

# TwinProbe

## User Manual



[www.elektropartner.com](http://www.elektropartner.com)

ENGLISH.....5



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# TWINPROBE TECHNICAL MANUAL

## Introduction

Dear Customer,

We would like to thank you for choosing a TEXA product for your workshop. We are certain that you will get the greatest satisfaction from it and receive a great deal of help in your work.

Please read through the instructions in this manual carefully and keep it for future reference.

Reading and understanding the following manual will help you to avoid damage or personal injury caused by improper use of the product to which it refers.

TEXA S.p.A reserves the right to make any changes deemed necessary to improve the manual for any technical or marketing requirement; the company may do so at any time without prior notice.

This product is intended for use by technicians specialized in the automotive field only. Reading and understanding the information in this manual cannot replace adequate specialized training in this field.

The sole purpose of the manual is to illustrate the operation of the product sold. It is not intended to offer technical training of any kind and technicians will therefore carry out any interventions under their own responsibility and will be accountable for any damage or personal injury caused by negligence, carelessness, or inexperience, regardless of the fact that a TEXA S.p.A. tool has been used based on the information within this manual.

Any additions to this manual, useful in describing the new versions of the program and new functions associated to it, may be sent to you through our TEXA technical bulletin service.

This manual should be considered an integral part of the product to which it refers. In the case it is resold the original buyer is therefore required to forward the manual to the new owner.

Reproduction, whole or in part, of this manual in any form whatsoever without written authorization from the producer is strictly forbidden.

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# ABOUT THE MANUAL

In this document the terms "**tool**" and "**device**" refer to the purchased product, subject of this manual.












Any other specific term is explained in the text.

This manual is divided into the following chapters:

1. **Legend of the Symbols:** *provides the description of the symbols used in the manual.*
2. **Glossary:** *provides the meaning of the technical terms used in the manual.*
3. **General Safety Rules:** *provides important information concerning the safety of the operator and its workplace.*
4. **Specific Safety Rules:** *provides important information concerning the safety of the operator in relation to the use of the product.*
5. **Environmental information:** *provides indications related to the disposal of the purchased tool/device.*
6. **Operation of the Radio Devices:** *provides information concerning the wireless connectivity of the tool/device.*
7. **Normative information:** *reports the declaration of conformity of the tool/device*
8. **Description:** *describes the tool/device, the technical features, the equipment.*
9. **Operation:** *explains all the functions and operation modes of the tool/device.*
10. **Maintenance:** *provides indications on the maintenance of the tool/device.*
11. **Solutions to problems:** *suggests "what to do when..." and gives information on our client help service.*
12. **Legal Notes:** *provides indications related to the guarantee of the purchased tool/device.*

# 1 LEGEND OF THE SYMBOLS USED

The symbols used in the manual are described in this chapter.

	Asphyxiation Risk
	Explosion Risk
	High Voltage Hazard
	Fire / Burn risk
	Poisoning Hazard
	Corrosive Substances Risk
	Noise Hazard
	Moving Parts Risk
	Crushing Risk
	General Risk
	Important information



## 2 GLOSSARY

This chapter provides definitions of the technical terms used in the manual:

- **Diagnosis/diagnostic socket:** *female connector mounted on the vehicle which allows it to be connected to the vehicle control unit.*
- **OBD socket:** *diagnosis socket specific to the OBD protocol.*
- **Diagnosis/diagnostic connector:** *male connector mounted on the diagnosis tool or at the end of a cable to connect to the diagnosis tool.*
- **OBD connector:** *diagnosis connector specific to the OBD protocol.*
- **Diagnosis/diagnostic cable:** *cable that allows the diagnosis cable to be connected to the diagnosis socket.*
- **OBD cable:** *diagnosis cable specific to the OBD protocol.*
- **Display unit:** *device equipped with a screen (PC, mobile device, etc.) in which the special software that allows communication with the tool, its configuration and the processing and displaying of data collected by it, is installed.*
- *Peripheral device: with respect to the display unit, any instrument or device that the display unit is able to interface with.*
- **Device connector:** *USB connector used to connect to the device.*
- **Host connector:** *USB connector used to connect to the display unit.*

## 3 GENERAL SAFETY REGULATIONS

### 3.1 Glossary

- **Operator:** *qualified individual, in charge of using the device/tool.*
- **Machine/device/tool:** *the product purchased.*
- **Workplace:** *the place where the operator must carry out her/his work.*

### 3.2 Operator Safety Regulations

#### 3.2.1 General Safety Regulations

- *The operator must be completely clear-headed and sober when using the device; taking drugs or alcohol before or when operating the device is strictly forbidden.*
- *The operator must not smoke during device operation.*
- *The operator must carefully read all the information and instructions in the technical documents provided with the device.*
- *The operator must follow all the instructions provided in the technical documents.*
- *The operator must always watch over the device during the various operating phases.*
- *The operator must make sure she/he is working in environment which is suitable for the operations that must be carried out.*
- *The operator must report any faults or potentially hazardous situation in connection with the workplace or the device.*
- *The operator must carefully follow the safety regulations required for the workplace in which she/he is working and required by the operations she/he has been asked to carry out.*

#### 3.2.2 Risk of Asphyxiation




Exhaust gas from internal combustion engines, whether they may be petrol or diesel, are hazardous to your health and can cause serious harm to your body.

