FASTMATE RACING

P9288 System Tester

User Manual

Firmware v2.45 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 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.
>
> ABS, transmission, brakes, airbags and other systems are critical parts of the vehicle and great care must be taken with these. You should follow the manufacturer's service manuals and ensure that any work is checked thoroughly before driving. If in any doubt then seek help from a specialist garage or professional vehicle mechanic.
>
> Actuator tests operate real components. Before running one, make sure nobody is near anything that may move, and that the car is secure.
>
> **Do not operate the tester while driving.**

2 Models and control units supported

928

1988 – 1994

- LH-Jetronic fuel injection
- EZK ignition timing
- RDK tyre pressure monitoring
- PSD electronic limited-slip diff
- Airbag
- Alarm

944

1989 – 1991

- DME Motronic engine control
- Airbag
- Alarm

968

1992 – 1995

- DME Motronic engine control
- Airbag
- Alarm
- Tiptronic

911

964 1989–1994
993 1995–1996 (not US 1996)

- DME Motronic engine control
- PDAS all-wheel drive, traction control & diff locks
- ABS on 964 Carrera 4 (via PDAS) or 993 ABS5 / ABS5-ABD anti-lock braking & traction control units. ABS units on non-AWD 964 are not supported.
- 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.

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.

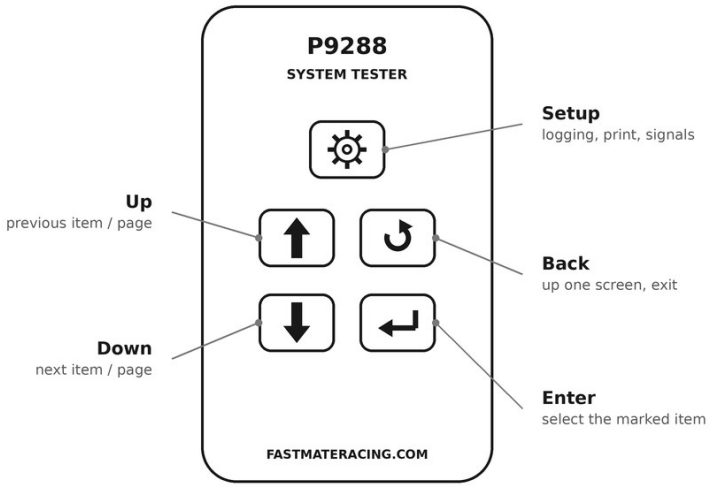
The tester takes its power from the car, or from the USB-C connector when plugged into a computer. There are no batteries to replace or on/off switch.

The tester starts as soon as it has power.

Make sure any immobiliser is deactivated as this will stop the DME from being detected.

> **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.

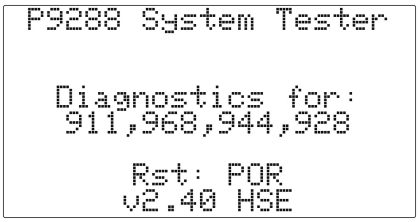
4 The keypad



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.

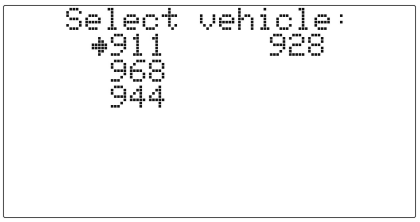
Setup is available from any menu and opens the Setup screen directly (section 10).

5 Starting up



Start-up screen

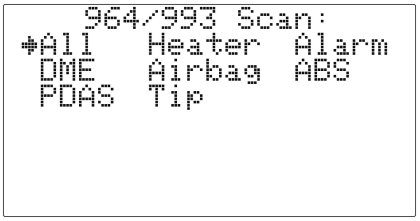
The start-up screen appears for about two seconds and shows the firmware version and some internal information.



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.

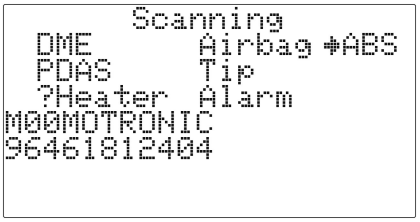
6 Scanning



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.

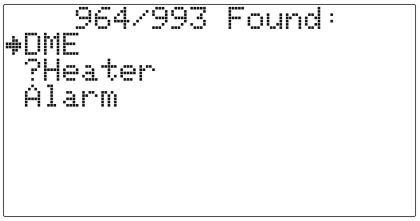
Alternatively, select a single unit by name to go straight to it, this is much quicker when you already know which one you want.



