

P9288 System Tester

User Manual

Firmware v2.40 and later

The P9288 System Tester reads the control units fitted to Porsche 928, 944, 968 and 911 (964 and 993) models from the late 1980s to the mid 1990s. These cars use a proprietary version of the KWP1281 K & L-line protocol, which modern OBD2 equipment cannot read.

It replaces the Bosch KTS300 "Hammer" and the KTS301 Porsche module: it scans faster, lists the control units on screen as they are found, and shows several readings at once.

1 Models and control units supported

928	944	968	911
1988 – 1994	1989 – 1991	1992 – 1995	964 1989–1994 993 1995–1996 (not US 1996)
– LH-Jetronic fuel injection – EZK ignition timing – RDK tyre pressure monitoring – PSD electronic limited-slip diff – Airbag – Alarm	– DME Motronic engine control – Airbag – Alarm	– DME Motronic engine control – Airbag – Alarm – Tiptronic	– DME Motronic engine control – PDAS all-wheel drive, traction control & diff locks – ABS5 / ABS5-ABD anti-lock braking & traction control – Tiptronic – Heater – Airbag – Alarm

Not every control unit supports every function, and this varies with the version fitted as well as the model e.g. some units support faults only.

For what to do with the readings, see the original Porsche service manuals for your vehicle and look for the instructions covering the **Bosch KTS300** or the **Porsche 9288 System Tester**. Those manuals explain how the original factory tester was used for fault finding and maintenance, and the P9288 presents the same information.

2 Safety

This diagnostic tool is provided as-is and usage is at the user's own risk.

Great care must be taken when carrying out automotive diagnostics. There are many dangers, including high-speed moving parts, very heavy objects, very hot surfaces, flammable fluids, high voltages and toxic chemicals e.g. battery acid, fuel, oil and brake fluid among them.

Actuator tests operate real components. Before running one, make sure nobody is near anything that may move, and that the car is secure.

3 Connecting

The car interface port is at the top of the tester; the USB-C connector is at the bottom.

Plug the supplied cable into the port at the top of the tester and into the car's diagnostic socket. Use the OBD-type cable which is typically for later cars, or add the OBD to 19-pin circular adaptor cable if needed.

The tester takes its power from the car, or from the USB-C connector when plugged into a computer. There are no batteries to replace or on/off switch.

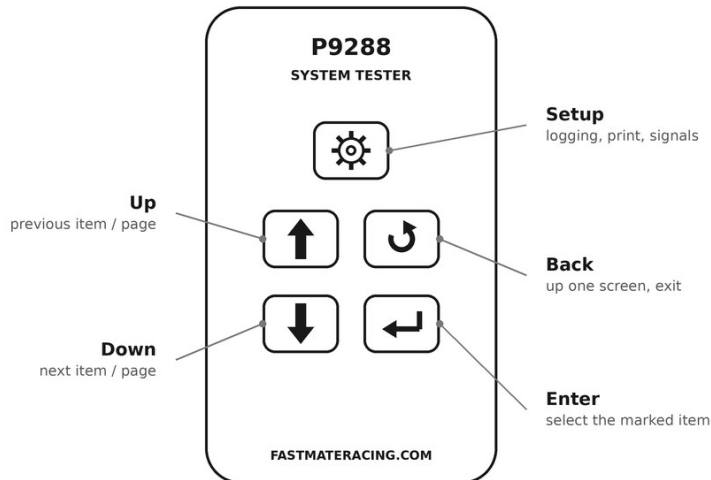
Turn the ignition on. The tester starts as soon as it has power.

Ignition on is enough to read and clear faults, read switches, and run actuator tests (drive links).

Engine running is needed for most actual values to mean anything including voltages, temperatures, RPM and lambda normally only read correctly with the engine turning. A few functions, such as system adaptation, have their own conditions and say so on screen.

Actuator tests are normally run with the engine stopped. If the engine is started while an actuator is being driven, the tester stops immediately and returns to the menu.

4 The keypad



Up and Down keys move through the items on a screen; the flashing arrow shows which item is selected. Enter opens it. Back goes up one screen and can be pressed at any point, it simply returns the way you came, ending at the vehicle list.

Setup is available from any menu and opens the Setup screen directly (section 10).

5 Starting up

```
P9288 System Tester

Diagnostics for:
911,968,944,928

Rst: POR
v2.40 HSE
```

Start-up screen

The start-up screen appears for about two seconds and shows the firmware version and some internal information.

```
Select vehicle:
+911      928
 968
 944
```

Vehicle list

Choose the model with Up and Down, then press Enter. The list of control units the tester looks for depends on this choice, so pick the right one. 911 covers 964 and 993 models.

