metralight

TLE1 Sensor

Quickstart guide

Product links

TLE1 sensor product page: http://www.metralight.com/our-products/reflective-laser-sensors/tle1

Software: http://www.metralight.com/software/tl-studio

Sensor power

TLE1 sensor have to be powered using POE (power-over-ethernet) using 12 or 24VDC.

Network setting

From factory, the IP address is initially set to 192.168.0.16. The host PC have to be on the same subnet as the sensor to be able to connect.

Check current network setting

To check the IP address of host PC or get setting needed for static network configuration:

1. Use WIN key to open start menu

2. Type **cmd** and press Enter

3. Type **ipconfig /all** and press enter

4. All network interfaces will be shown and its properties will be listed:

5. If the interface have IPv4 address from the range 192.168.0.XX, the sensor should be visible. Otherwise it is necessary to set static IP address of the computer. Write down following: IPv4 address, subnet mask, default gateway, DNS server addresses

Set static IP address

If you want to keep current network setting and add alternative IP address from IP range of the sensor, use previous steps to write down current properties of network interface. Then:

1. Open Control panel > Network and Internet > Network connections

2. Click on the interface using right mouse button, where the sensor is connected and choose **Properties**

3. In items list, choose Protocol IP version 4 and click on **Properties**
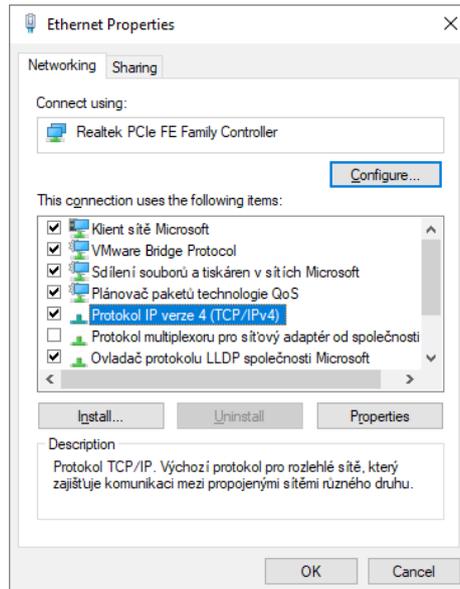
4. Check the option **Use the following IP** address and fill current network parameters: IPv4 address, subnet mask, default gateway, DNS server addresses (use values written down in previous steps or use values from your network/internet provider)
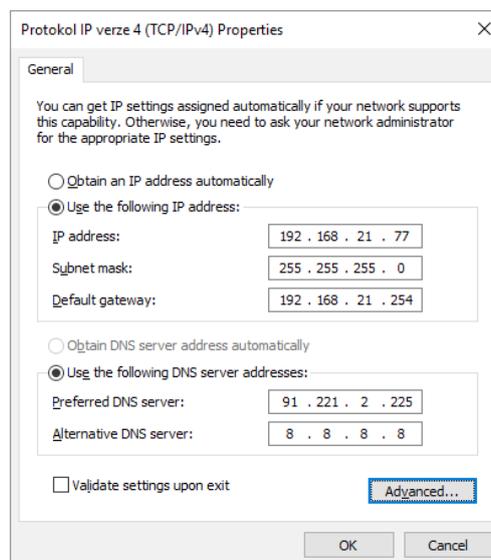
5. Click **Advanced...**

6. Click on **Add...**

7. Type any free IP address from range 192.168.0.XX (except the sensor address 192.168.0.16), subnet 255.255.255.0 and click **Add**

8. Apply all setting using **OK**

The PC should have the same network setting as before, but also the new alternative static IP address from range 192.168.0.XX. The setting can be verified using same steps as in the Check current network setting section. Connected sensor should be now visible from the host PC.

TLStudio connection

1. Verify or update host network setting

2. Connect the sensor using ethernet cable with POE to host PC or to the same network

3. Download latest TLStudio from product page (http://www.metralight.com/software/tl-studio/)

4. Unzip the archive and run start.bat

5. Type IP address of the sensor (initially 192.168.0.16), connection type set to Active and click **Connect**

6. Upon successful connection, sensor parameters should be loaded below and other tabs should be enabled

- **If the sensor could not be connected**
  - verify IP address of host PC and subnet setting matches the IP address of sensor

- **If the IP address was updated from factory setting and its IP address is unknown:**
  1. disconnect cable from sensor
  2. push and hold IP button on the back of the sensor
  3. connect cable and wait few seconds
  4. release IP button
  5. the sensor will be available on fallback address 192.168.0.15
  6. if the connection is still not possible, verify the network setting

TLStudio usage

TLStudio is mainly used to set up sensor parameters for specific measuring applications. When the sensor is set up, it should be integrated into the customer system and results should be read from sensor using DATA command (refer to chapter Command Set of TLE1 Sensor technical specification).

