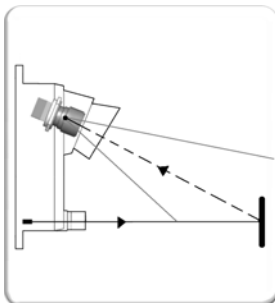
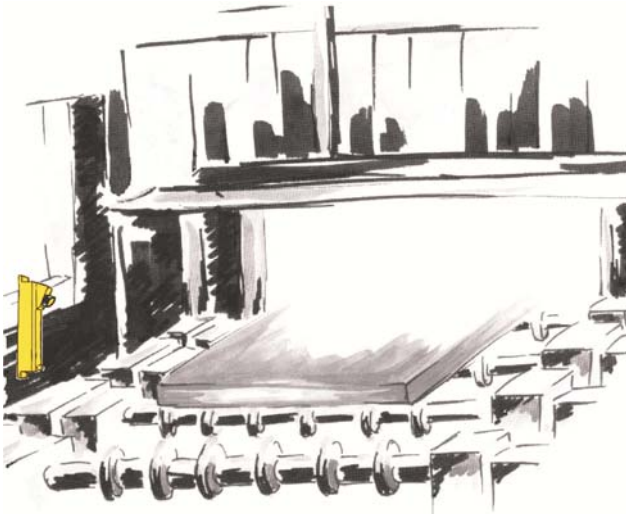


Trilas

TL



Measurement up to 10 m

Design for extremely harsh environment

High accuracy and fast response time



Features and benefits

The Trilas TL is a digital, high resolution, non-contact laser triangulation sensor for measurement of dimensional data. The target may be hot or cold, stationary or moving.

Sensor features and advantages:

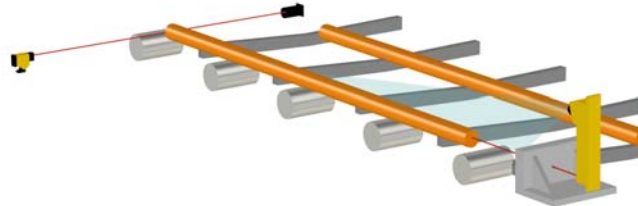
- Measurement at distances up to 10 m, measuring range up to 8 m.
- High accuracy: better than 0.08 % to 0.15 % depending on the measuring range.
- Fast response time : 5 ms.
- 2, 5 or 10 mW laser to adapt to different conditions: environment and target temperature.
- Autonomous sensor: ready to use, no calibration required.
- Autodiagnostic features.

By combining several sensors, dimensional measurements and shape readings can be achieved.

