previous code) | <b>Reference Point (Z)*</b><br>B : Beginning<br>M : Middle<br>E : End<br>No code: No reference point<br>*Optionally, can be selected requested with magnet at every 10 mm as requested. |

## 3. TECHNICAL SPECIFICATIONS

### MECHANICAL SPECIFICATIONS

|                       |  |
|-----------------------|--|
| Measuring Type        | Optical, transmissive  |
| Measuring Lengths     | Different measuring lengths from 50 mm to 1000mm                       |
| Resolution            | 5 $\mu\text{m}$  |
| Accuracy              | $\pm 10 \mu\text{m}$   |
| Repeatability         | $\pm 1$ pulse  |
| Max Traversing Speed  | 60m/min  |
| Max Acceleration      | 30 m/s <sup>2</sup>  |
| Required Moving Force | >1.5 N   |
| Operating Temperature | 0°C ..+50°C  |
| Storage Temperature   | -20°C ..+70°C  |
| Protection Class      | IP54   |
| Body Material         | Aluminium  |
| Max cable length      | 100 meters   |
| Electrical connection | M16 / 8 pin female socket, 5 or 8 x0.14 mm <sup>2</sup> shielded cable |

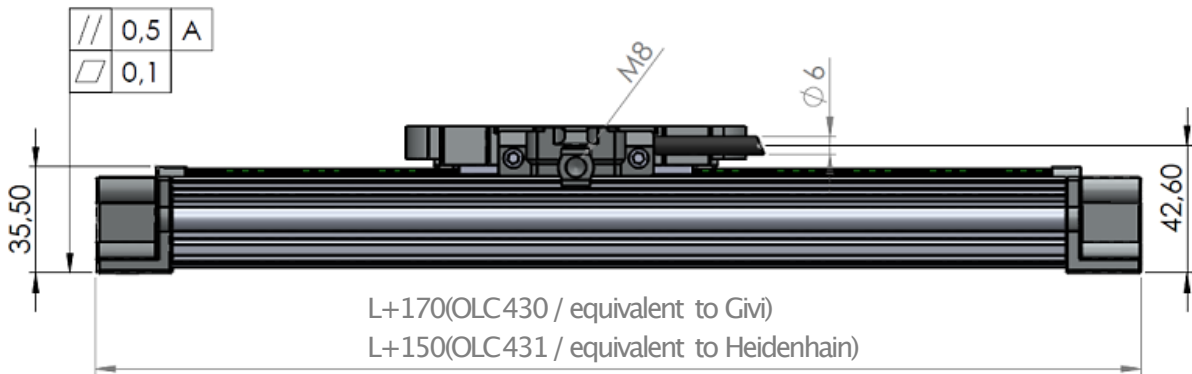
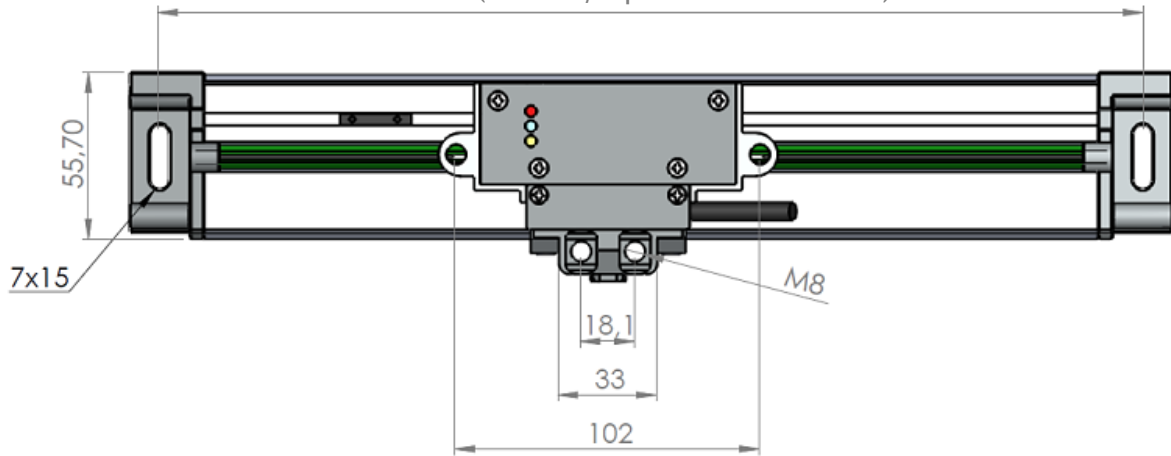
### ELECTRICAL SPECIFICATIONS