#### Safety Precautions:

- *The workplace must be equipped with an adequate ventilation and air extraction system and must be in compliance with standards according to current national laws.*
- *Always activate the air extraction system when working in closed environments.*


### 3.2.3 Risk of Impact and Crushing

	The vehicles which are undergoing A/C system recharging operations and the devices, must be properly blocked using the specific mechanical brakes/blocks, while being service.
---	--

#### Safety Precautions:

- *Always make sure that the vehicle is in neutral gear (or that it is set in parking position in case of a vehicle equipped with automatic transmission).*
- *Always activate the hand brake or parking brake on the vehicle.*
- *Always block the wheels on the vehicle with the specific mechanical blocks.*
- *Make sure the device is stable, on a flat surface and the wheels are locked with the specific brakes.*



### 3.2.4 Hazards Caused by Moving Parts

	Vehicle engines include parts that move, both while running and not running (eg: the cooling fan is controlled by a thermal switch in connection with the coolant temperature and become activated even when the vehicle is off), that can injure the operator.
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#### Safety Precautions:

- *Keep hands away from moving parts.*
- *Disconnect the engine cooling fan each time the engine you are working on is still hot. This will avoid the fan from becoming activated unexpectedly even when the engine is off.*
- *Do not wear ties, loose clothes, wrist jewellery or watches when working on a vehicle.*
- *Keep connection cables, probes and similar devices away from the moving parts of the engine.*

### 3.2.5 Risk of Burning or Scalding


 	The parts that are exposed to high temperatures in engines that are moving or have just stopped could burn the operator. Remember that catalytic mufflers reach very high temperatures, able to cause serious burns or even start fires. Acid in the vehicle batteries is another potential hazard.
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#### Safety Precautions:

- *Protect your face, hands, and feet by using suitable protection.*
- *Avoid contact with hot surfaces, such as spark plugs, exhaust pipes, radiators and connections within the cooling system.*

- *Make sure there are no oil stains, rags, paper or other inflammable material near the muffler.*
- *Avoid splashing electrolyte on skin, eyes and clothes, as it is a corrosive and highly toxic compound.*


### 3.2.6 Fire and Explosion Hazard

	<p>The following are potential fires and/or explosion hazards:</p> <ul style="list-style-type: none"> <li>• <i>The types of fuel used by the vehicle and the vapours released by these fuels.</i></li> <li>• <i>The refrigerants used by the A/C system.</i></li> <li>• <i>The acid in the vehicle batteries.</i></li> </ul>
---	--

#### Safety Precautions:

- *Let the engine cool.*
- *Do NOT smoke near the vehicle.*
- *Do NOT expose the vehicle to open flames.*
- *Make sure that the electrical connections are all well insulated.*
- *Collect any fuel that might have spilled.*
- *Collect any refrigerant that might have spilled.*
- *Make sure you are always working in an environment equipped with a good ventilation and air extraction system.*
- *Always activate the air extraction system when working in closed environments.*
- *Cover the openings of the batteries with a wet cloth in order to stifle the explosive gases before proceeding in testing or recharging.*
- *Avoid causing sparks when connecting cables to the battery.*


### 3.2.7 Noise Hazard

	<p>Loud noises that may occur within the workplace, especially during service operations may damage the operator's hearing.</p>
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#### Safety Precautions:

- *Protect your ears with suitable protective ear wear.*


### 3.2.8 High Voltage Hazard

	<p>The voltage supply from the mains that powers the devices in the workplace and the voltage within the vehicle starter system is a potential shock hazard to the operator.</p>
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## **Safety Precautions:**

- *Make sure the electrical system in the workplace is compliant to current national standards.*
- *Make sure the device being used is connected to ground.*
- *Cut off the power supply voltage before connecting or disconnecting cables.*
- *Do NOT touch the high voltage cables when the engine is on.*
- *Operate in conditions of insulation from ground.*
- *Work with dry hands only.*
- *Keep conductive liquids away from the engine while working.*
- *Never leave tools on the battery in order to avoid accidental contacts.*

### *3.2.9 Poisoning Hazard*

	The hoses used to extract the refrigerants can release toxic gases, dangerous to the operator if exposed to temperatures higher than 250 °C or in case of a fire.
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## **Safety Precautions:**

- *Contact a doctor immediately should you inhale these gases.*
- *Use neoprene or PVC gloves when eliminating combustion deposits.*

### 3.3 General User and Maintenance Warnings

When using the device or carrying out scheduled maintenance (eg. fuse replacement) on the device, carefully follow the information provided below.