6 Scanning

```
964/993 Scan:
+All  Heater Alarm
DME   Airbag  ABS
PDAS  Tip
```

Scan menu for a 964 or 993

Scan 'All' tries every control unit fitted to the chosen model in turn. This is the usual starting point when scanning a vehicle for the first time.

Alternatively, select a single unit by name to go straight to it, this is much quicker when you already know which one you want.

```
Scanning
DME   Airbag +ABS
PDAS  Tip
?Heater Alarm
M00MOTRONIC
96461812404
```

Scanning in progress

Each unit is tried in turn and named on screen as it answers, so you can watch real progress. The arrow marks the unit currently being probed, and the lower rows show the identification strings returned by it.

A question mark in front of a name means that unit reported stored faults.

```
964/993 Found:
+DME
?Heater
Alarm
```

Scan complete

When the scan finishes, only the units that answered are listed. Again, a leading question mark marks a unit with stored faults in this case the heater.

Select a unit and press Enter to work with it.

```
DME :

Connecting...
```

Opening a session

The tester opens a session with the chosen unit and waits for it to finish sending its identification. This takes a moment; the menu appears as soon as the unit is ready.

If the unit does not answer, the screen reads Connect failed and Back returns to the list.

7 The control unit menu

```

      DME :
+Read Faults      IDs
  Clear Faults
  Set Actuators
  Input signals
  Actual Values
  Adaptation
  Knock reg

```

DME menu on a 964

Every control unit offers Read Faults and Clear Faults. The rest of the menu depends on what that particular unit supports, so the list is not the same on every car or every unit e.g. an early unit may offer only faults and actual values.

The sections that follow describe each item using the DME as the example, since it has the fullest menu.

Read Faults

```

Heater              6/6
Rear blower motor -
Stage 1
seized
not present

Back

```

A stored fault

Faults are shown one per screen, decoded into plain text rather than a code to look up. The counter at the top right gives the position in the list 6/6 is the sixth fault of six.

Below the name, where the control unit supplies them, are the signal condition and more information about the fault.

Up and Down step through the list. A trailing + on the counter means the unit reported more faults than it could send in one go.

```

      Alarm Faults

No faults

Back

```

A clean unit

A unit with nothing stored reads No faults.

Clear Faults

Erases the fault memory of the unit you are in. Read the faults first and note them down if needed, once cleared they cannot be recovered. Clearing does not repair anything: a fault that is present now will return as soon as the unit next tests for it.

Set Actuators

```

      Set Actuators:
+Injector 1
  Injector 2
  Idle valve
  Carbon canister
  Fuel pump relay
  Oxygen sensor htr

```

Actuator list

Also called drive links. The tester asks the control unit to operate an output so you can confirm it works e.g. an injector, an idle valve, a relay, a heater flap motor, central locking, and so on. The list depends on the unit.

Run these with the engine stopped and the ignition on.

```

      DME Actuator

Running:
Idle valve

Listen / feel

Enter/Back: stop

```

Actuator running

Enter starts the selected item; listen or feel for it operating. Enter or Back stops it. The tester waits for the control unit to confirm the stop before leaving the screen, so an actuator is never left running.

If the engine is started while an actuator is live, it is stopped at once and the tester returns to the menu.

Input signals

```

DME Switches
Idle contact closed
WOT switch      open
A/C comp        open
Road speed      absent

Back

```

Switch states

Shows the state of the switches the control unit can see, updated live. Operate the switch and then press the throttle and watch the state change. This is the quickest way to prove a switch and its wiring.

Actual Values

```

DME Values 1/2
Voltage      13.5 V
Cyl head T   84°C
Intake T     26°C
Coding Man   nocat
RPM          880 rpm

Up/Dn page   Back

```

Actual values, page 1

Live readings from the control unit, several to a screen. Up and Down page through them; the counter in the title shows which page you are on.

Most of these need the engine running to be meaningful.

```

DME Values 2/2
Ign timing   3.8 deg
HO2S         0.02 V
Load sig     2.6 ms
IACV         61 %
Air flow     0.25 V

Up/Dn page   Back

```

Actual values, page 2

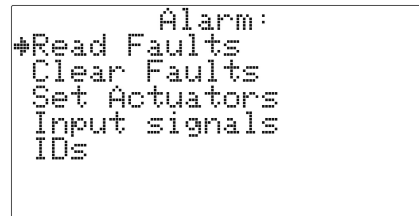
The second page of the same list. What appears depends on the control unit and its version.

Other DME items

- **Adaptation** this runs the idle adaptation procedure. The tester checks engine speed and cylinder head temperature first and will not start outside the required window; it shows both readings live so you can see what is holding it up.
- **Knock reg** this runs shows the knock registration count and the car needs to be driven so have a passenger operate the tester. The test runs for 10,000 ignitions which is something like a minute at 3500 rpm.
- **IDs** these are the identification strings the unit sent when the session opened: part number, version and so on. Useful when identifying which version unit is fitted.
- **CO+–** and **Data** on later DME versions only. CO adjustment steps the mixture setting up or down; Data reads the stored build record, including VIN, engine number and operating hours.

