# 2D/3D Profile Sensor

# MLWL155 LASER

Part Number

- **Blue light for applications on metal, organic or se-mi-transparent materials**
- **Increased resistance to extraneous light and high speed**
- **Optimized profile quality thanks to HDR function**
- **Precise measuring range resolution X (> 2000 mea-suring points)**
- **Up to 12 million measuring points per second**

2D/3D Profile Sensors project a laser line onto the object to be detected and generate an accurate, linearized height profile with an internal camera which is set up at a triangulation angle. Thanks to its uniform, open interface, the weCat3D series can be incorporated by means of the DLL program library or the GigE Vision standard without an additional control unit. Alternatively, wenglor offers its own software packages for implementing your application.
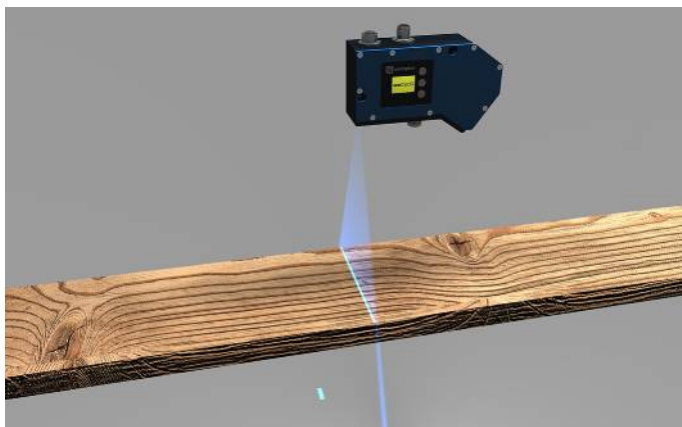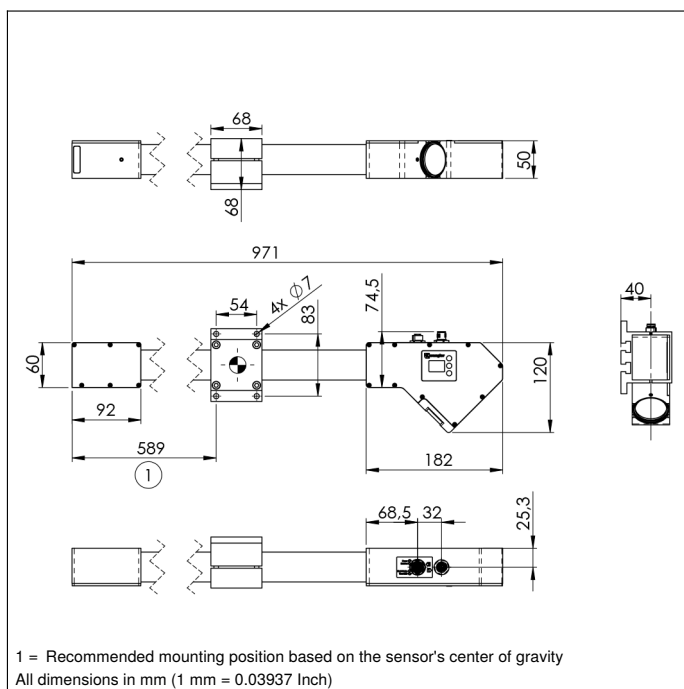
## Technical Data

| Optical Data | |
|---|---|
| Working range Z | 600...1400 mm |
| Measuring range Z | 800 mm |
| Measuring range X | 450...720 mm |
| Linearity Deviation | 200 μm |
| Resolution Z | 28...67 μm |
| Resolution X | 235...361 μm |
| Light Source | Laser (blue) |
| Wavelength | 405 nm |
| Service Life (T = +25 °C) | 20000 h |
| Laser Class (EN 60825-1) | 3R |
| Max. Ambient Light | 5000 Lux |
| **Electrical Data** | |
| Supply Voltage | 18...30 V DC |
| Current Consumption (Ub = 24 V) | 300 mA |
| Measuring Rate | 175...6000 /s |
| Temperature Range | 0...45 °C |
| Storage temperature | -20...70 °C |
| Inputs/Outputs | 4 |
| Switching Output Voltage Drop | < 1,5 V |
| Switching Output/Switching Current | 100 mA |
| Short Circuit Protection | yes |
| Reverse Polarity Protection | yes |
| Overload Protection | yes |
| Interface | Ethernet TCP/IP |
| Baud Rate | 100/1000 Mbit/s |
| Protection Class | III |
| FDA Accession Number | 1710276-000 |
| **Mechanical Data** | |
| Housing Material | Aluminum |
| Degree of Protection | IP67 |
| Connection | M12 × 1; 12-pin |
| Type of Connection Ethernet | M12 × 1; 8-pin, X-cod. |
| Optic Cover | Glass |
| Weight | 2780 g |
| Web server | yes |

| | | |
|---|---|---|
| Configurable as PNP/NPN/Push-Pull | ● | |
| Switchable to NC/NO | | ● |

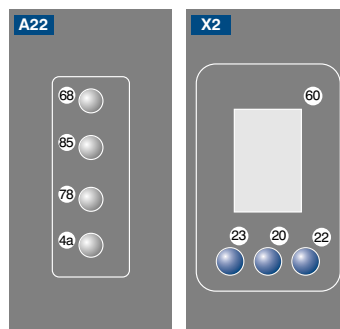| | | |
|---|---|---|
| Connection Diagram No. | **1022** | **1023** |
| Control Panel No. | **X2** | **A22** |
| Suitable Connection Equipment No. | **50** | **87** |

Display brightness may decrease with age. This does not result in any impairment of the sensor function.