- *Do not remove or damage the labels/tags and the warnings on the device; do NOT in any case make them illegible.*
- *Do not remove, or block, any safety devices the device is equipped with.*
- *Only use original spare parts or spare parts approved by the manufacturer.*
- *Contact your retailer for any non-scheduled maintenance.*
- *Periodically check the electrical connections of the device, making sure they are in good condition and replacing any damaged cables.*
- *Check parts that are subject to wear periodically and replace if necessary.*
- *Do not open or disassemble the device.*

## 4 SPECIFIC SAFETY RULES FOR USING TWINPROBE

The technology used for the design and inspection of the manufacture of the TWINPROBE diagnostic tools, make them reliable, simple and safe to use.

Personnel in charge of using the diagnostic tools is required to follow the general safety regulations and use the TWINPROBE tools for their intended use only. Furthermore, they are required to carry out the maintenance as described in this manual.

### 4.1 Glossary


**Operator:** qualified person responsible for using the diagnosis tool.

**Tool/device:** TWINPROBE.

### 4.2 General Rules


- *The operator must have basic knowledge of mechanics, automotive engineering, car repair and the potential dangers that may arise during self-diagnosis operations.*
- *The operator must carefully read all the information and instructions in the technical documents provided with the tool.*

### 4.3 Operator Safety

	Airbags inflate with great force; a tool placed in their expansion area may be projected towards the occupants of the vehicle causing serious harm.
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#### Safety Measures:


- *DO NOT position the tool in the airbag expansion area.*

	Some self-diagnosis operations allow you to activate/deactivate certain actuators and safety systems on the vehicle.
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### Safety Measures:


- *Do not allow unqualified personnel using the tool, in order to avoid accidents to people or damages to the tool or to electronic systems of the vehicle to which it is connected.*
- *Follow the instructions supplied by the software closely and carefully.*

## 4.4 Tool Safety

	<p>The tool was designed for the use in specific environmental conditions.</p> <p>The use of the tool in environments with temperature and moisture characteristics different from those specified may impair its efficiency.</p>
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### Safety Measures:

- *Place the tool in a dry place.*
- *Do not expose or use the tool near heat sources.*
- *Position the tool making sure it can be properly ventilated.*
- *Do not use corrosive chemicals, solvents or harsh detergents to clean the tool.*

	<p>The tool was designed so as to be mechanically tough and suitable for use in a workshop.</p> <p>Careless use and excessive mechanical stress may impair its efficiency.</p>
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### Safety Measures:

- *Do not drop, shake or subject the tool to shocks.*
- *Do not place the tool where it could fall into water. Avoid any contact with water.*
- *Do not lean heavy or sharp objects on the cables.*
- *Always avoid twisting or pulling the cables repeatedly.*
- *Do not perform any kind of intervention that may damage the tool.*
- *Do not open or dismantle the tool.*





The tool was designed so as to be electrically safe and to work with specific power supply voltage levels. Failure to comply with the specifications related to the power supply may impair the tool efficiency.

### **Safety Measures:**

- *Do not wet with water or other liquids.*
- *If not otherwise specified, use the tool on vehicles with a 12/24V DC power supply and the chassis connected to the negative pole.*
- *The connection for the power supply of the tool should always occur with the battery system of the concerned vehicle.*
- *Do not use external batteries to supply the tool unless it is explicitly required by the software.*
- *Pay particular attention to battery terminals and cables when setting up a connection to the vehicle. This will avoid false contacts and/or avoid accidentally connecting the cables to metallic parts of the vehicle being tested.*
- *Unused terminals must be covered and protected by the appropriate rubber plugs.*



The electromagnetic compatibility tests carried out on the unit guarantee that it can be adapted to the technologies normally used on vehicles (e.g.: engine check, ABS, airbag etc.). Nevertheless, if malfunctions occur you should contact the vehicle dealer.

## 5 ENVIRONMENTAL INFORMATION



**For information regarding the disposal of this product please see the pamphlet supplied.**

## **6 OPERATION OF THE TOOL'S RADIO DEVICES**

### **Wireless connection with Bluetooth, WiFi and HSUPA technology**

Wireless connectivity through Bluetooth, WiFi and HSUPA is a technology that supplies a standard, reliable method for exchanging information between different devices using radio waves. Many other products besides those built by TEXA use this technology, such as mobile phones, portable devices, Computers, printers, cameras, Pocket PCs etc.

The Bluetooth, WiFi and HSUPA interfaces search for compatible electronic devices based on the radio signals they emit and establish a connection. TEXA tools only select and prompt compatible TEXA devices. This does not exclude the presence of other sources of communication or disturbance.


THE EFFICIENCY AND QUALITY OF BLUETOOTH, WiFi AND HSUPA COMMUNICATION MAY BE AFFECTED BY THE PRESENCE OF RADIO DISTURBANCE. THE COMMUNICATION PROTOCOL IS DESIGNED TO MANAGE THESE TYPES OF ERRORS; HOWEVER, IN SUCH CASES COMMUNICATION MAY BE DIFFICULT AND CONNECTION MAY REQUIRE SEVERAL ATTEMPTS.

