

# VasfEFI S2

## OEM 56-pin Connector Pinout - Installer Documentation

### Document purpose

This document describes the final OEM 56-pin connector pinout for the VasfEFI S2 ECU daughter board. It is intended for installers, harness builders and end users wiring the ECU into a vehicle.

**Connector orientation:** the connector has two physical rows. Pins 1-28 are the upper row and pins 29-56 are the lower row when viewed according to the harness drawing / ECU connector face view. Always verify connector orientation before crimping or depinning a harness.

**Important:** IGNITION\_SWITCH is the main switched +12 V power input for the ECU. Battery voltage for the GUI is measured internally by the ECU; there is no dedicated external VBATT pin in this pinout.

### Physical row / column view

Column	Upper row	Lower row
1	1 - GND_SENSOR	29 - PGND
2	2 - IGNITION_SWITCH	30 - FUEL_P_S
3	3 - MAIN_RELAY_OUT	31 - AUX_ANALOG_IN / O2_2_IN
4	4 - +5V_SENSOR	32 - +5V_SENSOR_2
5	5 - CANL	33 - CANH
6	6 - VR1+	34 - VR1-
7	7 - VR2+	35 - VR2-
8	8 - CAM_HALL	36 - CKP_HALL
9	9 - TPS_S	37 - CLT_S
10	10 - IAT_S	38 - MAP_S
11	11 - O2_IN / EXT_WIDE	39 - KNOCK_IN
12	12 - FLEX / AUX_DIGITAL_IN	40 - VSS
13	13 - FUEL_TEMP	41 - OIL_P / OIL_T
14	14 - AUX_LOW_SIDE_2A	42 - GND
15	15 - LAUNCH / CLUTCH_IN	43 - NITROUS_OUT
16	16 - FUEL_PUMP_OUT	44 - FAN_OUT
17	17 - BOOST_OUT	45 - TACHO_OUT
18	18 - IDLE1_OUT	46 - IDLE2_OUT
19	19 - VVT1_OUT	47 - VVT2_OUT
20	20 - INJ1_OUT	48 - INJ2_OUT
21	21 - INJ3_OUT	49 - INJ4_OUT
22	22 - INJ5_OUT	50 - INJ6_OUT
23	23 - INJ7_OUT	51 - INJ8_OUT
24	24 - IGN1_OUT	52 - IGN2_OUT
25	25 - IGN3_OUT	53 - IGN4_OUT
26	26 - IGN5_OUT	54 - IGN6_OUT
27	27 - IGN7_OUT	55 - IGN8_OUT
28	28 - RESERVED / SHIELD	56 - PGND

## Pinout table - pins 1 to 28

Pin	Name	Type	Description
1	GND_SENSOR	Sensor ground	Clean sensor/signal ground. Do not use for relays, solenoids, injectors, fan or other loads.
2	IGNITION_SWITCH	Main ECU power input	Fused +12 V switched ignition input. This is the main ECU power-on feed.
3	MAIN_RELAY_OUT	Low-side output	Main relay control output. Relay coil must be supplied from fused +12 V.
4	+5V_SENSOR	5 V sensor supply	Filtered 5 V supply for external sensors only.
5	CANL	CAN bus	CAN Low. Wire as twisted pair with CANH.
6	VR1+	Trigger input	Primary VR crank sensor positive input.
7	VR2+	Trigger input	Secondary VR input positive.
8	CAM_HALL	Digital trigger input	Camshaft Hall sensor input.
9	TPS_S	Analog input	Throttle position sensor signal.
10	IAT_S	Analog input	Intake air temperature sensor signal.
11	O2_IN / EXT_WIDE	Analog input	External wideband analog output or narrowband O2 input, depending on configuration.
12	FLEX / AUX_DIGITAL_IN	Digital/frequency input	Configured as a digital input. Can be used for Flex Fuel frequency input or auxiliary digital input.
13	FUEL_TEMP	Analog input	Fuel temperature sensor input.
14	AUX_LOW_SIDE_2A	Low-side relay output	Auxiliary active-low output intended to activate relays. Maximum 2 A when hardware and cooling limits are respected.
15	LAUNCH / CLUTCH_IN	Digital input	Launch control or clutch switch input.
16	FUEL_PUMP_OUT	Low-side output	Fuel pump relay control output. Do not power the pump directly unless rated for the load.
17	BOOST_OUT	PWM low-side output	Boost control solenoid output.
18	IDLE1_OUT	PWM output	Idle control output 1.
19	VVT1_OUT	PWM low-side output	VVT solenoid output 1.
20	INJ1_OUT	Injector low-side	Injector output 1.
21	INJ3_OUT	Injector low-side	Injector output 3.
22	INJ5_OUT	Injector low-side	Injector output 5.
23	INJ7_OUT	Injector low-side	Injector output 7.
24	IGN1_OUT	0-5 V logic output	Ignition output 1 for smart/transistorized coils only.
25	IGN3_OUT	0-5 V logic output	Ignition output 3 for smart/transistorized coils only.
26	IGN5_OUT	0-5 V logic output	Ignition output 5 for smart/transistorized coils only.
27	IGN7_OUT	0-5 V logic output	Ignition output 7 for smart/transistorized coils only.
28	RESERVED / SHIELD	Reserved	Do not connect unless specified in a dedicated harness drawing.