|                     |  |
|---------------------|--|
| Supply Voltage      | 5 Vdc, +10Vdc ..+30Vdc   |
| Current Consumption | 50 mA@5 VDC<br>70 mA @10..30 VDC   |
| Output Type         | TTL, Push Pull Line Driver, NPN or PNP   |
| Output Signals      | A,B,Z<br>A,B<br>A,/A,B,/B<br>A,/A,B,/B,Z,/Z  |
| Reference Points    | At the beginning, middle or end of the measuring length, or selectable with magnet every 10 mm |
| Signal Period       | 20 $\mu\text{m}$   |

## 4.MECHANICAL DIMENSIONS

L+150(OLC430 / equivalent to Givi)

L+130(OLC431 / equivalent to Heidenhain)



L+170(OLC430 / equivalent to Givi)

L+150(OLC431 / equivalent to Heidenhain)

**L:** Measuring Length

**A:** Machine Guide

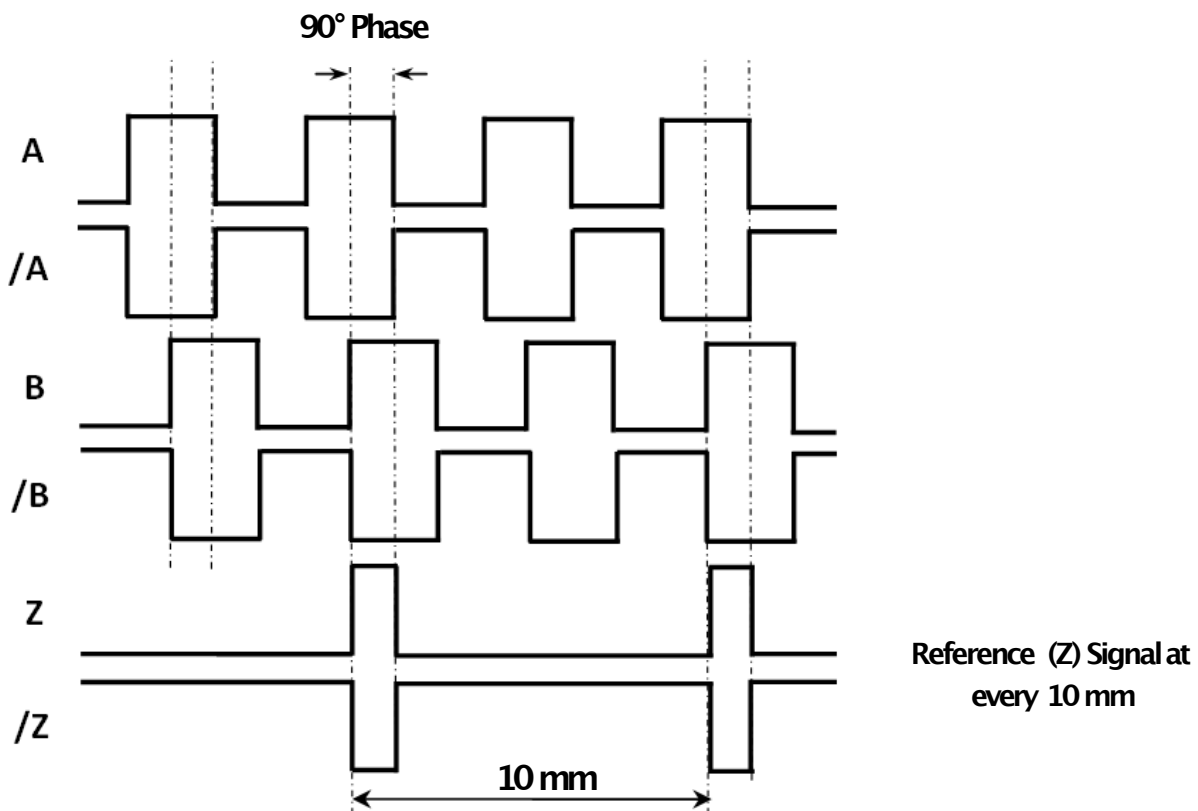
| Standard Measuring Lengths* (L) (mm) |     |     |     |     |     |     |     |      |     |
|--------------------------------------|-----|-----|-----|-----|-----|-----|-----|------|-----|
| 50                                   | 70  | 100 | 120 | 150 | 170 | 200 | 220 | 250  | 270 |
| 300                                  | 320 | 350 | 370 | 400 | 420 | 450 | 470 | 500  | 550 |
| 600                                  | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |     |

(\*) Optionally, different measuring lengths can be requested. Please contact the company for non-standard requests.