SHOULD THE WIRELESS CONNECTION ENCOUNTER SERIOUS PROBLEMS AND COMPROMISE REGULAR COMMUNICATION, THE SOURCE OF THE ENVIRONMENTAL ELECTROMAGNETIC DISTURBANCE MUST BE IDENTIFIED AND ITS INTENSITY REDUCED.

Position the tool so that the radio devices it is equipped with can work properly. In particular, do not cover it with any shielding or metallic materials in general.

## 7 INFORMATION REGARDING REGULATIONS

### Declaration of conformity

 Texa S.p.A. hereby declares that this unit complies with the essential requirements and with all further provisions defined by the 1999/5/EC regulation.

A complete copy of the Declaration of Conformity can be obtained from  
TEXA S.p.A., Via 1 Maggio 9, 31050 Monastier di Treviso (TV), Italy

## 8 TWINPROBE

**TWINPROBE** is an acquisition instrument for analogue and digital measures.

It is a powerful, functional and economic acquisition system in the world of cars, bikes and industrial vehicles diagnosis.



**TWINPROBE** has the following functions:

- *2-channel oscilloscope.*
- *Signal generator (through optional cable kit).*

## 9 DESCRIPTION

This chapter describes the general features of the tool.

### 9.1 Image of the Tool



1. **Green LED:** indicates that the tool is on.
2. **Red LED:** indicates the battery status.
3. **Blue LED:** indicates the Bluetooth communication status.
4. **USB plug:** USB2.0 connector (compatible USB 1.0) for communication with the display unit and for firmware update of the tool.
5. **Power:** ON/OFF button.
6. **Battery Power:** connection connector for mains adapter or battery clamps.
7. **Gen. Function:** connector for signal generator.
8. **CH02:** input of channel 2 of the oscilloscope.
9. **CH01:** input of channel 1 of the oscilloscope.

## 9.2 Technical Features

The technical features of the tool are explained here below:

### GENERAL CHARACTERISTICS:

<b>Power supply:</b>	8 V - 35 V DC max
<b>Stand-by consumption:</b>	150 mA at 12 V
<b>Consumption during battery charge in OSCILLOSCOPE mode and 2 active channels:</b>	480 mA at 12 V
<b>&lt;Internal battery duration in OSCILLOSCOPE mode and 2 active channels:</b>	1h and 45 mins approximately
<b>Internal battery charge time:</b>	3 h max
<b>Internal battery type:</b>	Lithium 3,7 V , 1 A/h
<b>Operational temperature:</b>	0 °C - 45 °C
<b>Storage temperature:</b>	-20 °C - 60 °C
<b>Operating relative humidity:</b>	10% - 80%
<b>Maximum recommended length of certified USB 2.0 cable:</b>	Less than 2,5 m
<b>Dimensions without cables (with cables):</b>	125 x 130 x 27 mm (135 x 130 x 27 mm)
<b>Weight:</b>	0,46 Kg
<b>Electromagnetic compatibility:</b>	EN 61326-1 ETSI EN 301 489-1 ETSI EN 301 489-17 ETSI EN 300 328-2
<b>Safety:</b>	EN 61010-1

**OSCILLOSCOPE:**

<b>Channel numbers:</b>	2 analogue (CH01, CH02).
<b>Host connection:</b>	Via USB2, USB1 or Wireless Bluetooth.
<b>Channel configuration:</b>	USB2, USB1, Bluetooth, max 2 channels 20 MS/s.
<b>Trigger:</b>	CH01 or CH02.
<b>A/D conversion:</b>	2 10-bit converters. 40 MS/s with one active channel. 20 MS/s for channel with 2 active channels.
<b>Viewing mode:</b>	Normal, Auto, Single shot.
<b>Common mode:</b>	AC, DC
<b>Max input voltage:</b>	$\pm 200$ V
<b>Additional functions:</b>	Trigger delay, frequency calculation, Vmedia, Vmax, Vmin, Period, Setting scale for amperometric clamps.

**SIGNAL GENERATOR:**

<b>PWM CURRENT DRIVE:</b>	<b>Maximum continuous current:</b>	5 A @ 12 V
	<b>Maximum PWM frequency:</b>	50 kHz
	<b>Operating voltage:</b>	5÷30 V
	<b>Duty Cycle Resolution:</b>	1%
	<b>Frequency resolution:</b>	0,1 Hz
<b>PWM 5 V:</b>	<b>Maximum continuous OUTPUT current:</b>	20 mA
	<b>Maximum PWM frequency:</b>	50 kHz
	<b>OUTPUT voltage:</b>	0-5 V $\pm$ 5%
	<b>Duty Cycle Resolution:</b>	1%
	<b>Frequency resolution:</b>	0,1 Hz



## 10 User Instructions

**TWINPROBE** must be used by qualified personnel.

TEXA S.p.A. offers professional training courses to its clients.

In these training courses the technicians are followed step by step by specialized personnel. Their goal is to give these technicians as much familiarity with the tools and their software as possible. This way the technicians will learn how to make the best use of TEXA S.p.A. products.


