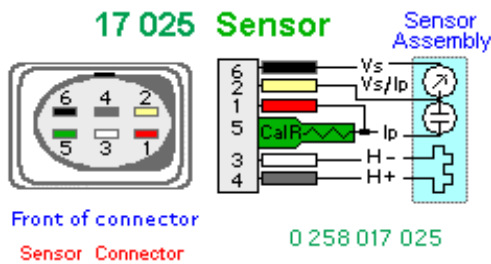


LSU4.9
 VEMS v3
 (2016-02-15)



LSU4.9 sensor has **faster response** (than LSU4.2), and **longer life** expected under similar conditions.

ALWAYS identify LSU4.9 pin5 (sensor wire missing, not a real signal !)

Function	COLOR	LSU4.9 pin	LSU4.2 pin	EC18 pin	
pump+	red	1	6	EC18/9	
pump-	yellow	2	5	EC18/7	
nernst	black	6	1	EC18/13	see pullup resistor note below
heater-	white	3	4	EC18/18	
heater+	grey	4	3	+12V	
Rcal	-	5	2	NC	no wire to sensor (see Rcal below)

Check sensor-connector orientation by Rcal = LSU4.9 / pin5 (**sensor wire missing**), and by sensor wire colors. **Do not just follow drawing without checking.**

Power up ECU and measure nernst voltage (with nothing connected. Config does not matter at this point). If less than 4V (above GND), then install a **27k resistor between nernst and +5V** for correct operation (pullup resistor for nernst reference current according to Bosch requirement: nernst reference current replaces the LSU4.2 reference oxygen gas connection-tube, which was sensitive to clogging).

If the 27k nernstpullup resistor is installed (outside or inside the box as default now in 2016), nernst measures >4V (typically appr 4.9V) when open circuit. With a 1k pulldown (test resistor towards GND) measures typically appr 175-180 mV => don't install another 27k externally if already installed internally.

LSU4.9 must be selected in config (Wideband settings: independently possible for 1st and 2nd WBO2 channel). Other than that, same PID values work (eg. Ri target is 165).

Rcal = 84.5 Ohm; calibration 149
 Rcal = 105.9 Ohm; calibration 166
 Rcal = 158.3 Ohm; calibration = 208

Rcal verification Ohm measurement:
Between LSU4.9 sensor pin1 and pin5
 (pin5 is resistor in connector, no wire to sensor)

$$0.8 \quad 81.4 \text{ Expected wbo2_calibration} = \text{Rcal} * 0.8 + 81.4$$

Rcal	calibration (examples)	Rcal	calibration
60	129.4	140	193.4
65	133.4	145	197.4
70	137.4	150	201.4
75	141.4	155	205.4
80	145.4	160	209.4
85	149.4	165	213.4
90	153.4	170	217.4
95	157.4	175	221.4
100	161.4	180	225.4
105	165.4	185	229.4
110	169.4	190	233.4
115	173.4	195	237.4
120	177.4	200	241.4
125	181.4	205	245.4
130	185.4	210	249.4
135	189.4	215	253.4
	Continued ==>	218	255.8