Up to 8 different settings can be stored into 8 memory banks. Banks can be switched between measurements using command or IO, thus 8 different situations can be handled by one sensor.

Connect to the sensor using steps from section „TLStudio connection". When connected, available studio tabs are Measure, Image, Profile, Stream, History, Sensor and Settings.

On image bellow, the measuring range, which corresponds to range on image and profile tab, is marked with red color. Different versions of sensor have different measuring range, refer to chapter Description of TLE1 sensor technical specification for information about measuring range.
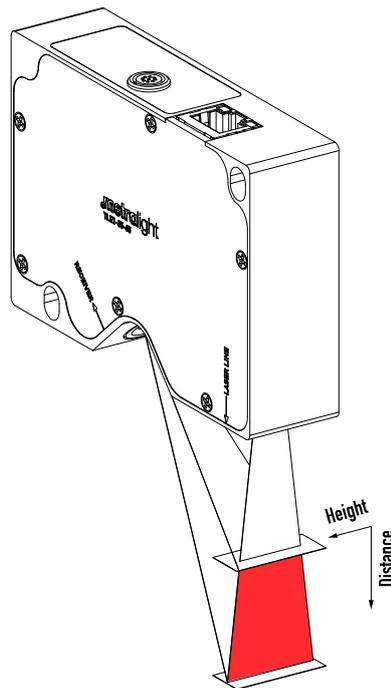
Measure tab

Measure tab contains values of four points found on profile of measured object. Each point have different meaning based on measuring mode. Refer to chapter Modes of TLE1 sensor technical specification for more information.

Values can be frozen by clicking on measured values. Below measured values, minimum and maximum for both axes are displayed and can be reset by mouse click. Using switch below points, unwanted points can be disabled.
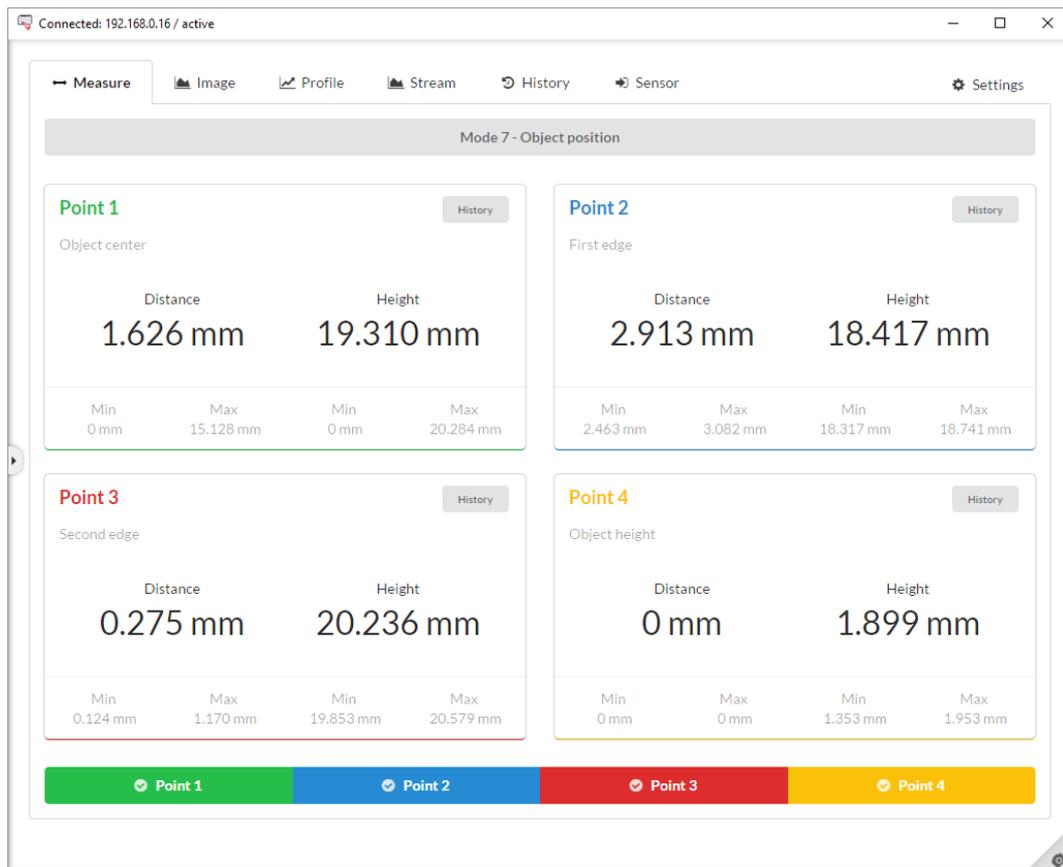
Image tab