## Pinout table - pins 29 to 56

Pin	Name	Type	Description
29	PGND	Power ground	Power ground for ECU load outputs. Connect to engine/battery ground with suitable wire size.
30	FUEL_P_S	Analog input	Fuel pressure sensor signal.
31	AUX_ANALOG_IN / O2_2_IN	Analog input	Auxiliar analog input for optional sensor or second O2 signal, depending on configuration.
32	+5V_SENSOR_2	5 V sensor supply	Second filtered 5 V sensor supply pin. Same rail as +5V_SENSOR.
33	CANH	CAN bus	CAN High. Wire as twisted pair with CANL.
34	VR1-	Trigger input	Primary VR crank sensor negative input.
35	VR2-	Trigger input	Secondary VR input negative.
36	CKP_HALL	Digital trigger input	Crankshaft Hall sensor input.
37	CLT_S	Analog input	Coolant temperature sensor input.
38	MAP_S	Analog input	Manifold absolute pressure sensor signal.
39	KNOCK_IN	Analog input	Knock sensor input. Function depends on firmware and sensor conditioning.
40	VSS	Digital/frequency input	Vehicle speed sensor input.
41	OIL_P / OIL_T	Analog input	Oil pressure or oil temperature input, depending on calibration.
42	GND	Sensor Ground	Clean sensor/signal ground. Do not use for relays, solenoids, injectors, etc
43	NITROUS_OUT	Low-side output	Nitrous solenoid control output. Solenoid must be externally fused and supplied from +12 V.
44	FAN_OUT	Low-side output	Cooling fan relay control output. Use a relay or suitable external power stage for high-current fans.
45	TACHO_OUT	Tachometer output	Tachometer / RPM output.
46	IDLE2_OUT	PWM output	Idle control output 2.
47	VVT2_OUT	PWM low-side output	VVT solenoid output 2.
48	INJ2_OUT	Injector low-side	Injector output 2.
49	INJ4_OUT	Injector low-side	Injector output 4.
50	INJ6_OUT	Injector low-side	Injector output 6.
51	INJ8_OUT	Injector low-side	Injector output 8.
52	IGN2_OUT	0-5 V logic output	Ignition output 2 for smart/transistorized coils only.
53	IGN4_OUT	0-5 V logic output	Ignition output 4 for smart/transistorized coils only.
54	IGN6_OUT	0-5 V logic output	Ignition output 6 for smart/transistorized coils only.
55	IGN8_OUT	0-5 V logic output	Ignition output 8 for smart/transistorized coils only.
56	PGND	Power ground	Second power ground pin. Connect together with pin 29 to the ECU power ground point.

## Electrical usage notes

### Injector outputs

**Signals:** INJ1\_OUT to INJ8\_OUT

Low-side injector outputs. Injectors must receive fused +12 V on the other side.

### Ignition outputs

**Signals:** IGN1\_OUT to IGN8\_OUT

0-5 V logic outputs for smart/transistorized coils only. Do not connect dumb coils directly.

### Low-side outputs

**Signals:** MAIN\_RELAY\_OUT, FUEL\_PUMP\_OUT, FAN\_OUT, BOOST\_OUT, VVT1\_OUT, VVT2\_OUT, NITROUS\_OUT, AUX\_LOW\_SIDE\_2A

These outputs switch the load to ground. Loads must be supplied from fused +12 V externally.

### Sensor supplies

**Signals:** +5V\_SENSOR, +5V\_SENSOR\_2

Filtered 5 V rail for external sensors. Do not use for relays, lamps, wideband controllers or other high-current devices.

### Grounds

**Signals:** GND\_SENSOR, PGND

Use GND\_SENSOR only for sensors. Use PGND for power/output returns.

## Installation warnings

**Grounding:** do not use GND\_SENSOR as a return for solenoids, relays, injectors, fan, pump or ignition power. Use PGND for power/output return paths.

**IGNITION\_SWITCH:** connect to fused switched +12 V. This is the main ECU power input, not just a logic wake-up pin.

**5 V sensor supply:** +5V\_SENSOR and +5V\_SENSOR\_2 are intended only for external sensors. Do not use these pins to power wideband controllers, relays, lamps, pumps or other external modules.

**Low-side outputs:** these outputs switch to ground. The load must be connected to fused +12 V externally. Use relays or external power stages where the load current exceeds the ECU output rating.

**NITROUS\_OUT:** intended for nitrous solenoid control through the ECU low-side output stage. The solenoid supply must be fused externally.

**AUX\_LOW\_SIDE\_2A:** intended to activate relays or small low-side loads up to the documented limit. For large loads, use a relay or external driver.

**Ignition outputs:** 0-5 V logic outputs are for smart/transistorized coils only. Do not connect dumb ignition coils directly.

**VR sensors:** use twisted/shielded wiring for VR1 and VR2 in noisy installations. Keep VR wiring away from ignition coils, injectors and solenoid wiring.

**CAN:** wire CANH and CANL as a twisted pair. CAN termination depends on the complete vehicle network.

**Reserved pins:** do not connect RESERVED/SHIELD unless instructed by a specific harness drawing or product revision note.

## Recommended sensor wiring

Sensor type	Supply	Signal	Ground
TPS / MAP / Fuel pressure / Oil pressure	+5V_SENSOR or +5V_SENSOR_2	Dedicated sensor signal pin	GND_SENSOR
CLT / IAT / Fuel temperature	Usually pull-up inside ECU or as specified	Dedicated temperature input	GND_SENSOR
Flex fuel	As specified by sensor	FLEX / AUX_IN_1 digital/frequency input	GND_SENSOR or sensor ground as specified
VR crank/cam	Not applicable	VR+ / VR- differential pair	Shield drain only if specified

## Revision note

This document reflects the VasfEFI S2 OEM 56-pin final pinout as prepared for installer documentation. Harness drawings, fuse ratings and output current ratings must be verified against the final production hardware revision before public release.