Scanning in progress

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

A question mark pops up in front when that unit reports stored faults.



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.

You should always see the DME unit but if this is missing it normally means the immobiliser needs to be deactivated before scanning.

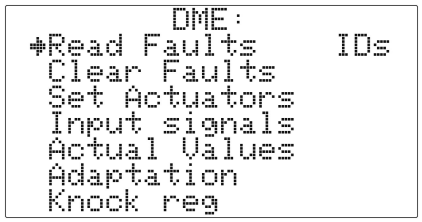


Opening a session

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

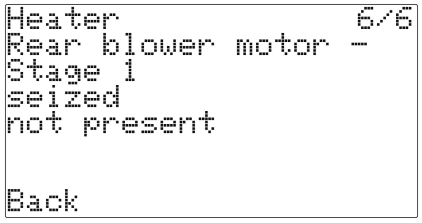


DME menu on a 964

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

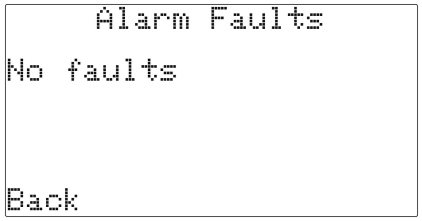


A stored fault

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.



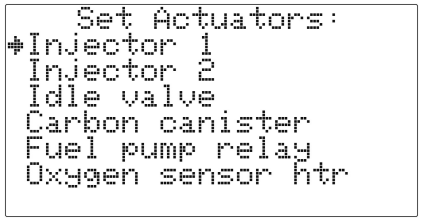
A clean unit

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 permanent fault will return when re-scanned or after power cycle.

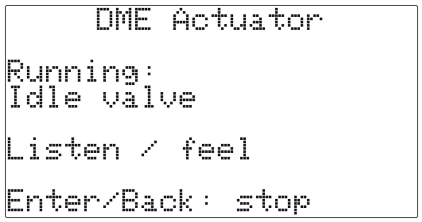
Set Actuators



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.

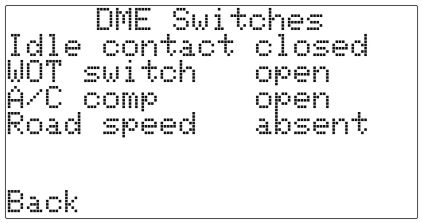


Actuator running

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. If the unit does not answer, it repeats the request and then returns to the list anyway, so you are never held on the screen.

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

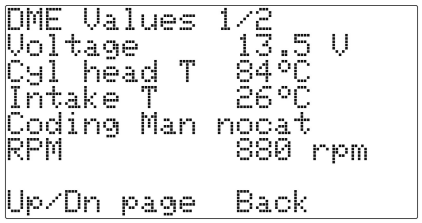
Input signals



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.

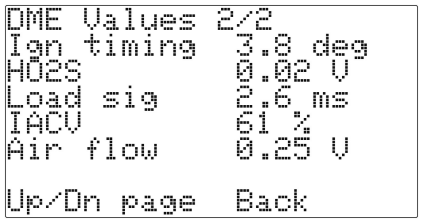
Actual Values



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.



Actual values, page 2

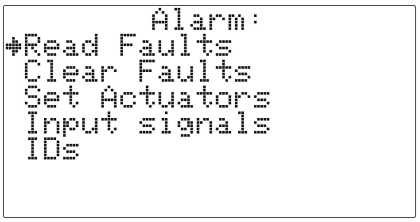
The second page of the same list. What appears depends on the control unit and its version.

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. The car needs a drive test so you must have a passenger to 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. This can be used to tell 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.

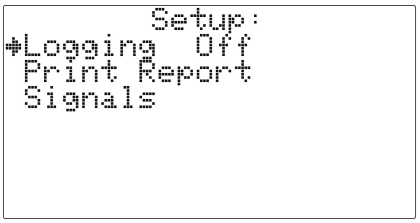
- **Heater (911)** faults, flap motor drive with a live position bar, blower stages, and the analogue sensor and potentiometer readings.
- **Airbag** faults, plus Down-time, the recorded time the system has been unpowered.
- **ABS / ABS-ABD** faults, wheel speed sensor readings and the valve and pump drive links (964 ABS only via PDAS i.e. supported on Carrera 4 only).
- **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

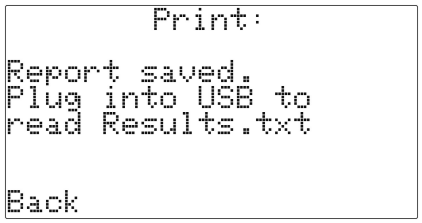
Leave this off for normal use. Logging records the raw data exchanged with the control units. It allows remote debugging, and can help us identify problems and add support for missing or new features.