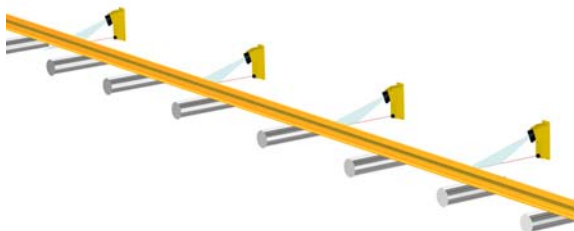
Typical applications



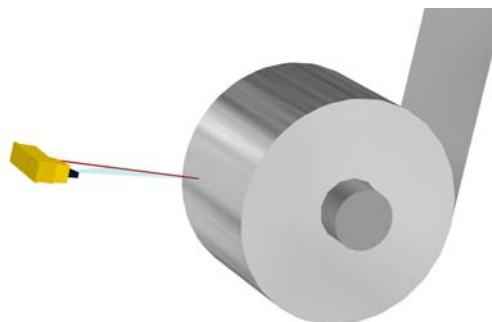
Width measurement



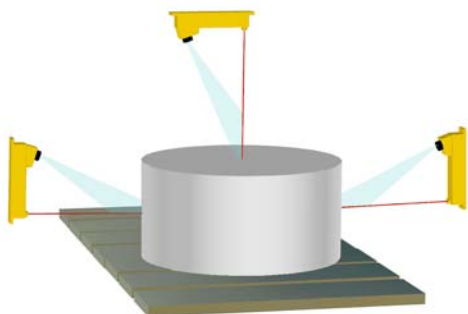
Bloom, billet, bar length measurement



Straightness measurement



Coil diameter measurement decoiler - recoiler



Coil centring, diameter and height measurement



Strip loop control

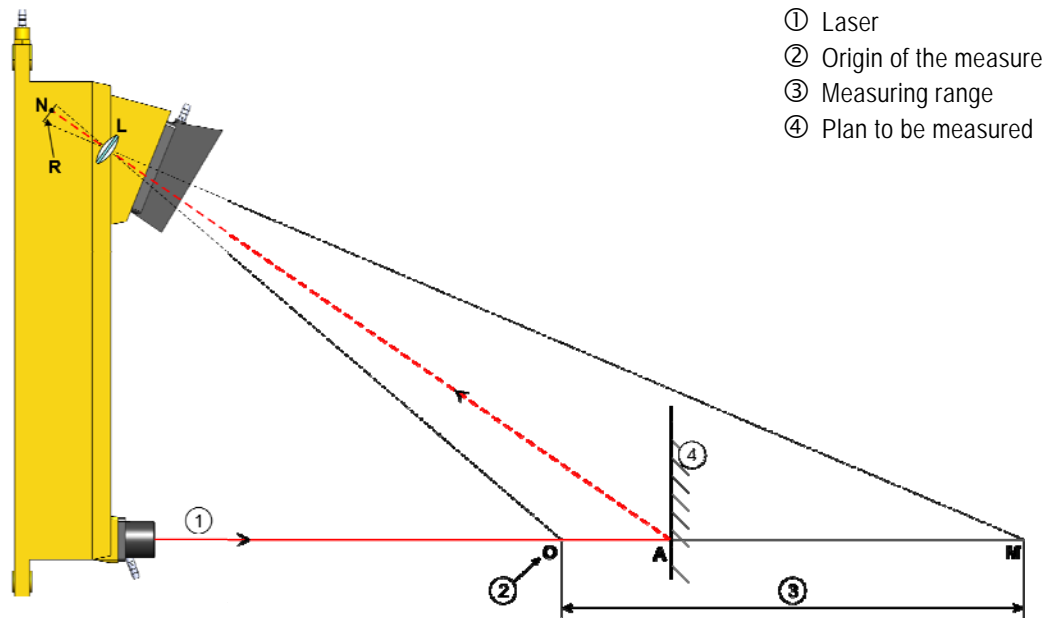


Presentation

The **Trilas TL** is an autonomous sensor mounted in a cast aluminium housing containing a visible laser emitter with its power supply and a diode array with focalisation optics and a signal processing electronic circuit. The output of the laser beam as well as the input of the focalisation optics is each protected by a protective hood with an air connection. This avoids dust deposit or steam interference. The electrical connection is made via a connector. The sensor is delivered already equipped with the corresponding plug on silicone armoured cable (∅ 13 - 2 m standard length). For Profibus DP versions, the plug is fitted with one cable protected by a steel braid (including IN and OUT Profibus cables) of a larger diameter (∅ 19). Different models of TL are available depending on laser power and measuring range.

Operating principle

The **Trilas TL** sensor uses the principle of optical triangulation. A diode array R observes through an optics L the image of the impact A of the emitted laser beam on the measured surface. The distance OA is related to the address N of the lighted diode of the array R. The relation, depending only on the geometry of the system, is determined by a factory calibration.