For more information regarding training courses offered by TEXA S.p.A. please visit our website [www.texa.it](http://www.texa.it).

### 10.1 Tool Power Supply

You can power the tool in the following ways:

- **Through power supply unit supplied.**
- **Through battery cable supplied.**
- **Through internal battery.**

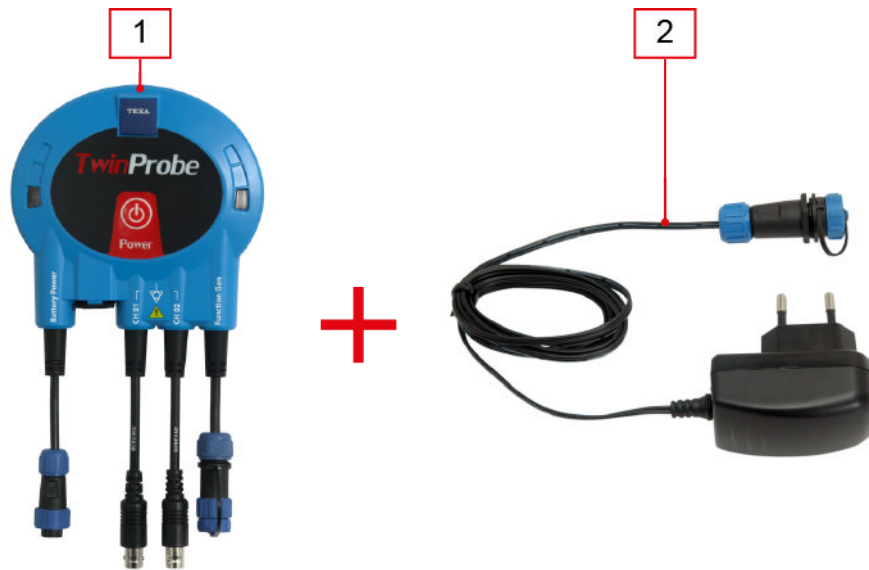
The tool is protected against power supply cabling inversion.

	<p><b>This symbol indicates that the external conductors of BNC connectors have the same potential (shortcircuited together).</b></p> <p><b>Take all necessary safety precautions in order to avoid applying a potential through external conductors.</b></p> <p><b>This kind of potential may induce the flux of a high current, thus damaging the product and/or the connected tools.</b></p>
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**For more information go to the chapter INSULATED MEASUREMENT.**

### 10.1.1 Power supply through power adapter

The tool can be powered through the power adapter supplied.



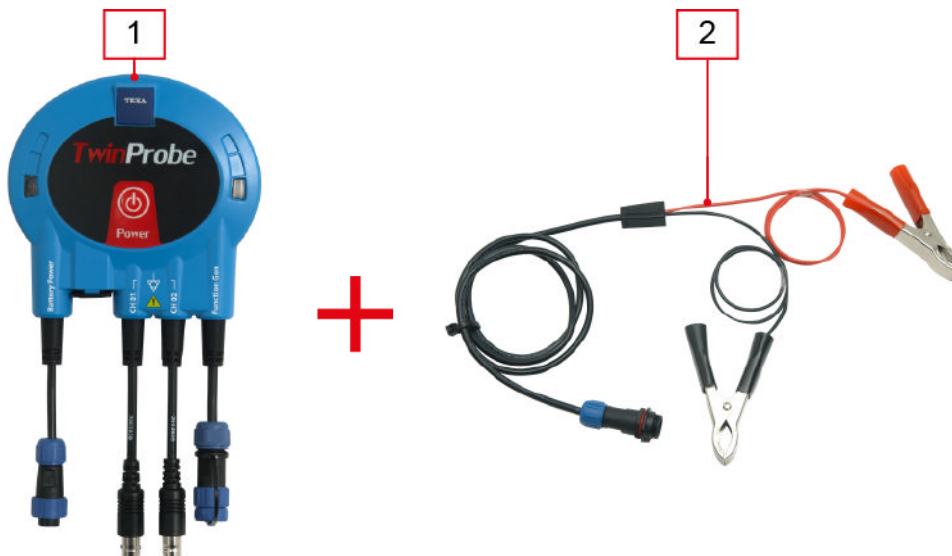
1. Tool
2. Power adapter

Proceed as follows:

1. Connect the power adapter to connector **Battery Power** of the tool.
2. Connect the power supply to the mains.

### 10.1.2 Power supply through battery cable

Power supply can be obtained from the battery of the vehicle under test after a proper wiring.



1. Tool
2. Clamps to connect to the battery

Proceed as follows:

1. Connect the clamps to connector **Battery Power** of the tool.
2. Connect the cable clamps to the battery terminals taking care to respect the polarity indicated on the cables.



**If the battery is in the rear of the vehicle, we recommend connecting the tool directly to the power supply points coming from the battery, available near the area in which you are operating.**

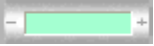
### 10.1.3 Power supply through internal battery

The internal lithium battery at 3,7 V, 1 A/h can operate the tool for about 1 hour and 45 minutes if you use the OSCILLOSCOPE module with 2 active channels and USB 2.0 port connected.