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

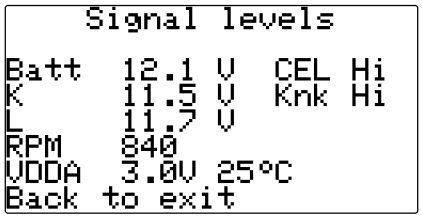


Report saved

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

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 Batt reads 12 V or above and K and L sit near battery voltage (9 V or above is usually ok). A line stuck near 0 V is a fault and would stop the diagnostic port working.

CEL and Knk are the two digital inputs, shown as Hi or Lo. CEL is the engine warning lamp line, which the 928 LH uses to signal the end of its adaptation; Knk is the knock signal the DME knock registration count is read from. Both show the raw level at the pin, not what the tester makes of it.

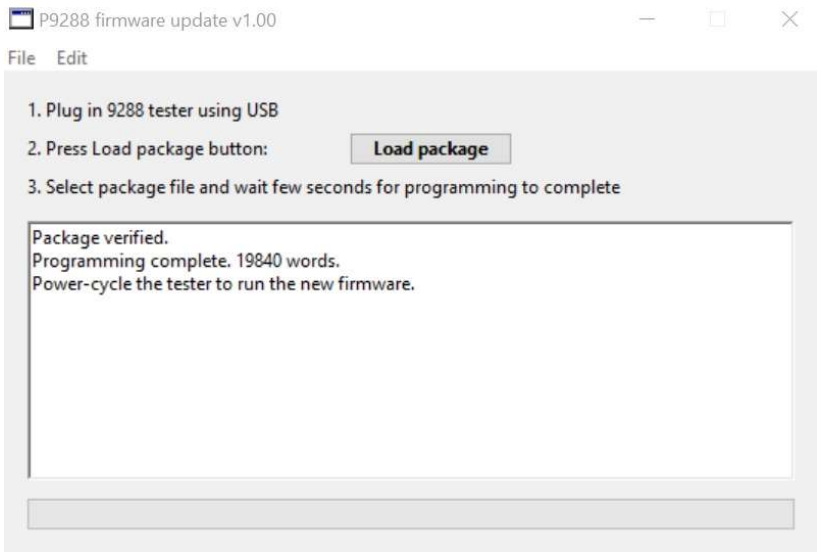
RPM is the same smoothed engine speed the scan screen uses, and reads as two dashes with the engine stopped. VDDA and the temperature are the tester's own supply rail and die temperature: a sanity check on everything above, since every voltage on this screen is measured against that rail.

11 Firmware updates

Updates are free and are installed from a Windows computer over the USB-C connector at the bottom of the tester. The car is not involved and the tester does not need to be plugged into it.

Download two things from the downloads page at fastmateracing.com: the updater application installer, and the firmware package. The firmware comes as a zip file — unzip it first and keep the file it contains somewhere you can find again.

- Run the installer, then start the P9288 firmware update application.
- Plug the tester into the computer with the supplied USB-C cable. It powers up from the computer and shows USB on screen.
- Click Load package and select the unzipped firmware file.
- Programming starts straight away and takes a few seconds. Progress is shown both in the application and on the tester screen.
- Wait for Programming complete, then power-cycle the tester by unplugging it.



The update application, with programming complete

The new version number is shown on the start-up screen the next time the tester is plugged into a car.

If the application does not find the tester, check the USB-C cable — some charge-only cables carry no data — and that the tester shows USB on screen.

Updating the USB code

The tester also holds USB code, which is separate from the App. Normally you only need to update the App, so check the release notes on the downloads page at fastmateracing.com first to see whether your tester needs the USB code updating.

- Load the USB code package with the update application exactly as you would an App package.
- Unplug the tester from the computer and plug it into the car with the ignition on. The update is completed there.
- Wait for the screen to show Boot updated OK. Do not unplug part way through as this may brick the tester.
- Plug the tester back into the computer and load the tester App as described above.

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.

Safety (reminder)

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Do not operate the tester while driving.

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