Models / Measuring range

Model		TL051 • TL021 • TL101 •	TL052 • TL022 • TL102 • TL112 •	TL053 • TL023 • TL103 •	TL057 • TL027 • TL107 • TL117 •	TL104 • TL114 •	TL105 •
Measuring Range	mm	500	1000	2000	3000	5000	8000
Distances starting from the fastening plan of the sensor	mm	700 - 1200	1200 - 2200	700 - 2700	1700 - 4700	2000 - 7000	2000-10000
Accuracy	± mm	0.4	1	3	4 (7 for TL 05)	7	15
Response time	ms	5 ms					

Other distances or accuracies available on request. (TL ••#•• solutions)



Outputs

Model	TL ●●●6	TL ●●●7	TL ●●●8	TL ●●●9
Measurement output*	0 - 10 V (10 mA max.)	4 - 20 mA (load 500 Ω)	0 - 10 V (10 mA max.)	4 - 20 mA (load 500 Ω)
Serial link	RS485 (measurement*, diagnostic, identification)		Profibus DP	
Digital inputs :	0 - 24 V : - Stop measurement: the measure value is sampled and hold if at 0V - Test - Laser beam on/off		0 - 24 V : - Laser beam on/off	
Digital outputs :	0 - 24 V 25 mA - Product presence (24 V when the target is inside the measuring range) - Alarm: power supply, absence of scan, internal temperature (24 V if no defect detected) - Laser on (24 V when the laser beam is on)			
Video output :	0 - 5 V - Analog output of the diode array signal. For diagnostic and maintenance.			
Cable	Connector fitted with silicone cable with protective steel braid, Ø13 Standard length of 2 m (other length : 3, 5 or 8 m)		Connector fitted with silicone cable with protective steel braid, Ø19 (including IN and OUT Profibus cables). Standard length of 2 m (other length : 3, 5 or 8 m)	

*Measurement value taken from the beginning of the measuring range.

Other technical characteristics

Model	TL05●●	TL02●●	TL10●●	TL11●●
Maximum target temperature	850 °C (1560 °F)	1000 °C (1830 °F)	1200 °C (2200 °F)	1300 °C (2370 °F)
Emitted power (FDA 21CFR1040 or IEC 60825-1)	4.5 mW (class IIIR / 3R)	2 mW (class IIIR/ 3R)	10 mW (class IIIB/3B)	10 mW (class IIIB/ 3B)
Wavelength	630 - 670 nm		632.8 nm	
Operating voltage	230 V (±10%) - 50 / 60 Hz 115 V (±10%) - 50 / 60 Hz			
Power consumption	30 VA		60 VA	
Weight	11 kg		16 kg	
Protection rating	IP 66 (cast aluminium case)			
Air Purging	Protection of the optic with clean air : 50 to 200 g/cm ² , 4 to 16 l/min			
Working temperature	0 to 50 °C (32 to 122 °F) without cooling Up to 120 °C (250 °F) with water cooling: industrial quality water at about 25 °C (77 °F), pressure 1-2 bar and flow 1-5 l/min			

Laser technology



Laser Class 3R
Laser Class 3B

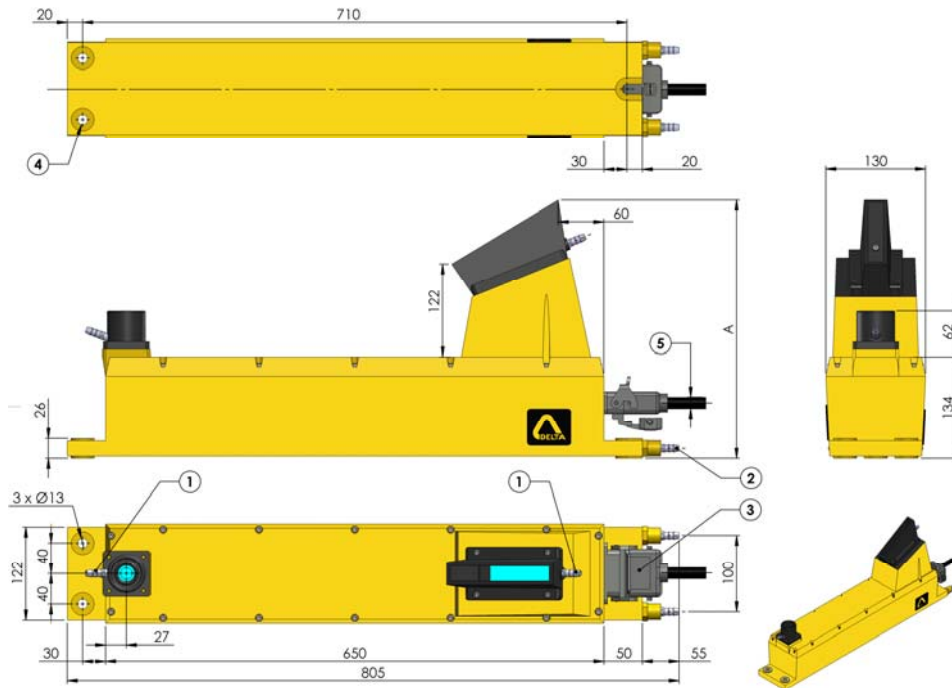
Beam attenuator: the **TRILAS** has a laser on/off input and can be easily disconnected in the event that personnel require access to the area where the sensor is mounted.

