

# MLS 12X

## MAGNETIC READER SENSORS



- Model with socket (MLS 120) or cable (MLS 121)
- Model with scraper or without scraper
- Easy mounting
- Resolution from 1  $\mu\text{m}$  to 100  $\mu\text{m}$
- High accuracy
- Spiral or cable option
- Dust, oil and moisture resistant
- Robust aluminum body
- IP67 protection class

# USER MANUAL

## 1. WARNINGS



- 1.** Connections must be completed by only authorized personnel.
- 2.** Consider the warnings when completing the connections and using the scale.
- 3.** Pay attention about the sensors power supply. (For TTL sensor max. 5V, for Push-Pull sensor max. 30V). Don't energize the scale before all connections completed.
- 4.** Distance between sensor and control unit must be short as possible. Avoid additions except the suitable connector unless it needs.
- 5.** Be away the sensor and cables from high power cables, contactor, engine, or inductive and capacitive noise sources.
- 6.** The screen cable must be connected to the earth line.
- 7.** The magnetic tape must be away from magnetic areas.
- 8.** The proximity of the band with comparator, magnet or similar instruments having a magnetic effect, disrupts the working structure of the band.
- 9.** Don't make any connection when the scale energized.
- 10.** Please call the service for any problem about the scale.
- 11.** Transport and storage should be at their original packaging and an ambient temperature of  $-25^{\circ}\text{C}$  /  $+85^{\circ}\text{C}$  in such a way that they will not be exposed to dust, humidity, impact, vibration, falling or water.
- 12.** Chemicals such as alcohol, thinner etc. should not be used for cleaning the product. The product should be wiped with a damp cloth.
- 13.** The product may be damaged and may become unusable if used outside of the specifications in the user manual. In this case, the product will be out of warranty.

## 2. GENERAL INFORMATION

ML 12X series sensor sensors can be used with magnetic stripe tape as well as PS1 profile system and PS2 profile system. Without touching the magnetic tape, it moves position 0,1 - 2 mm and precisely reads the position information and sends it as encoder pulse. Its small structure provides maximum installation convenience to the user. Due to optional integrated scraper on the sensor body, it is extra protected from dust, dirt, sawdust, etc. which may be formed on the magnetic tape or profile that it moves on. Models with socket (MLS 120) and cable (MLS 121) are available. Cable type can be requested as PUR or spiral cable.

### Applications:

- Machining Centers
- PVC Cutting Machines
- Wood Cutting Machines
- Lathes, Milling, Drilling, Grinding Machines
- Sheet Metal Working Machines
- Marble Machines
- Welding Machines
- Bending Machines
- Electrical Discharge Machines
- Robotics / Material Handling
- Glass Working Machinery etc...