The battery also works as a **back-up battery**. If the power supply lowers during the start-up phase, the battery is not influenced by decreases in voltage.



**Make sure that the proper power supply is always supplied to the tool.**

The state of charge of the internal battery is indicated on screen from the software through a specific icon: .



**For more information consult the software operating manual.**

### 10.1.4 Recharging the Internal Battery

The tool charges the internal battery automatically every time the power supply voltage goes above 8 V. This happens independently from the power supply mode selected.

The charge in progress is indicated by the **RED LED** that stays on.

## 10.2 Turning the unit on and off

To turn on the tool proceed as follows:

1. Press **Power** button for about 2 seconds.
2. Release the button after hearing a beep.

After the first beep the **green LED** turns on.

The tool emits a second beep (longer and delayed of about 3 seconds) indicating the success of self-configuration procedure and that the tool is ready to be used.



**A series of beeps indicates that the auto-setting has NOT been successfully completed.**

In this case, you are advised to turn off the tool and disconnect any external power supply, wait a few seconds and then try again.



**Turn the display unit on before turning the tool on.**

To turn the tool off you must keep the **Power** button pressed until you hear a beep.



**Before turning the tool off make sure you have closed any software.**

### 10.3 Communication Mode with the Display Unit

The tool is not equipped with a user interface and the data acquired are sent to an appropriate display unit.



**Before starting the communication with the display unit, you must perform the special configuration procedure.**

The tool can be connected to the display unit in the following ways:

- *Bluetooth*
- *USB*

To make the most of the tool's potentials use USB connection, for a better flexibility you are advised to use Bluetooth connection.



**Power, connect and turn on the tool before starting up the functions or software which will be used to interface with it. If this procedure is not followed communication errors could occur..**

The tool, upon switching on, identifies the communication mode to be used.

In details:

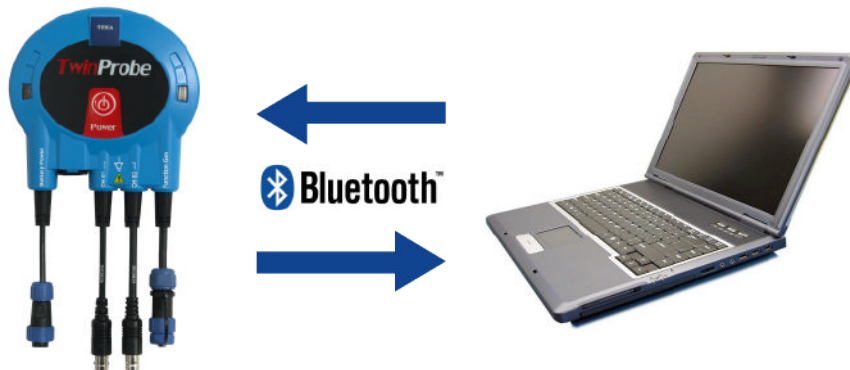
- *USB mode is started when, upon switching on, the tool is connected through the USB cable supplied with the display unit switched on.*
- *Bluetooth mode is started when, upon switching on, the tool is not connected to a display unit through the USB cable.*



**To change the communication mode between the tool and the display unit you must first turn off the tool and then choose the mode you prefer.**

### 10.3.1 Connecting via Bluetooth

The wireless connection eliminates the communication cable with the display unit, increasing the practical use of the tool.



The serial number used to configure Bluetooth communication can be found on the plate located on the lower part of the tool.

The **Blue LED** flashes:

- *Configuration phase of Bluetooth communication.*
- *During communication between the tool and the display unit, while data transmission takes place.*

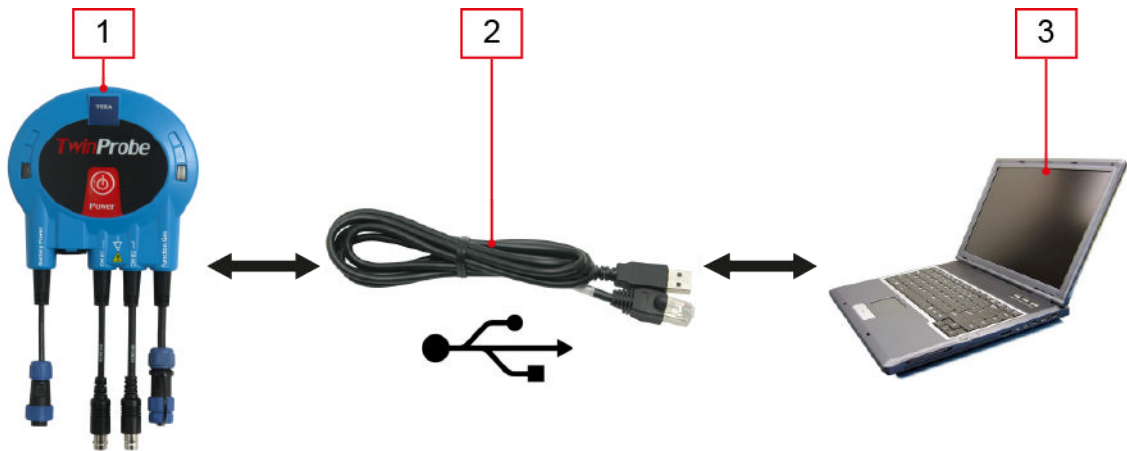


**In order to configure properly we suggest you to turn on the tool BEFORE turning on the display unit and only after proceed with the configuration procedure.**

