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SA-LSU4.2-000 LSU4.2 lambda probe

Key Features

- High signal resolution and accuracy
- Measuring range λ 0.65 to ∞ (air) or 6 to 16 A/F
- Fast response time 20ms (50Hz)

Options:

- Connector and cable length can be modified on customer request
- Version with Deutsch AS 6 connector available (SA-LSU4.2-001)

Technical specifications

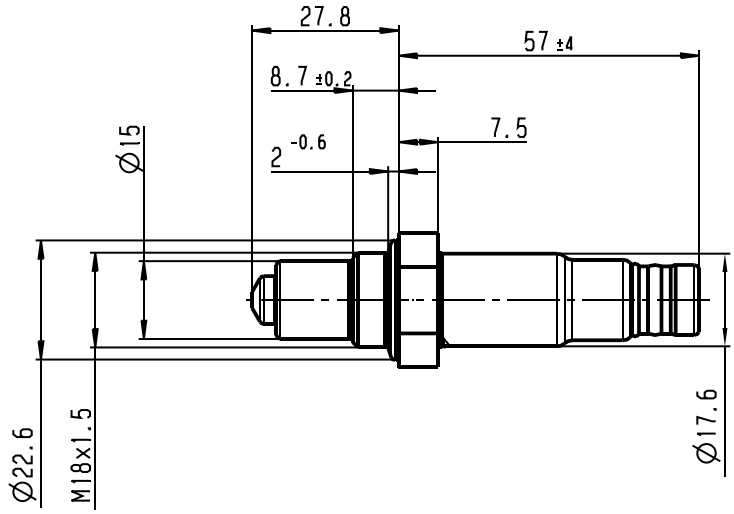
Electrical characteristics		
Supply voltage	V	12
Exhaust gas pressure	bar	< 4
Operating exhaust gas temperature	°C	< 930
Maximum exhaust gas temperature	°C	< 1030
Air/Fuel Ratio	A/F	6 to 16
Heating power	A	max. 2
Linear output (Air/Fuel ratio) from		6:1 to 16:1
Heater control frequency	Hz	≥2
Nominal resistance for Nernst cell	Ω	80

Environmental data		
Storage temperature range	°C	-40 to 100
Max. vibration (stochastic peak level)	G	< 100

Mechanical characteristics		
Sensor length	mm	84
Weight (without cable)	g	120
Thread	M	18x1.5
Sensor length with cable	mm	870
Wrench size	mm	22
Tightening torque	Nm	40 to 60

Ordering information	
Art. No. SA-LSU4.2-000	Bosch 1 928 404 016
Art. No. SA-LSU4.2-001	Deutsch AS 6 07-35PN

Dimensions

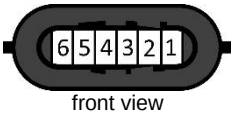


Connector layout

Connector type

SPEC 000 - Bosch 1 928 404 016

Pin	Name	Description	Color
1	APE	Outer Pumping Electrode and Trim Resistor	red
2	RE	Reference Electrode	black
3	IPN	Combined Inner Pumping and Nernst Electrode	yellow
4	H-	Heater Ground	white
5	H+	Heater Power	grey
6	RT	Trim Resistor	-



front view

SPEC 001 - Deutsch AS 6 07-35PN

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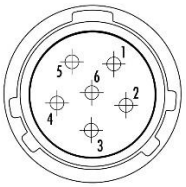


front view

Factory calibration

Do not modify the resistor inside the connector. Keep the original Bosch connector if you have remove it and contact 2D

Installation Position / Design Guidelines

Installation in the exhaust system must be at a position ensuring representative exhaust gas composition whilst also not exceeding the temperature limits. The sensor must be positioned upstream of catalyst and downstream turbocharger (if existing)

The sensor installation position design must be selected in a way to minimize exhaust side stress of the sensor with exhaust gas condensate.

Heat-Up Profile

The start of the heat-up profile must be delayed until all exhaust gas condensate is gone

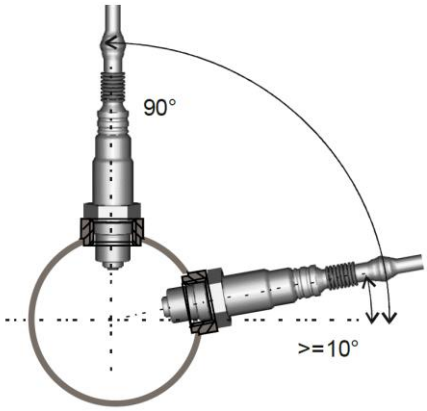
➔ All 2D LSU Modules have a special heat-up profile to minimize the influence of exhaust gas condensate

