

# TL Series Contrast Sensors

## Contrast Sensor



- Datalogic contrast print mark sensor
- RGB light emission
- Vertical or horizontal spot orientation
- 6–12mm sensing distance
- 10 to 30 VDC operating voltage
- Selectable light-on / dark-on
- NPN / PNP
- 0 – 5 VDC analog output models
- 15, 20, or 50kHz switching frequency
- Aluminum housing
- Teach-in sensitivity adjustment
- 5-pin M12 quick-disconnect with adjustable exit angle
- Purchase cable separately
- IP67

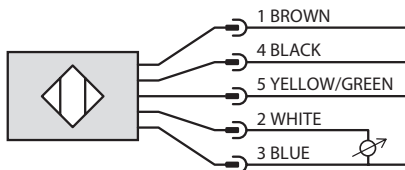


### TL Series Contrast Sensors Selection Chart

| TL Series Contrast Sensors Selection Chart |          |                        |                  |                     |                                                                   |           |               |           |            |  |  |  |
|--------------------------------------------|----------|------------------------|------------------|---------------------|-------------------------------------------------------------------|-----------|---------------|-----------|------------|--|--|--|
| Part Number                                | Price    | Sensing Range          | Spot Orientation | Switching Frequency | Output State                                                      | Logic     | Connection    | Wiring    | Dimensions |  |  |  |
| <a href="#">TL46-W-815</a>                 | \$152.00 | 6–12mm<br>[0.2–0.5 in] | Vertical         | 15kHz               | Selectable<br>Light-on/Dark-on<br>plus analog output<br>0 – 5 VDC | NPN / PNP | M12 connector | Diagram 1 | Figure 1   |  |  |  |
| <a href="#">TL46-W-815L</a>                | \$152.00 |                        | Horizontal       |                     |                                                                   |           |               |           |            |  |  |  |
| <a href="#">TL46-WL-815</a>                | \$179.00 |                        | Vertical         | 20kHz               |                                                                   |           |               | Diagram 2 |            |  |  |  |
| <a href="#">TL46-WL-815L</a>               | \$179.00 |                        | Horizontal       |                     |                                                                   |           |               |           |            |  |  |  |
| <a href="#">TL46-WJ-815</a>                | \$385.00 |                        | Vertical         | 50kHz               | Selectable<br>Light-on/Dark-on                                    | PNP       |               | Diagram 3 |            |  |  |  |
| <a href="#">TL46-WJ-815L</a>               | \$385.00 |                        | Horizontal       |                     |                                                                   |           |               |           |            |  |  |  |

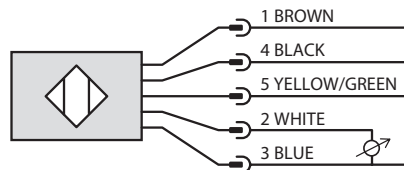
## Wiring Diagrams

### Diagram 1



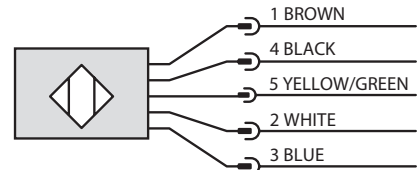
Pin 1 – Supply Voltage  
 Pin 4 – NPN/PNP Output  
 Pin 5 – Delay Setting Input  
 Pin 2 – Analog Output  
 Pin 3 – 0 VDC

### Diagram 2



Pin 1 – Supply Voltage  
 Pin 4 – NPN/PNP Output  
 Pin 5 – Remote Acquisition  
 Pin 2 – Analog Output  
 Pin 3 – 0 VDC

### Diagram 3

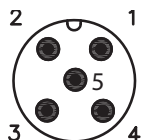


Pin 1 – Supply Voltage  
 Pin 4 – PNP Output  
 Pin 5 – Remote Acquisition  
 Pin 2 – Light/Dark Input  
 Pin 3 – 0 VDC