**For more information regarding the configuration procedure consult the software User Manual.**

### 10.3.2 Connection via USB

In order to connect via USB you must use the USB cable provided. The tool is compatible with the USB 1.1 technology.



1. Tool
2. USB cable
3. Display unit

Proceed as follows:

1. Connect RJ45 cable connector to the tool.
2. Connect the USB connector of the USB cable to the display unit already switched on.
3. 1. Turn on the tool.
4. Proceed with the communication software configuration.



**It is not possible to supply with power or to charge the internal battery of the tool using the USB port.**



### 10.3.3 Blink codes

The tool uses the blinking of LEDs to indicate its status or signal any detected problems.

LED		STATUS
GREEN	Off	- Tool off
	On	- Tool on.
	Blinking	--
RED	Off	Device battery not in charge.
	On	Device battery in charge.
	Blinking	Signalling of a problem of the internal battery.
BLUE	Off	Bluetooth communication not active.
	On	--
	Blinking	Ongoing Bluetooth transmission.

## 10.4 Oscilloscope

The tool, in **OSCILLOSCOPE** mode, features **2 independent analogue input channels** with a **10 MHz (-3 dB) passing band**.

According to the number of active channels there could be different configurations.

The following acquisition modes are available:

- **Normal:** *the graph of the waveform of the signal is updated each time the trigger condition is met.*
- **Auto:** *the graph of the waveform of the signal is updated periodically, independently from trigger.*
- **Single Shot:** *the graph of the waveform of the signal is updated only once when the first trigger event is detected.*

The **maximum sampling frequency** is 40 MSample/sec, 10 bit with 1 active channel and 20 Msample/sec with 2 active channels.



**The maximum voltage value accepted from the channels is: +/- 200 V, AC or DC coupling.**

The V/Div scale is divided into eleven intervals per channel:

- 20 mV/Div
- 50 mV/Div
- 100 mV/Div
- 200 mV/Div
- 500 mV/Div
- 1 V/Div
- 2 V/Div
- 5 V/Div
- 10 V/Div
- 20 V/Div
- 50 V/Div

Additionally these measures are available:

- **Vmax** (*calculated in real time on the data acquired for each channel*)
- **Vmin** (*calculated in real time on the data acquired for each channel*)
- **Vmedia** (*calculated in real time on the data acquired for each channel*)
- **Freq** (*only for the trigger channel*)
- **Period** (*only for the trigger channel*)
- **Duty cycle** (*only for the trigger channel*)

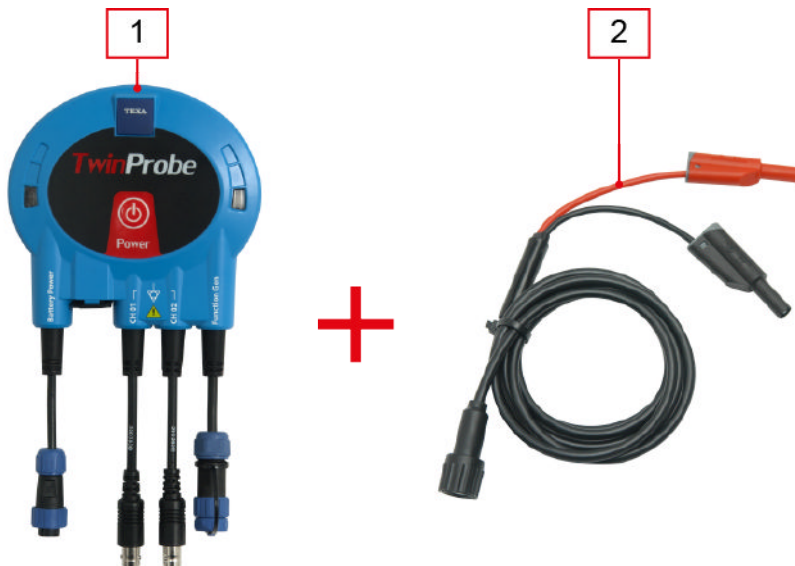
### 10.4.1 Connection of measuring probes

It is possible to connect two probes at the same time.

**!** In this case at least one of the probes has to be connected to the ground.



1. Positive terminal
2. Ground Terminal
3. Connection connector for the tool.



1. Tool
2. Oscilloscope cable

Proceed as follows:

1. Connect the cable for the oscilloscope to the connector of the desired channel (CH01 or CH02).
2. Connect the tip that is more suitable to the measurement to the probes.