Contains raw data from image sensor and settings which influence data acquisition. Units of the data are pixels. Tab also contains parameters which influence profile processing from image data. Profile overlay over image can be used to see changes in profile after parameter change.

- Time of integration – epxosition time, higher value means brighter image

- Laser power – higher value, more laser light

- Threshold – minimal light of pixel on each row of image to be taken to profile processing algorhitm

- Line processing – method of profile computation from pixels over threshold – first peak, last peak, biggest peak or all over threshold (mean)

- Window – active area of image sensor, smaller area allows higher framerate

- ROI (region of interest) – area where the profile is processed, can be used to avoid unwanted area of image, reflections, etc.
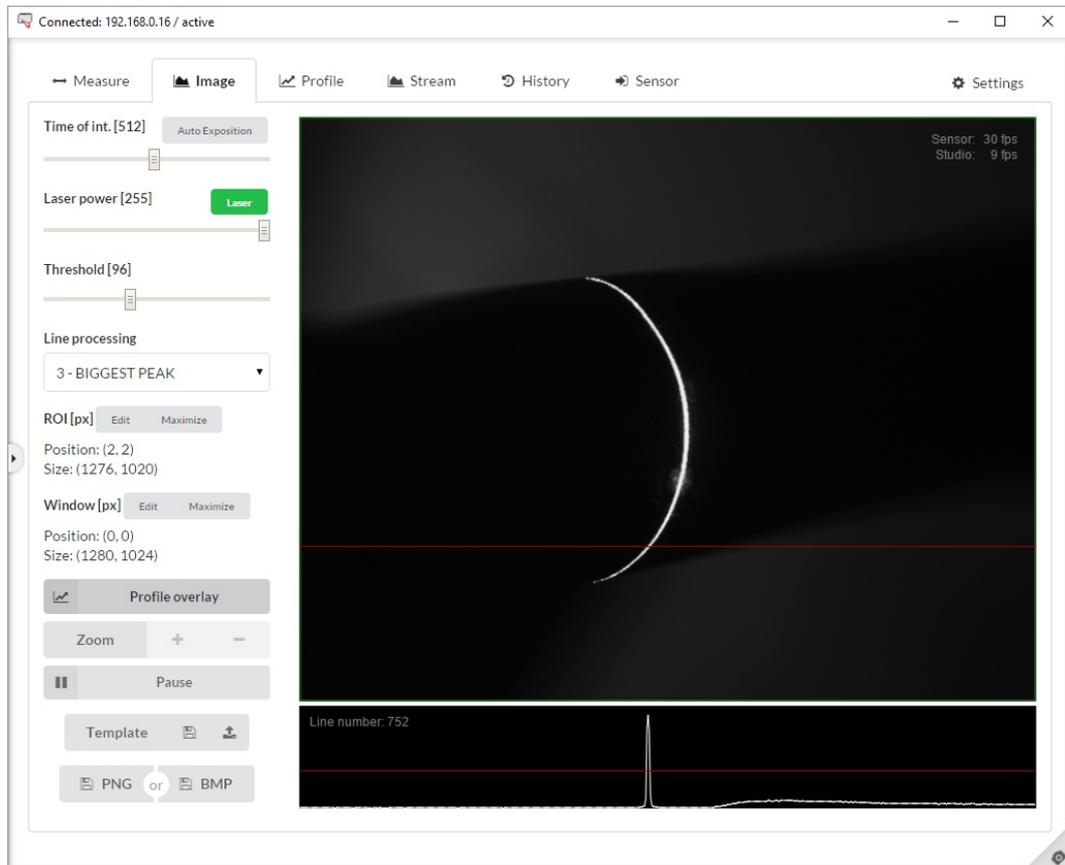
Profile tab

Contains processed and calibrated profile based on data from image sensor. Units can be configured in TLStudio, but it is one of: micrometers, millimetres and inches. Two cursors can be used to measure vertical or horizontal distances between any two points of profile.