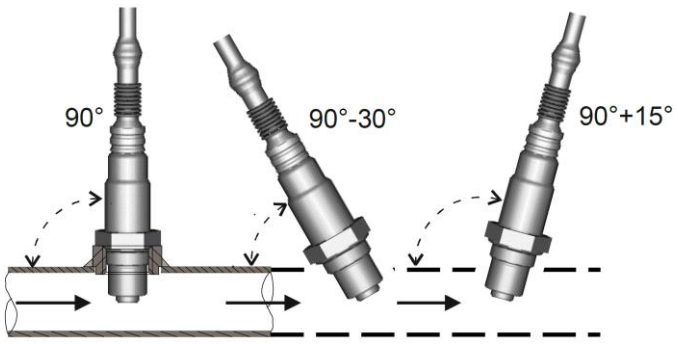
Design Guidelines

- Locate sensor as close to the engine as possible, respecting the temperature limits
- The exhaust pipe in front of the sensor must not contain any pockets, projections, protrusions, edges flex-tubes etc. to avoid accumulation of exhaust gas condensate. A downwards slope of the pipe is recommended.
- Make sure, that the front hole of the protection tube does not point against exhaust gas stream.
- Also make sure, that no accumulated water can flow back from locations downstream of the sensor
- Attempt to achieve rapid heating-up of the exhaust pipes in the area in front of the sensor and of the complete sensor thread boss area, to avoid developing of exhaust gas condensate.
- The sensor thread boss has to be designed as shown below to reach a rapid heat up of the sensor protection tube area. Make sure, that the protection tube is fully reaching into the exhaust gas stream.

Installation angle should be aimed perpendicular (90°); at least it must be inclined 10° towards horizontal to prevent the accumulation of exhaust gas condensate between the sensor housing and sensing element.

The tilt angle against the exhaust gas stream should be aimed as 90°, maximum inclination 90°+15° (protection tube opening towards exhaust gas flow 90°-30°).



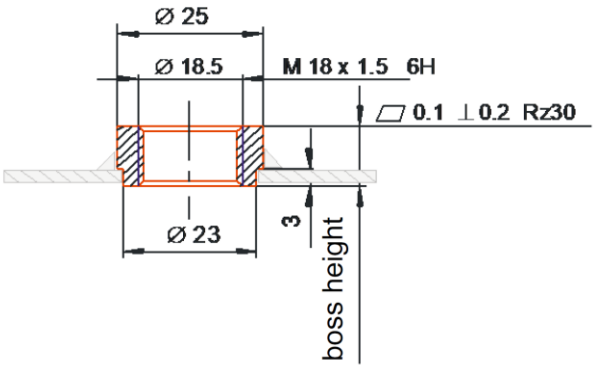


The sensor must not be exposed to strong mechanical shocks (e.g. while the sensor is installed). Otherwise the sensing element may crack without visible damage to the sensor housing.

The PTFE formed hose is part of the reference air volume of the sensor and must be kept sealed and undamaged. For installation, the minimum bending radius of the hose must be 12 mm. Keep the PTFE formed hose away from sharp edges and avoid contact/friction with frame/engine assembly.

Thread Boss Design

Recommended material for the thread boss:
Heat-resistant stainless steel, e.g. 1.4301; 1.4303; SAE 30304; SAE 30305



Thread boss dimensions should be as shown in the figure above.

Acceptable range for boss heights:

- Minimum boss height ≥ 10.5 mm
  to ensure complete coverage of sensor thread and protection tube weld seam.
- Recommended boss height ≥ 13 mm
  - for hot applications (Thexagon > 600 °C or Texhaust gas > 930 °C, to avoid overheating of protection tube weld seam and sensor hexagon.
  - for tilt angles with gas entry hole towards exhaust gas stream (> 90°) to cover the protection tube weld seam.
- Maximum boss height ≤ 22 mm
  If the height is ≥ 16 mm the danger of thermal shock increases due to exhaust gas condensate formation inside the protection tube.

The outer diameter of the welded-on boss should be selected so that the universal oxygen sensor gasket ring is seated solidly when mounted, e.g. Ø 25 mm. Greater diameters increase the mass and thus delay the heat-up of the boss, promoting the formation of exhaust gas condensate. The boss ends flush with the inner wall inside of the exhaust gas pipe.

The tolerance of the mating thread boss (6H) must be ensured after the thread boss is welded into the exhaust pipe (with respect to welding distortion).