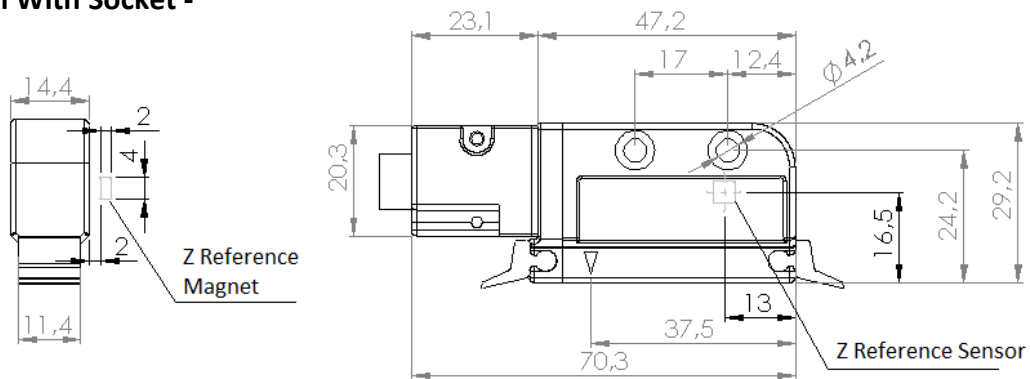


## 3. TECHNICAL FEATURES

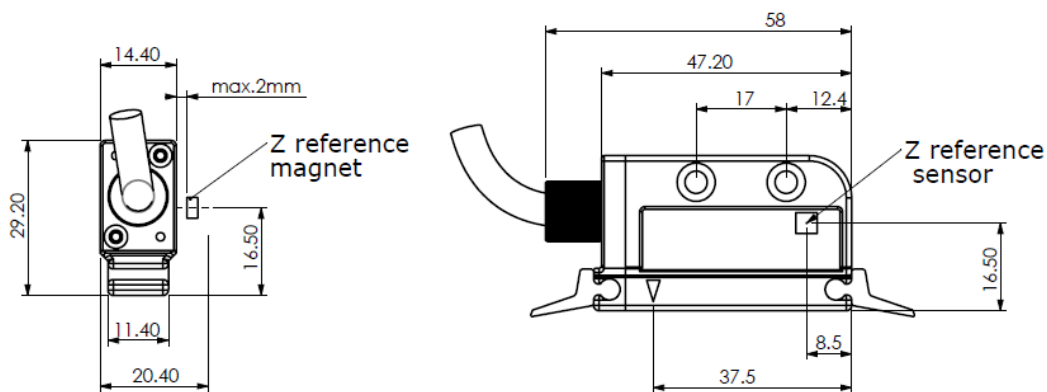
<b>Measurement Type</b>	Magnetic, non-contact				
<b>Resolution</b>	1µm, 5µm, 10µm, 25µm, 50µm, 62.5µm, 80µm, 100µm (Optional others)				
<b>Supply And Output</b>		<b>PP</b>	<b>TTL</b>	<b>HTL</b>	<b>HPL</b>
	<b>Supply</b>	10...30 VDC	5 VDC	10...30 VDC	5...30 VDC
	<b>Output</b>	10...30 VDC Push-pull	5 VDC TTL RS422 Line Driver	5 VDC TTL RS422 Line Driver	5...30 VDC Push-pull
<b>Output Signals</b>	A, /A, B, /B, Z, /Z				
<b>Current Consumption</b>	40 mA / channel max.				
<b>Repeatabiliy</b>	± 1 Pulse				
<b>Gap between tape and sensor</b>	0,1 mm to 2 mm				
<b>Operating Speed</b>	3 m/s				
<b>Operating Temperature</b>	-25...+85 °C				
<b>Storage Temperature</b>	-40...+100 °C				
<b>Electrical Connection</b>	D-Sub 9 pin connector, 5 or 8 x 0,14 mm <sup>2</sup> shielded cable				
<b>IP Protection Class</b>	IP67				
<b>Material</b>	Aluminum				

## 4. MECHANICAL DIMENSIONS

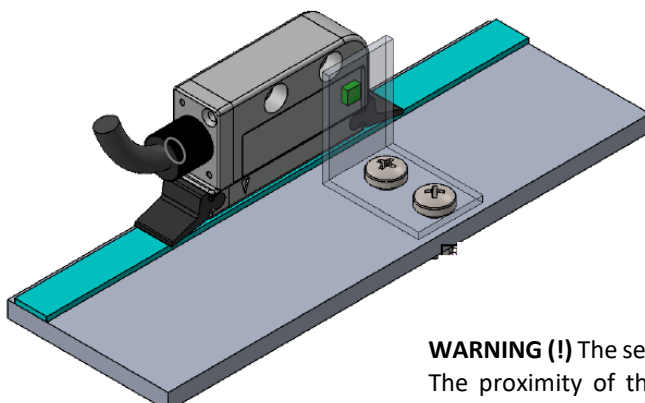
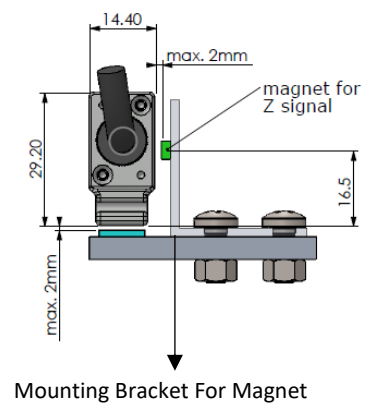
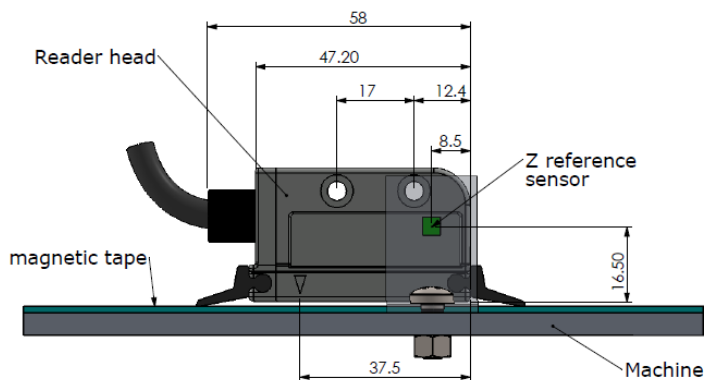
### - Model With Socket -



### - Model With Cable -



## 5. EXTERNAL Z REFERENCE SIGNAL AND WORKING DISTANCE



The magnet and Z reference sensor must be parallel to each other for the external Z reference signal.

**In models with a single Z reference signal,** the Z pulse can only be generated when the A and B signals are active. In other words, the sensor must be in motion. No Z output pulse is generated when the sensor is stationary.

