Pin No. (order not important)	Voltage reading (V)	Fluctuation of reading with engine RPM	Function of wire	Training result	Description of circuit
Pin 1.	3.4	Fluctuation of approx. 1-1.4 Volts with engine RPM	Pump current		ECU will be moving current with these two wires to maintain its reference voltage across the stable pin outs at 0.45 Volts. Current flow is the method the ECU can detect the actual air/fuel ratio outside of the strict stoichiometric point.
Pin 2.	3.4	Fluctuation of approx. 1-1.4 Volts with engine RPM	Pump current		ECU will be moving current with these two wires to maintain its reference voltage across the stable pin outs at 0.45 Volts. Current flow is the method the ECU can detect the actual air/fuel ratio outside of the strict stoichiometric point.
Pin 3.	11	Stable	PWM controlled ECU ground for heater circuit	Once identified, a multimeter can be used to check the resistance reading **(with the lambda sensor disconnected from the engine)** across the lambda side pin, and the corresponding battery voltage supply pin. Nearly all wideband (5 wire / 6 pin) oxygen sensors will have a heater resistance of between 2 - 4 Ohms, indicating a functional internal heater circuit.	ECU will be switching this ground pin (via an internal ECU ground) with a PWM to maintain the internal nose temperature of the lambda sensor to within its strict operating range. A likely result lower than 10-11 Volts is usually indicative of internal ECU ground switching failure, one of the more common failure modes in modern vehicles with wideband oxygen sensor systems, due to the high duty cycle of this circuit - **NOT** a lambda sensor component fault.
Pin 4.	4.1	Stable	Nernst*	Multimeter connected across this and Pin 6 (in good operation system) should be reading 0.45 V.	A stable voltage reading (when scoped with multimeter to ground), without fluctuation (within multimeter accuracy) irrespective of engine speed. Once this stable voltage pin (and the corresponding pin) are identified, a multimeter connected across (polarity un-important) will read a constant 0.45 Volts when the system (and lambda sensor) are functioning as expected, with zero fluctuation during differing engine RPM.
Pin 5.	14.6	Stable	Battery voltage, power for heater circuit	Once identified, a multimeter can be used to check the resistance reading **(with the lambda sensor disconnected from the engine)** across the lambda side pin, and the corresponding ground pin. Nearly all wideband (5 wire / 6 pin) oxygen sensors will have a heater resistance of between 2 - 4 Ohms, indicating a functional internal heater circuit.	Engine run ignition position permanent battery supply voltage to the lambda sensor internal heater circuit.
Pin 6.	3.7	Stable	Ref. voltage	Multimeter connected across this and Pin 4 (in good operation system) should be reading 0.45 V.	A stable voltage reading (when scoped with multimeter to ground), without fluctuation (within multimeter accuracy) irrespective of engine speed. Once this stable voltage pin (and the corresponding pin) are identified, a multimeter connected across (polarity un-important) will read a constant 0.45 Volts when the system (and lambda sensor) are functioning as expected, with zero fluctuation during differing engine RPM.

Pin numbering within the vehicle engine loom side of connector (not lambda side) are irrelevant. Testing technician can use however they wish to number the pins (in whichever order), with just the requirement to make a table and record the results of each pin-out.

The chosen numbering can then be translated into the above table for diagnostic check.

Results should reveal; **two pins** with fluctuating voltage (pump current circuits), **two stable voltage pins** (do not fluctuate with engine RPM), and the **remaining battery voltage heater supply pin** with **switched PWM ground pin** (multimeter will display this reading as an average 10-11 Volts approx.).

*Nernst Voltage – Higher than 650° C, oxygen pressure difference across a piece of ZrO_2 (Zirconium Dioxide) will cause a voltage to be generated. This is known as the Nernst Voltage, which is used to logically control the current flow through the cells within the sensor, enabling the air/fuel ratio analysis.