*Note: Wiring Objects are based on AutomationDirect 5-pole cable assemblies.*

## Connectors

### M12 connector

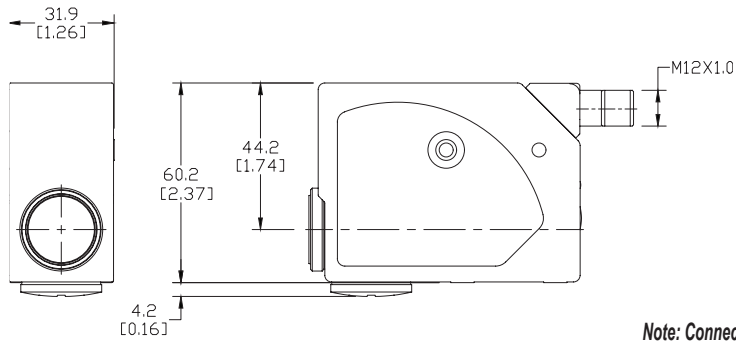


*Note: Class 2 power supply required*

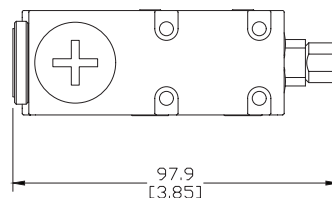
# TL Series Contrast Sensors

## Dimensions

mm [inches]

**Figure 1**

*Note: Connector can be rotated to 5 different orientations.*



See our website: [www.AutomationDirect.com](http://www.AutomationDirect.com) for complete Engineering drawings.

# TL Series Contrast Sensors

| Specifications                      |                                                                            |                                                                                                |                                            |
|-------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------|
| TL Series                           | TL46-W                                                                     | TL46-WL                                                                                        | TL46-WJ                                    |
| Sensing Distance                    | 6–12 mm [0.2–0.5 in]                                                       |                                                                                                |                                            |
| Spot Dimension                      | 1.5 x 5 mm                                                                 |                                                                                                | 0.8 x 4 mm                                 |
| Spot Orientation                    | 815 - Vertical and 815L - Horizontal                                       |                                                                                                |                                            |
| Emission                            | RGB LEDs: Blue (465nm)/ Green (520nm)/Red (630nm) with automatic selection |                                                                                                |                                            |
| Sensitivity                         | Yes via teach-in button/remote signal                                      |                                                                                                | No                                         |
| Output Type                         | NPN or PNP; Light-On/Dark-On selectable                                    |                                                                                                | PNP Light -on/Dark-on Selectable           |
| Delay                               | 0 – 20ms selectable via delay input                                        |                                                                                                | NA                                         |
| Operating Voltage                   | 10 – 30 VDC                                                                |                                                                                                |                                            |
| No-load Supply Current              | ≤ 50mA                                                                     | ≤ 85mA (bargraph on)<br>≤ 55mA (bargraph off)                                                  | ≤ 50mA                                     |
| Operating (Load) Current            | ≤ 100mA                                                                    |                                                                                                |                                            |
| Off-state (Leakage) Current         | < 5μA                                                                      |                                                                                                |                                            |
| Voltage Drop                        | ≤ 2V                                                                       |                                                                                                |                                            |
| Switching Frequency                 | 15kHz                                                                      | 20kHz                                                                                          | 50kHz                                      |
| Response Time                       | 33μs                                                                       | 25μs                                                                                           | 10μs                                       |
| Differential Travel                 | < 20mV                                                                     |                                                                                                |                                            |
| Jitter                              | < = 33μs                                                                   | < = 25μs                                                                                       | < 7μs                                      |
| Ripple                              | ≤ 2Vpp                                                                     |                                                                                                |                                            |
| Time Delay Before Availability (tv) | N/A                                                                        |                                                                                                |                                            |
| Reverse Polarity Protection         | Yes                                                                        |                                                                                                |                                            |
| Short-Circuit Protection            | Yes                                                                        |                                                                                                |                                            |
| Operating Temperature               | -10 to 55°C [14 to 131°F]                                                  |                                                                                                |                                            |
| Protection Degree (DIN 40050)       | IP67                                                                       |                                                                                                |                                            |
| Indication/Switch Status            | Output LED (yellow) /<br>Ready LED (green)                                 | Out LED (yellow)<br>Ready LED (green)<br>Delay and Keylock LED (orange)<br>5-segment Bar graph | Output LED (yellow) /<br>Ready LED (green) |
| Housing Material                    | Aluminum                                                                   |                                                                                                |                                            |
| Sensing Face Material               | PMMA                                                                       | Glass                                                                                          | PMMA                                       |
| Shock                               | EN60068-2-27                                                               |                                                                                                |                                            |
| Vibration                           | EN60068-2-6                                                                |                                                                                                |                                            |
| Weight                              | 170g [5.99 oz]                                                             |                                                                                                |                                            |
| Connectors                          | M12 5-pole connector                                                       |                                                                                                |                                            |
| Agency Approvals                    | CE cULus E227487                                                           |                                                                                                |                                            |

Note: To obtain the most current agency approval information– see the Agency Approval Checklist section on the specific part number's web page.