

# Lambda Sensor

## LSU 4.2

### Features:

- Application: lambda 0.65 to  $\infty$
- Wide-band
- Exhaust gas temperature range (max.) for short time <1300°C
- Max. Hexagon temperature 570°C



This sensor is designed to measure the proportion of oxygen in exhaust gases of automotive gasoline engines.

The wide band lambda sensor LSU 4.2 is a planar  $ZrO_2$  dual cell limiting current sensor with integrated heater. Its monotonic output signal in the range of lambda 0.65 to air makes the LSU capable of being used as a universal sensor for lambda 1 measurement as well as for other lambda ranges. The connector module contains a trimming resistor, which defines the characteristic of the sensor.

The main benefit of the LSU is the very robust design.

This lambda sensor operates only in combination with a special LSU-IC, which is implemented in the HT-CL-AF1000-LS.

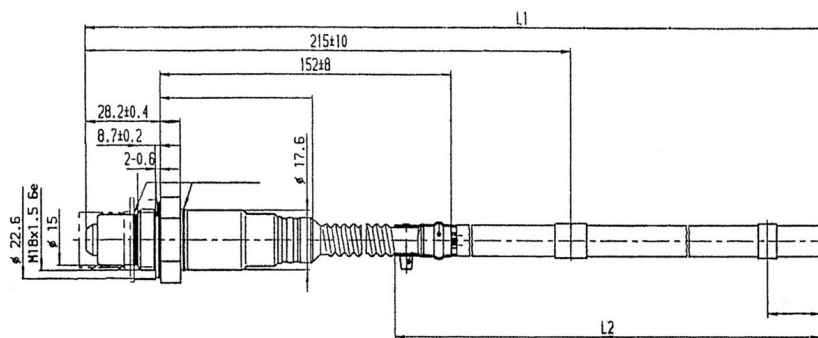
## Application

• Application	lambda 0.65 to $\infty$
• Fuel compatibility	Gasoline
• Exhaust gas pressure	$\leq 2.5$ bar (higher with decrease accuracy)
• Exhaust gas temperature range (operating)	930°C
• Exhaust gas temperature range (max.) for short time	$< 1300^{\circ}\text{C}$
• Hexagon temperature	$< 570^{\circ}\text{C}$
• Cable and protective sleeve temperature	$< 250^{\circ}\text{C}$
• Connector temperature	$< 120^{\circ}\text{C}$
• Storage temperature range	-40 to $100^{\circ}\text{C}$
• Max. vibration (stochastic peak level)	300 $\text{m/s}^2$

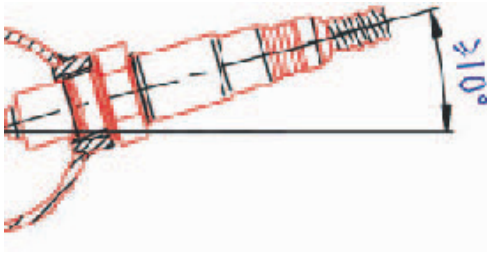
## Installation Notes

- This lambda sensor operates only in combination with a special LSU-IC, which is implemented in the HT-CL-AF1000-LS.
- The lambda sensor should be installed at point which permits the measurement of a representative exhaust -gas mixture, which does not exceed the maximum permissible temperature.
- Install at a point where the gas is as hot as possible.
- Observe the maximum permissible temperature.
- As far as possible install the sensor vertically (wire upwards).
- The sensor is not to be fitted near to the exhaust pipe outlet, so that the influence of the outside air can be ruled out.
- The exhaust-gas passage opposite the sensor must be free of leaks in order to avoid the effects of leak -air.
- Protect the sensor against condensation water.
- The sensor is not to be painted, nor is wax to be applied or any other forms of treatment. Use only the recommended grease for lubricating the thread.

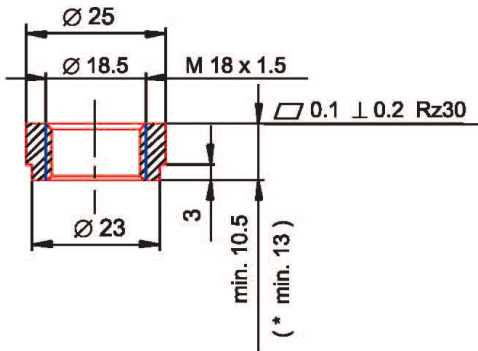
## Dimensions



## Mounting recommendation



Recommended materials for the mating thread in the exhaust pipe \*: THexagon > 600°C or TGas > 930°C