## 5.ELECTRICAL CONNECTIONS

| SIGNAL | CABLE COLOR | D-SUB9 PIN SOCKET / PIN NO |
|--------|-------------|----------------------------|
| +V     | RED         | 1                          |
| 0V     | BLACK       | 2                          |
| A      | YELLOW      | 3                          |
| Z      | PINK        | 4                          |
| B      | GREEN       | 5                          |
| /B     | WHITE       | 6                          |
| /Z     | GREY        | 7                          |
| /A     | BLUE        | 8                          |

In the above table, the cable colors of sensors output signals are given. If the control circuit is suitable in the Line Driver, sensors of the not output signals (/A, /B, /Z) have to be added to the system. If it is not suitable /A, /B, /Z signal cables must be fixed as insulated separately. Don't forget that these edges have electricity too.



## 6.REFERENCE POINT ADJUSTMENT

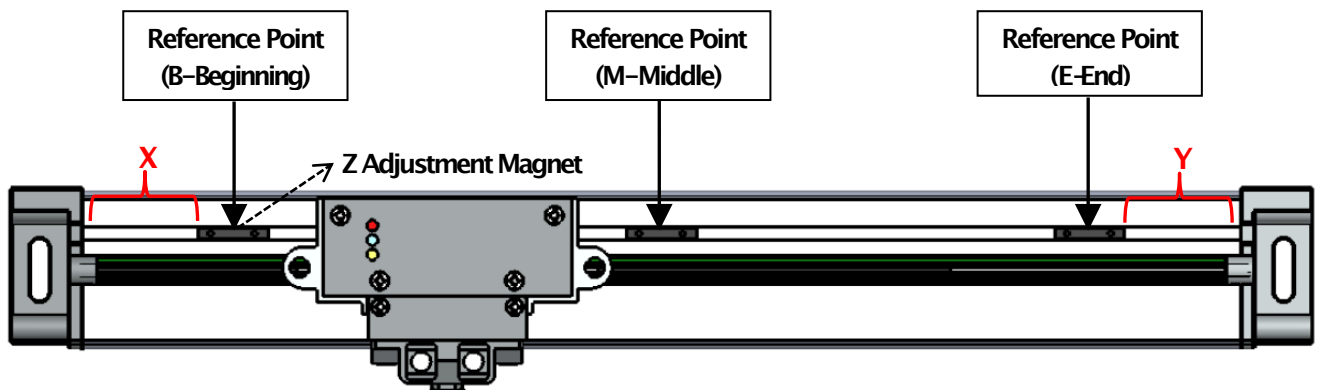
Reference point;

Can be selected at the beginning, middle and / or end of the measurement length used as standard.

### NOTE:

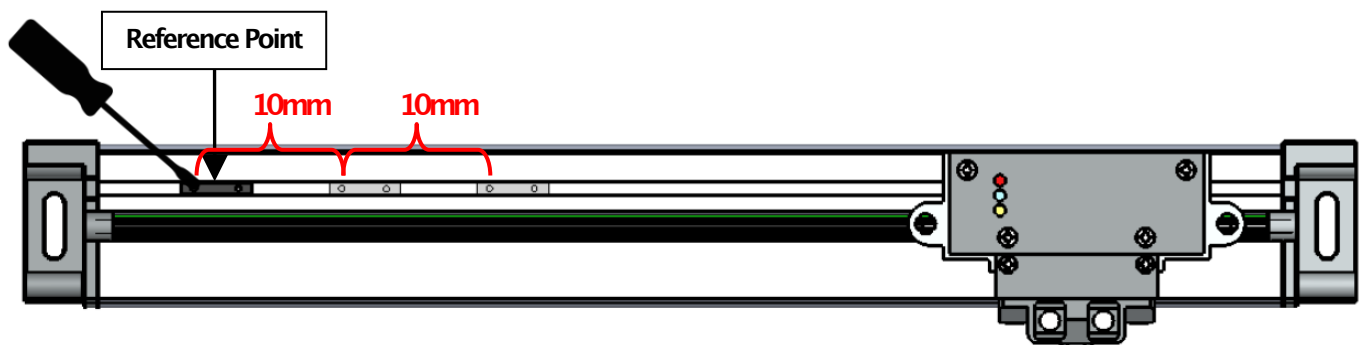
**In OLC430 model;** The reference points are 60 mm from the left (X) and right (Y) sides. There is an area that is not measured of 19 mm at the beginning and 11.4 mm at the end of the ruler.