For **TL10.. TL11..** : An installation meeting all safety requirements for FDA 21CFR1040 or IEC 60825-1 requires the use of a junction box **CRN-TL** or of a box with the same safety functions (ON/OFF key switch, emission indicator, remote interlock connector).



Dimensions

TL02 ●● / TL10 ●● / TL11 ●●



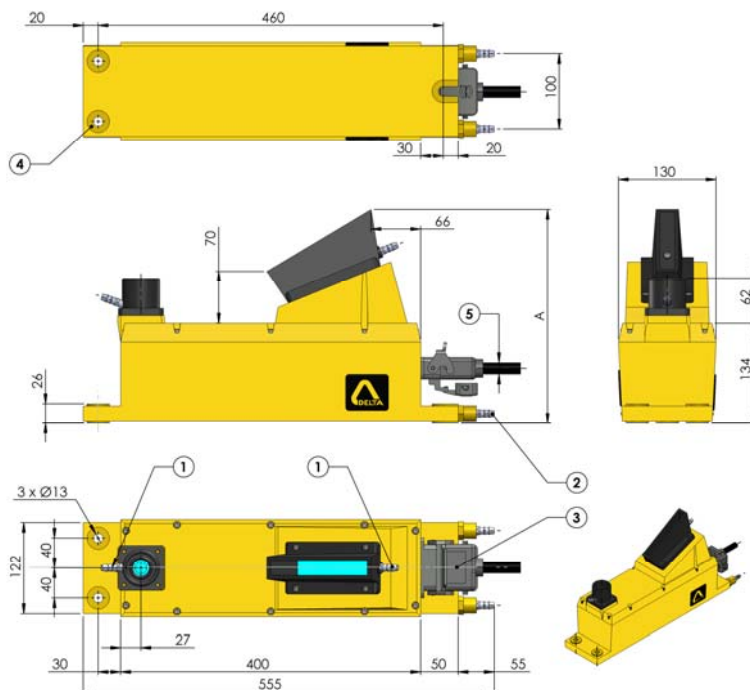
TL02●● / TL10●● / TL11●●	A
TL021 ● / TL101 ●	285
TL022 ● / TL102 ● / TL112 ●	285
TL023 ● / TL103 ●	285
TL027 ● / TL107 ● / TL117 ●	285
TL104 ● / TL114 ●	340
TL105 ●	340