## Complementary Products

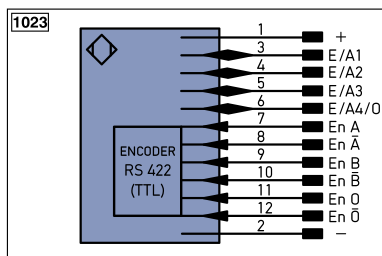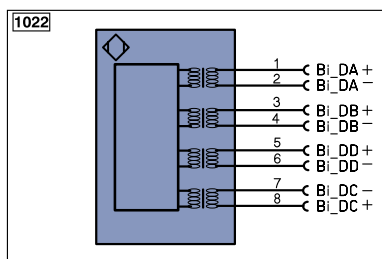| |
|---|
| Control Unit |
| Cooling Unit ZLWK003 |
| Protective Screen Retainer ZLWS003 |
| Software |
| Switch ZAC45FN01 |

**2D/3D Sensors**

1 = Recommended mounting position based on the sensor's center of gravity
All dimensions in mm (1 mm = 0.03937 Inch)

## Ctrl. Panel

**A22**

**X2**

20 = Enter Button
22 = UP Button
23 = Down Button
4a = User LED
60 = Display
68 = Supply Voltage Indicator
78 = Module status
85 = Link/Act LED

**1022**

| | |
|---|---|
| 1 | Bi_DA + |
| 2 | Bi_DA − |
| 3 | Bi_DB + |
| 4 | Bi_DB − |
| 5 | Bi_DD + |
| 6 | Bi_DD − |
| 7 | Bi_DC − |
| 8 | Bi_DC + |

**1023**

ENCODER RS 422 (TTL)

| | |
|---|---|
| 1 | + |
| 3 | E/A1 |
| 4 | E/A2 |
| 5 | E/A3 |
| 6 | E/A4/O |
| 7 | En A |
| 8 | En Ā |
| 9 | En B |
| 10 | En B̄ |
| 11 | En 0 |
| 12 | En Ō |
| 2 | − |

## Legend

| | |
|---|---|
| + | Supply Voltage + |
| − | Supply Voltage 0 V |
| ~ | Supply Voltage (AC Voltage) |
| A | Switching Output (NO) |
| Ā | Switching Output (NC) |
| V | Contamination/Error Output (NO) |
| V̄ | Contamination/Error Output (NC) |
| E | Input (analog or digital) |
| T | Teach Input |
| Z | Time Delay (activation) |
| S | Shielding |
| RxD | Interface Receive Path |
| TxD | Interface Send Path |
| RDY | Ready |
| GND | Ground |
| CL | Clock |
| E/A | Output/Input programmable |
| ⬡ | IO-Link |
| PoE | Power over Ethernet |
| IN | Safety Input |
| OSSD | Safety Output |
| Signal | Signal Output |
| BI_D+/− | Ethernet Gigabit bidirect. data line (A-D) |
| EN0RS422 | Encoder 0-pulse 0-0̄ (TTL) |

| | |
|---|---|
| PT | Platinum measuring resistor |
| nc | not connected |
| U | Test Input |
| Ū | Test Input inverted |
| W | Trigger Input |
| O | Analog Output |
| O− | Ground for the Analog Output |
| BZ | Block Discharge |
| AMW | Valve Output |
| a | Valve Control Output + |
| b | Valve Control Output 0 V |
| SY | Synchronization |
| E+ | Receiver-Line |
| S+ | Emitter-Line |
| ⏚ | Grounding |
| SnR | Switching Distance Reduction |
| Rx+/− | Ethernet Receive Path |
| Tx+/− | Ethernet Send Path |
| Bus | Interfaces-Bus A(+)/B(−) |
| La | Emitted Light disengageable |
| Mag | Magnet activation |
| RES | Input confirmation |
| EDM | Contactor Monitoring |
| ENARS422 | Encoder A/Ā (TTL) |
| ENBRS422 | Encoder B/B̄ (TTL) |

| | |
|---|---|
| ENA | Encoder A |
| ENB | Encoder B |
| AMIN | Digital output MIN |
| AMAX | Digital output MAX |
| AOK | Digital output OK |
| SY In | Synchronization In |
| SY OUT | Synchronization OUT |
| OLT | Brightness output |
| M | Maintenance |
| rsv | reserved |

**Wire Colors according to DIN IEC 757**

| | |
|---|---|
| BK | Black |
| BN | Brown |
| RD | Red |
| OG | Orange |
| YE | Yellow |
| GN | Green |
| BU | Blue |
| VT | Violet |
| GY | Grey |
| WH | White |
| PK | Pink |
| GNYE | Green/Yellow |

## Measuring field X, Z

**MLWL1x5**
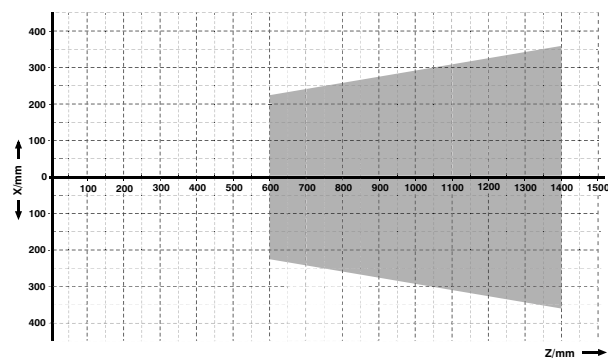


Z = Working distance

X = Measuring Range

LASER CLASS 3R EN60825-1

RoHS