**In OLC431 model;** The reference points are 50 mm from the left (X) and right (Y) sides. There is an area that is not measured of 3.5 mm at the beginning and 6.5 mm at the end of the ruler.



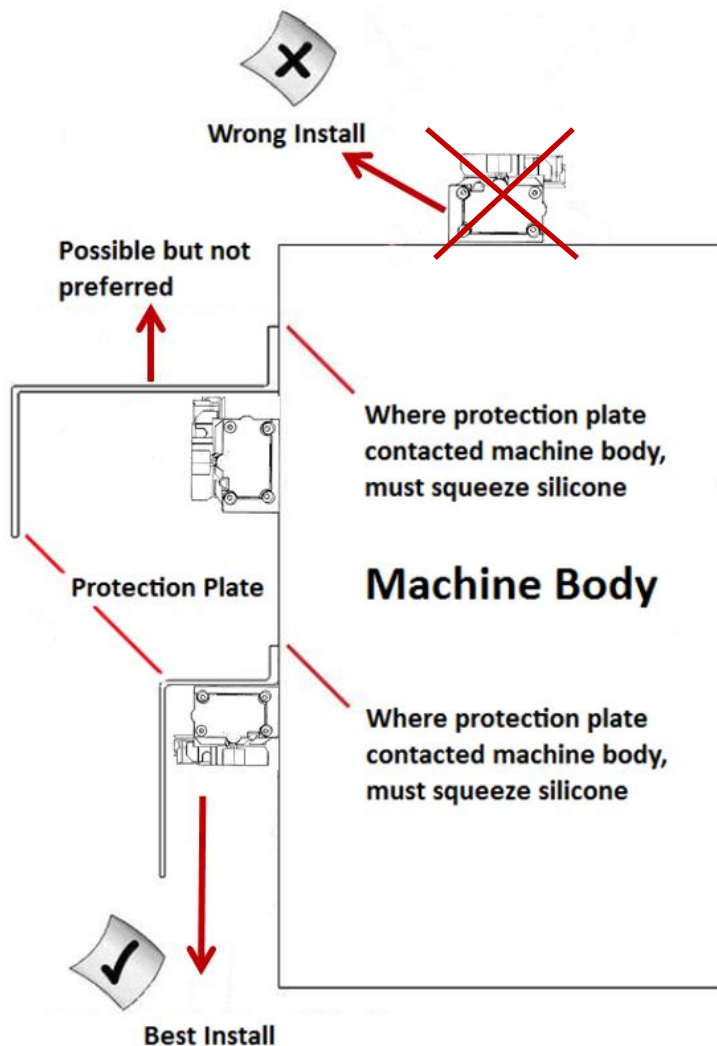
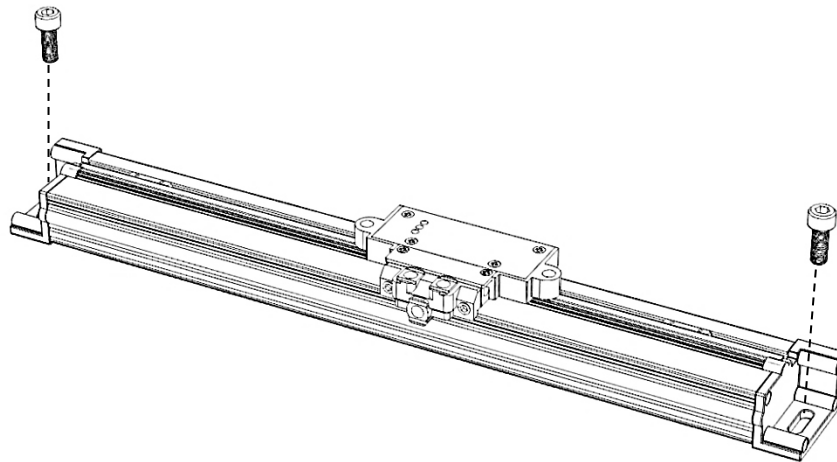
Reference point can be adjusted as requested with the Z adjustment magnet in 10 mm steps along the measurement length from the reference points marked on the ruler when necessary.