8 Other control units

The menu structure is the same throughout: Read Faults and Clear Faults on every unit, plus whatever else that unit supports.



Alarm menu

The alarm and immobiliser offers faults, drive links for the horn, indicators, interior light and central locking, and input signals covering the door, bonnet, boot and glovebox switches, the key button and the position switches.

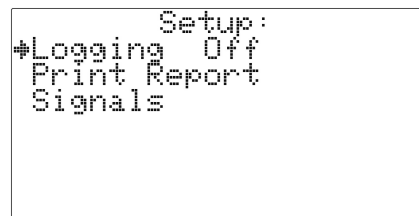
- **Heater (911)** faults, flap motor drive with a live position bar, blower stages, and the analogue sensor and potentiometer readings.
- **Airbag** faults, plus Down-time, the recorded time the system has been unpowered.
- **ABS / ABS-ABD** faults, wheel speed sensor readings and the valve and pump drive links.
- **PDAS (964) and PSD (928)** faults and the differential lock drive links; the 964 also has input signals.
- **Tiptronic** faults, solenoid drive links, input signals and the coding.
- **LH and EZK (928)** fuel injection and ignition timing: faults, actual values and drive links. LH also has its own adaptation procedure, which uses the engine warning lamp to signal completion.
- **RDK (928)** tyre pressure monitoring: faults, the four sending unit readings with their health check, the wheel speed sensors, and the pressure switch states.

9 Reading the results on a computer

Plug the tester into a computer using the USB-C connector at the bottom of the tester. It appears as a removable drive. There are no drivers to install. Copy the files off it as you would from a memory stick.

Use Print Report in the Setup menu to save what you have read and faults as **Results.txt**.

10 The Setup button



Setup menu

Press Setup from any menu. Back returns to the vehicle list.

The menu changes with the state of the tester: Print Report is hidden while logging is running, because logging and the report share the same memory.

Logging

Leave this off for normal use. Logging records the raw data exchanged with the control units. It allows remote debugging, and can help us identify problems and add support for missing or new features.

We have surveyed most of the control units and are actively improving coverage, but you may come across something we have not seen yet. Logging lets you gather the data, which we then analyse.

If you turn logging on you can then scan, select ECU as normal, read faults etc. Then when you plug the tester into a computer: the file on the USB drive changes to **Log.bin**. Send it to us with a short description of the car and what you were doing.

While logging is on, the percentage of the log memory used is shown in the corner of the screen. There is space for quite a long duration but logging stops when it hits 100%.

Print Report

```
Print:
Report saved.
Plug into USB to
read Results.txt

Back
```

Report saved

Saves the units found and the faults read during this session as a text file. Plug the tester into a computer and open Results.txt.

Scan a car first there is nothing to print otherwise.

Signals

```
Signal levels
Battery      12.4 V
K-line       11.9 V
L-line       0.1 V

RPM          0 rpm
Back to exit
```

Signal levels

Reads the voltages at the diagnostic connector directly, with no protocol involved. Use it to check the interface and the cable when a car will not respond at all: battery voltage confirms the tester is powered, and the K and L line levels show whether the lines are being pulled where they should be. Normally the display will show battery at 12V or above and K and L lines will be near 12V (9V or above is usually ok). In this displays there is a fault as the L-line is stuck at 0.1V. This would stop the diagnostic port working.

11 Firmware updates

Updates are free. Download the PC application from fastmateracing.com, plug the tester into a computer with the ignition off, and follow the instructions in the application. The tester shows USB on screen while it is connected and waiting.

12 If a car will not respond

- Check the vehicle selected matches the car. The tester only looks for the units fitted to the model chosen.
- Check the ignition is on and note that immobilisers may stop the DME from waking up.
- Use the Signals screen in the Setup menu to confirm the tester sees battery voltage at the connector.
- Use the supplied cables. Many after-market 19-pin circular leads are wired incorrectly and do not work. You can use OBD to OBD extension leads if you need to move the tester closer to the engine compartment.
- A unit that is not fitted will simply not answer, which is normal the scan lists only what it finds.
- Diagnostic sockets on cars of this age can be worn or corroded. Check the pins before assuming a fault. Plug in and out a few times can help wipe the contacts.

If none of that helps, check the signal levels from the Setup menu.

Fastmate Racing · 4 The Worple, Wraysbury, Staines, Middlesex TW19 5NY

jim@fastmateracing.com · +44 7974 679750 · fastmateracing.com