Based on selected measuring mode, points which visualizes current result are displayed over profile.
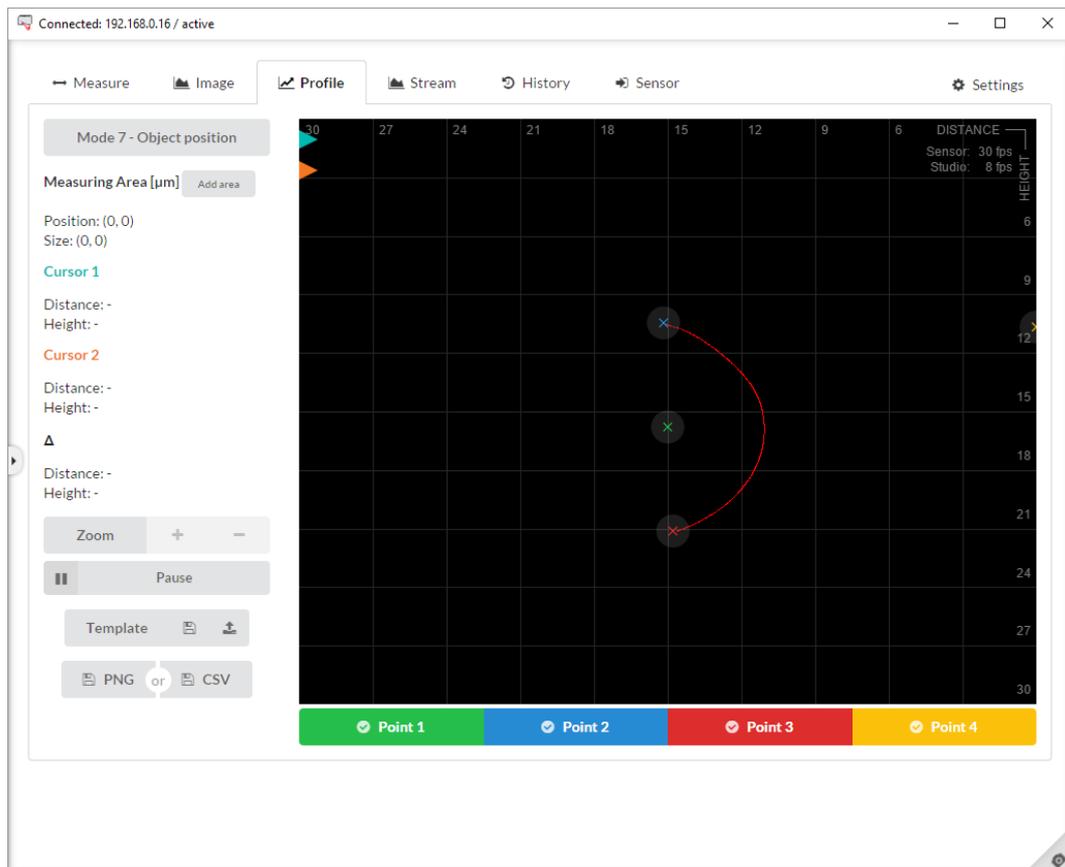
Stream tab

Stream allows to read and analyse data at current maximum sensor frame rate – allows to analyse dynamic scenes and phenomena.

History tab

Visualizes all measurements read from sensor at software frame rate in selected time span – can be used to monitor how the measured value evolves in time.

Sensor tab

Contains all available sensor parameters in one configuration panel. Parameters can be changed and different setting can be saved into 8 available parameter banks. Refer to chapter Sensor Parameters of TLE1 sensor technical specification, for more information about all available parameters.

Settings tab

Contains sensor IP setting, tools for update/readout of both sensor firmware and memory, and version information.