For this purpose, the bolts on the magnet are loosened and moved to the desired point in 10 mm steps. When the magnet reaches the desired point, the bolts are fixed by tightening and the new reference point is set.

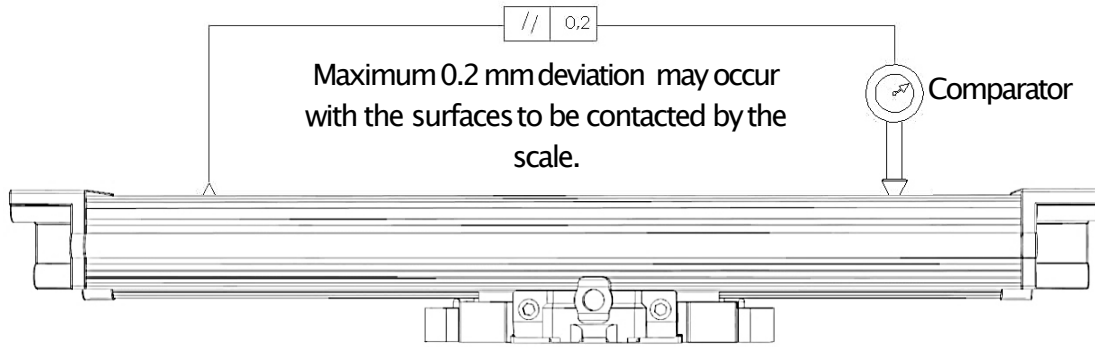


## 7.MECHANICAL MOUNTING

The smooth installation of the OLC43X scale is an important consideration for the proper functioning of the system. Figure below shows the correct installation of the system. The upper part of the reader sensor should be mounted facing the floor. In this way, the effect of negative factors on the system is minimized. In addition, the protection sheet should be used, extra protection should be provided by squeezing the silicon to the points where the machine body and the protection sheet meet. The reader head is mounted in profile, the distance between the profile and the reader head is fixed. Parallelism between the reader head and the profile should remain the same for the whole distance. During the mounting phase, the scale profile and reader head must be adjusted with appropriate equipment such as the comparator.