## Specifications

### Mechanical Data

Weight w/o wire: ..... 120 g  
 Thread: ..... M18x1.5  
 Wrench size: ..... 22 mm  
 Tightening torque:..... 40 to 60 NM

### Electrical Data

Power supply H+ nominal: ..... 9 V  
 Heater power steady state:..... 10 W  
 Heater control frequency: ..... >2 Hz  
 Nominal resistance of Nernst cell: ..... 80 Ω  
 Max. current load for Nernst cell:..... 10(DC)/250(AC) μA

### Characteristic

Signal output: ..... I<sub>p</sub> meas  
 Accuracy at lambda 0.8: ..... 0.80 ± 0.01  
 Accuracy at lambda 1: ..... 1.016 ± 0.007  
 Accuracy at lambda 1.7: ..... 1.70 ± 0.05

I <sub>p</sub> [mA]	lambda	UA [V], v=17
-1.85	0.70	-
-1.08	0.80	0.364
-0.76	0.85	0.700
-0.47	0.90	1.005
0.00	1.009	1.500

I <sub>p</sub> [mA]	lambda	UA [V], v=17
0.34	1.18	1.858
0.68	1.43	2.216
0.95	1.70	2.500
1.40	2.42	2.973
2.55	Air	4.183

**Please note:** U<sub>A</sub> is not an output signal of the lambda sensor, but the output of the evaluation circuit. Only I<sub>p</sub> correlates with the oxygen content of the exhaust gas.

### Heater Strategy

T <sub>Sensor</sub> [°C]	-40	-10	20	50
U <sub>H, eff, max</sub> (t=0) [V]	8,5	9,5	10,5	10,5

### Connectors and Wires

Connector: ..... Y 928 K00 050  
 Mating connector: ..... D 261 205 138-01  
 Pin 1:..... IP/APE  
 Pin 2:..... UN/RE  
 Pin 3:..... VM/IPN  
 Pin 4:..... Uh-/H  
 Pin 5:..... Uh+/H  
 Pin 6:..... IA/RT  
 Wire length L:..... 60.0 cm



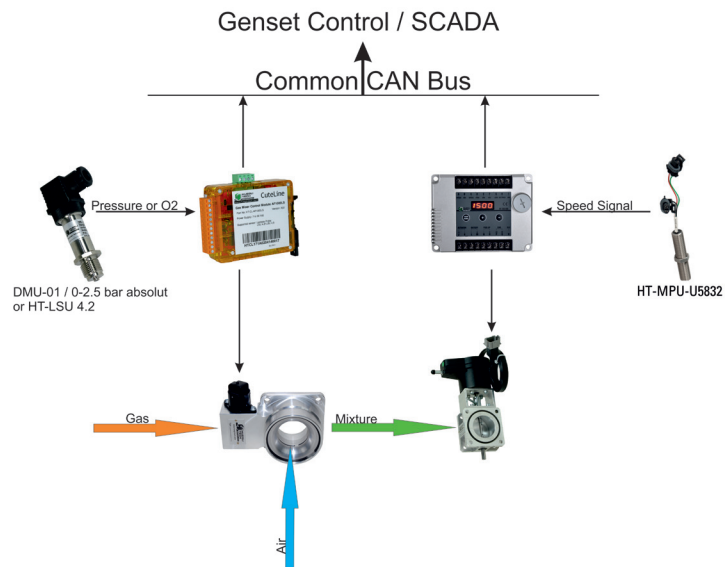
## The closed governing loop together with Cuteline Lambdacontroller

The Lambda Control in the closed loop consisting of:

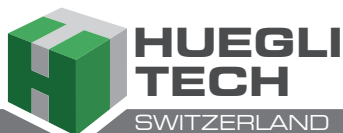
- HT-CL-AF-1000LS or 1500P Lambdacontroller
- DMU-01 / 0-2.5 Pressure sensor
- LSU 4.2 Lambdasensor
- HT-SG-100 Governor
- HT-MPU-U5832 Pick Up

Wiring Harness

- CH-DMU-L07
- CH-LSU-L07
- CH-1230-L04



Local Distributor / Partner:



HUEGLI TECH AG (LTD)  
 Murgenthalstrasse 30  
 4900 Langenthal Switzerland  
 Phone: +41 62 916 50 30  
 Fax: +41 62 916 50 35

e-mail: [sales@huegli-tech.com](mailto:sales@huegli-tech.com)  
[www.huegli-tech.com](http://www.huegli-tech.com)