- ① Air supplies \varnothing 10
- ② Water supplies \varnothing 12

- ③ Connector (clearance 140 mm)
- ④ Mounting with 3 screws M12

- ⑤ \varnothing 13 : TL ●●●●6 - TL ●●●●7
- \varnothing 19 : TL ●●●●8 - TL ●●●●9

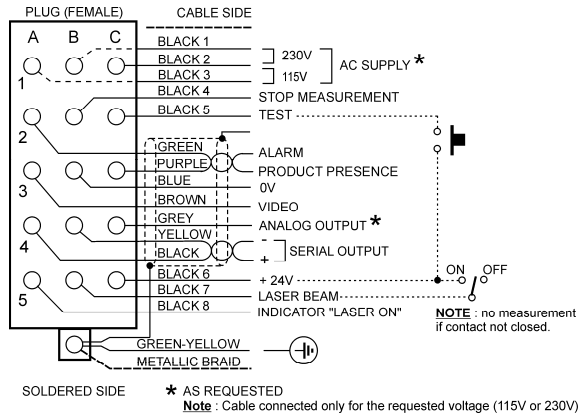
TL05 ●●



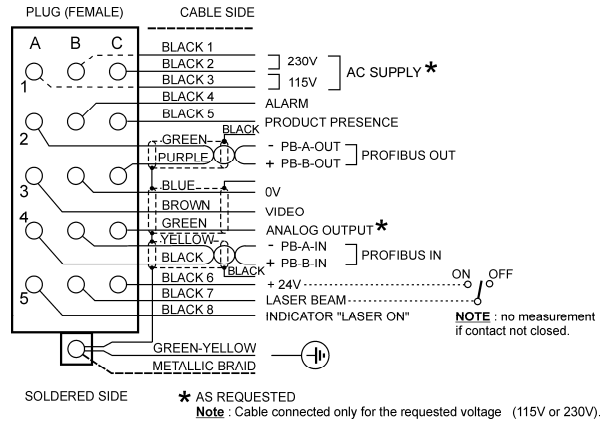
TL05	A
TL051 ●	285
TL052 ●	340
TL053 ●	285
TL057 ●	340



Connection

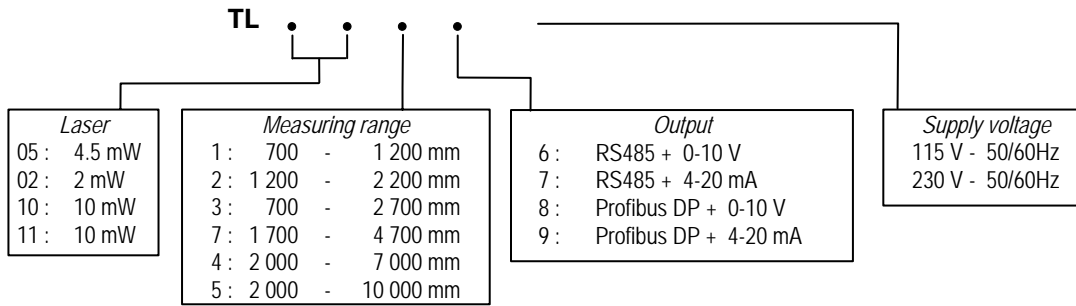


RS485 output option



Profibus DP output option

Reference for order



E.g. : TL1027 230V

Accessories

- Processing Unit MXP to connect one or several Trilas TL sensors, for application such as width, length measurement.
- Junction box CRN-TL for laser safety functions.
- Option: Configuration kit DELTACConf (not compatible with Profibus version): a Windows based software with cable, connector and USB/RS485 interface is supplied to access the parameters of the sensor. Order reference: CK-USB 230V or CK-USB 115V
- Laser check for measurement of the laser power.

DELTA

Tel. +33 388 78 21 01 - Fax : +33 388 76 02 29
 info@deltasensor.eu - www.deltasensor.eu

DELTA Sensor (China)

Tel: +86 519-85068855 - Fax: +86 519-85068865 - info@deltasensor.com.cn

DELTA Vertriebsgesellschaft mbH (Germany)

Tel: +49 700 3358 2736 - Fax: +49 700 3358 2835 - info.de@deltasensor.eu

DELTA Sensor (India)

Tel: +91 11 4054 8170 - Fax: +91 11 4054 8172 - info@deltasensor.co.in

DELTA USA, Inc. (North America)

Tel: +1 (412) 429 3574 - Fax: +1 (412) 429 3348 - info@delta-usa.com

DELTA Sensor (Russia)

Tel: +7 916 682 6027 - info.ru@deltasensor.eu

DELTA USA INC. (North America)
 CARNEGIE OFFICE PARC - BUILDING 2, SUITE 180
 600 NORTH BELL AVENUE, CARNEGIE, PA 15160

Tel: (412) 429 3574 Fax: (412) 429 3348
 info@delta-usa.com www.delta-usa.com

Subject to change without prior notice

Lt 1410 6