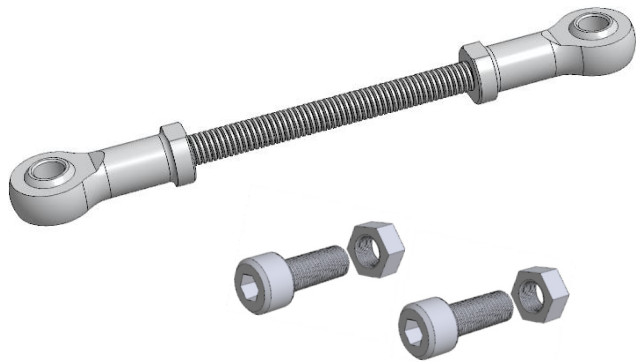




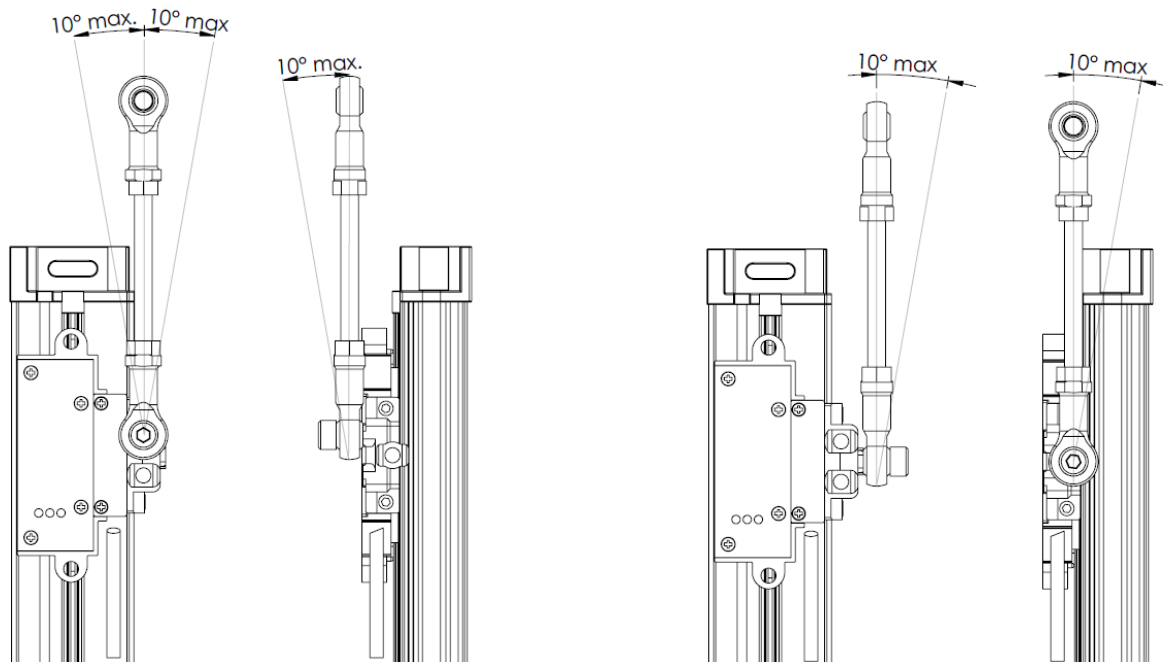
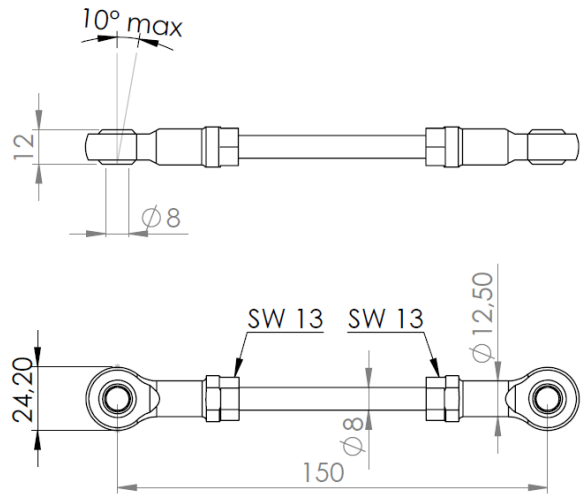


## 8.MOUNTING ACCESSORIES

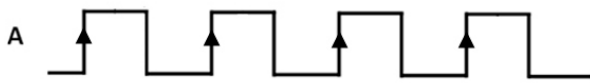
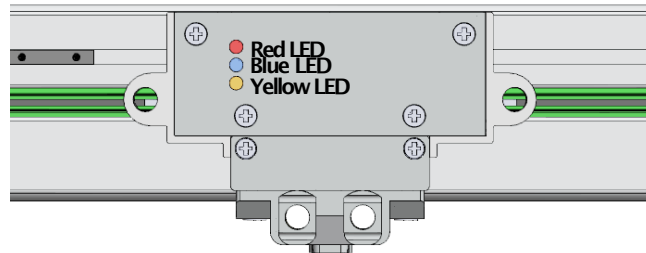
The encoder can be connected directly to the system or by connecting with the joint to provide a wider mounting tolerance.