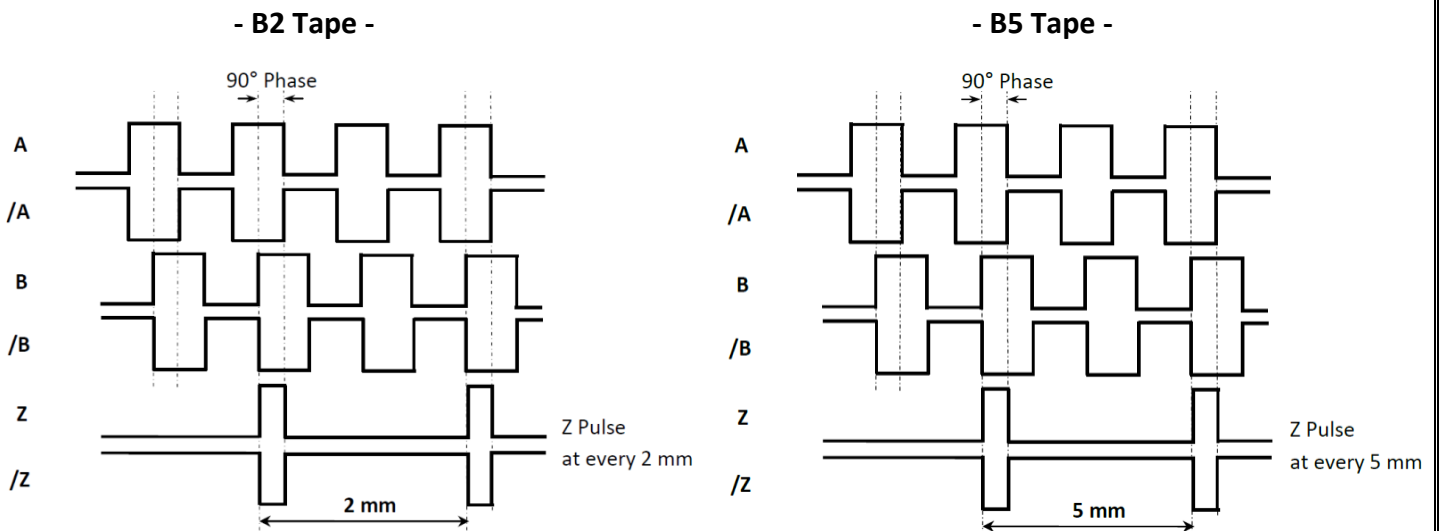
**WARNING (!)** The sensor and magnetic tape must be away from magnetic areas. The proximity of the band with comparator, magnet or similar instruments having a magnetic effect, disrupts the working structure of the band.

## 6. ELECTRICAL CONNECTION

SIGNAL	CABLE COLOR	D-SUB 9 PIN / SOCKET PIN NO
A	YELLOW	1
/B	WHITE	2
+V	RED	3
0V	BLACK	4
/A	BLUE	5
B	GREEN	6
/Z	GREY	7
Z	PINK	8
-	SHIELD	9

\* For other socket connections, see: Page 6- Other Socket Connections

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.



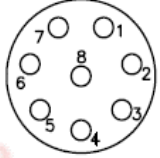

## 7. MAGNETIC TAPE AND PROFILE SYSTEMS USED WITH MLS 120



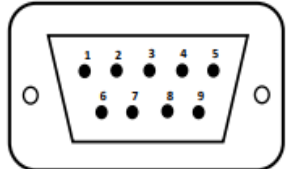

- PS1 Profile System
- PS2 Profile System
- B2 or B5 Magnetic Tape

### \*Other Socket Connections

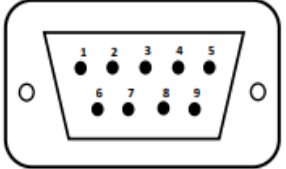

**S41 Connection (EAE) / M16 8 Pin Female Socket**

		
Pin No	Cable Color	Signal
1	RED	POWER SUPPLY
2	BLACK	GROUND
3	YELLOW	A
4	PINK	Z
5	GREEN	B
6	WHITE	/B
7	GREY	/Z
8	BLUE	/A
9	-	-

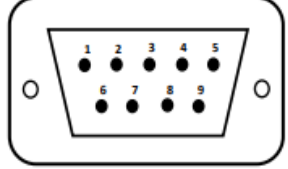

**S87 Connection (EC-4) / D-Sub 9 Pin Male Socket**

		
Pin No	Cable Color	Signal
1	-	-
2	RED	POWER
3	BLACK	GROUND
4	BLUE	/A
5	YELLOW	A
6	WHITE	/B
7	GREY	/Z
8	PINK	Z
9	GREEN	B

**S71 Connection (CYBELEC) / D-Sub 9 Pin Male Socket**

		
Pin No	Cable Color	Signal
1	BLACK	GROUND
2	BLUE	/A
3	WHITE	/B
4	GREY	/Z
5	RED	POWER
6	YELLOW	A
7	GREEN	B
8	PINK	Z
9	-	-

**S86 Connection (DELEM) / D-Sub 9 Pin Male Socket**

		
Pin No	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

**S50 connection (EMS) / D-Sub 9 Pin Male Socket**

**S42 Connection (SINO) / D-Sub 9 Pin Male Socket**

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

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


**S57 Connection (TURANLAR) / D-Sub 15 Pin Male Socket**


**S43 Connection (FAGOR) / D-Sub 15 Pin Male Socket**


Pin Numarası	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

Pin Numarası	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
10	-	-
11	BLACK	GROUND
12	-	-
13	-	-
14	-	-
15	SHIELD	GND

## **ATEK ELEKTRONİK SENSÖR TEKNOLOJİLERİ SANAYİ VE TİCARET A.Ş.**

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