**Connection Joints and Bolts**



## 9.LED INDICATORS



**Yellow LED:** It is active at the rising edges of the A signal.



**Blue LED:** It is active at the rising edges of the B signal.



**Red LED:** It is active at the rising edges of the Z signal.

## 10.BOX CONTENTS

| Product                   | Description                                 |
|---------------------------|---|
| <b>OLC43X</b>             | Optical Linear Encoder                      |
| <b>User Manual</b>        | 1 pcs                                       |
| <b>Mounting Equipment</b> | Joint set, 2 pcs imbus bolts and 4 pcs nuts |
| <b>Socket</b>             | 1 pcs D-SUB9 pin male connector             |

## \*Other Socket Connections

### S41 Socket

| Pin Number | Cable Color | Signal       |
|------------|-------------|--------------|
| 1          | RED         | POWER SUPPLY |
| 2          | BLACK       | 0V           |
| 3          | YELLOW      | A            |
| 4          | PINK        | Z            |
| 5          | GREEN       | B            |
| 6          | WHITE       | /B           |
| 7          | GREY        | /Z           |
| 8          | BLUE        | /A           |
| 9          | -           | -            |

### S87 Socket

| Pin Number | Cable Color | Signal       |
|------------|-------------|--------------|
| 1          | -           | -            |
| 2          | RED         | POWER SUPPLY |
| 3          | BLACK       | GROUND       |
| 4          | BLUE        | /A           |
| 5          | YELLOW      | A            |
| 6          | WHITE       | /B           |
| 7          | GREY        | /Z           |
| 8          | PINK        | Z            |
| 9          | GREEN       | B            |

### S86 Socket

| Pin Number | Cable Color | Signal       |
|------------|-------------|--------------|
| 1          | PINK        | Z            |
| 2          | GREEN       | B            |
| 3          | YELLOW      | A            |
| 4          | -           | -            |
| 5          | BLACK       | GROUND       |
| 6          | GREY        | /Z           |
| 7          | WHITE       | /B           |
| 8          | BLUE        | /A           |
| 9          | RED         | POWER SUPPLY |

### S71 Socket

| Pin Number | Cable Color | Signal       |
|------------|-------------|--------------|
| 1          | BLACK       | GROUND       |
| 2          | BLUE        | /A           |
| 3          | WHITE       | /B           |
| 4          | GREY        | /Z           |
| 5          | RED         | POWER SUPPLY |
| 6          | YELLOW      | A            |
| 7          | GREEN       | B            |
| 8          | PINK        | Z            |
| 9          | -           | -            |

### S50 ve S58 Socket

| Pin Number | Cable Color | Signal       |
|------------|-------------|--------------|
| 1          | PINK        | Z            |
| 2          | GREY        | /Z           |
| 3          | RED         | POWER SUPPLY |
| 4          | -           | -            |
| 5          | BLACK       | GROUND       |
| 6          | YELLOW      | A            |
| 7          | BLUE        | /A           |
| 8          | WHITE       | /B           |
| 9          | GREEN       | B            |

### S42 Socket (SINO CONNECTION)

| Pin Number | Cable Color | Signal       |
|------------|-------------|--------------|
| 1          | BLUE        | /A           |
| 2          | BLACK       | GROUND       |
| 3          | WHITE       | /B           |
| 4          | -           | -            |
| 5          | GREY        | /Z           |
| 6          | YELLOW      | A            |
| 7          | RED         | POWER SUPPLY |
| 8          | GREEN       | B            |
| 9          | PINK        | Z            |

### S43 Socket

| Pin Number | Cable Color | Signal       |
|------------|-------------|--------------|
| 1          | YELLOW      | A            |
| 2          | BLUE        | /A           |
| 3          | GREEN       | B            |
| 4          | WHITE       | /B           |
| 5          | PINK        | Z            |
| 6          | GREY        | /Z           |
| 7          | -           | -            |
| 8          | -           | -            |
| 9          | RED         | POWER SUPPLY |
| 10         | -           | -            |
| 11         | BLACK       | GROUND       |
| 12         | -           | -            |
| 13         | -           | -            |
| 14         | -           | -            |
| 15         | SHIELD      | GND          |

### S57 Socket

| Pin Number | Cable Color | Signal       |
|------------|-------------|--------------|
| 1          | YELLOW      | A            |
| 2          | BLUE        | /A           |
| 3          | -           | -            |
| 4          | PINK        | Z            |
| 5          | GREY        | /Z           |
| 6          | -           | -            |
| 7          | -           | -            |
| 8          | BLACK       | GROUND       |
| 9          | -           | -            |
| 10         | GREEN       | B            |
| 11         | WHITE       | /B           |
| 12         | -           | -            |
| 13         | -           | -            |
| 14         | -           | -            |
| 15         | RED         | POWER SUPPLY |