### 10.4.2 *Insulated measurement*

The insulated measurement can be carried out with a connection through the probes and **not supplying external power supply to the tool.**



**Different actions could damage the tools.**

The insulated measurement allows you to match the ground potential of the probe to the one to which it is connected.

In this way the measurement refers only to the potential on the probe, i.e. to the potential between the tip and the clamp of the ground cable.



**All the grounds of the tool's BNC connectors are linked one with the other.**

## 10.5 SIGNAL GENERATOR

The use of software **SIGNAL GENERATOR** allows to simulate some input and output signals of the electronic control unit used in cars.

Particularly, with the use of this software, it is possible to send signals simulating the ones produced by sensors to the electronic control units.

Additionally it is possible to simulate the control signal (output power signal) through which the control units control the activation of some actuators (including but not limited to: solenoid valves, motors, throttle housing).



**These functions, if used in an improper, faulty or negligent way could, in some cases, damage the systems under test.**



**It is the user's responsibility to make sure that the signals injected are compatible with the specifications and the minimum and maximum adjustment parameters declared by the vehicle's builder for that specific component under test.**

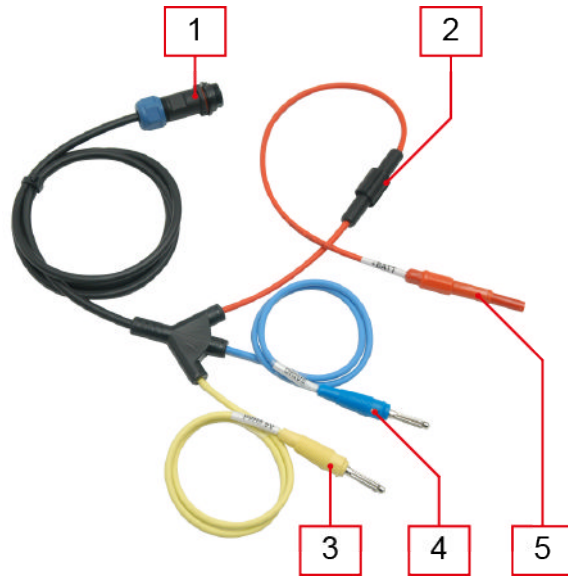
The signals generator can be used in the following modes:

- *PWM 5 V*
- *PWM CURRENT DRIVE*

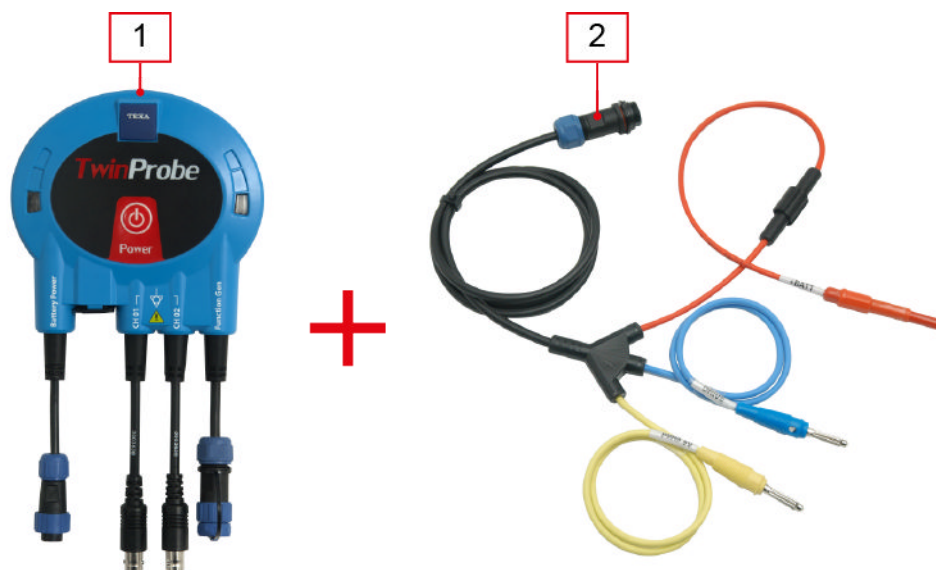
Use mode has to be selected through software and terminals have to be used as explained afterwards.

**To use the functions of the signals generator it is necessary to use the specific optional cables kit.**

### 10.5.1 Connection of the cable of the Signal Generator



1. Connector for the communication with the tool
2. Protection fuse
3. PWM 5 V terminal
4. DRIVE terminal
5. Terminal +BATT



1. Tool
2. Cable for the signal generator

Proceed as follows:

1. Connect the cable for the signal generator to connector **Function Gen** of the tool.
2. Connect the probes as desired.

### 10.5.2 PWM 5 V

**PWM 5 V** mode allows to simulate last generation sensors with 0-5 V PWM or PFM type signals.

For example it is possible to change the frequency of air mass meter to simulate the quantity of detected air.

This mode requires a ground cable to connect the negative pole of the battery to the one of the tool to be tested (sensor).

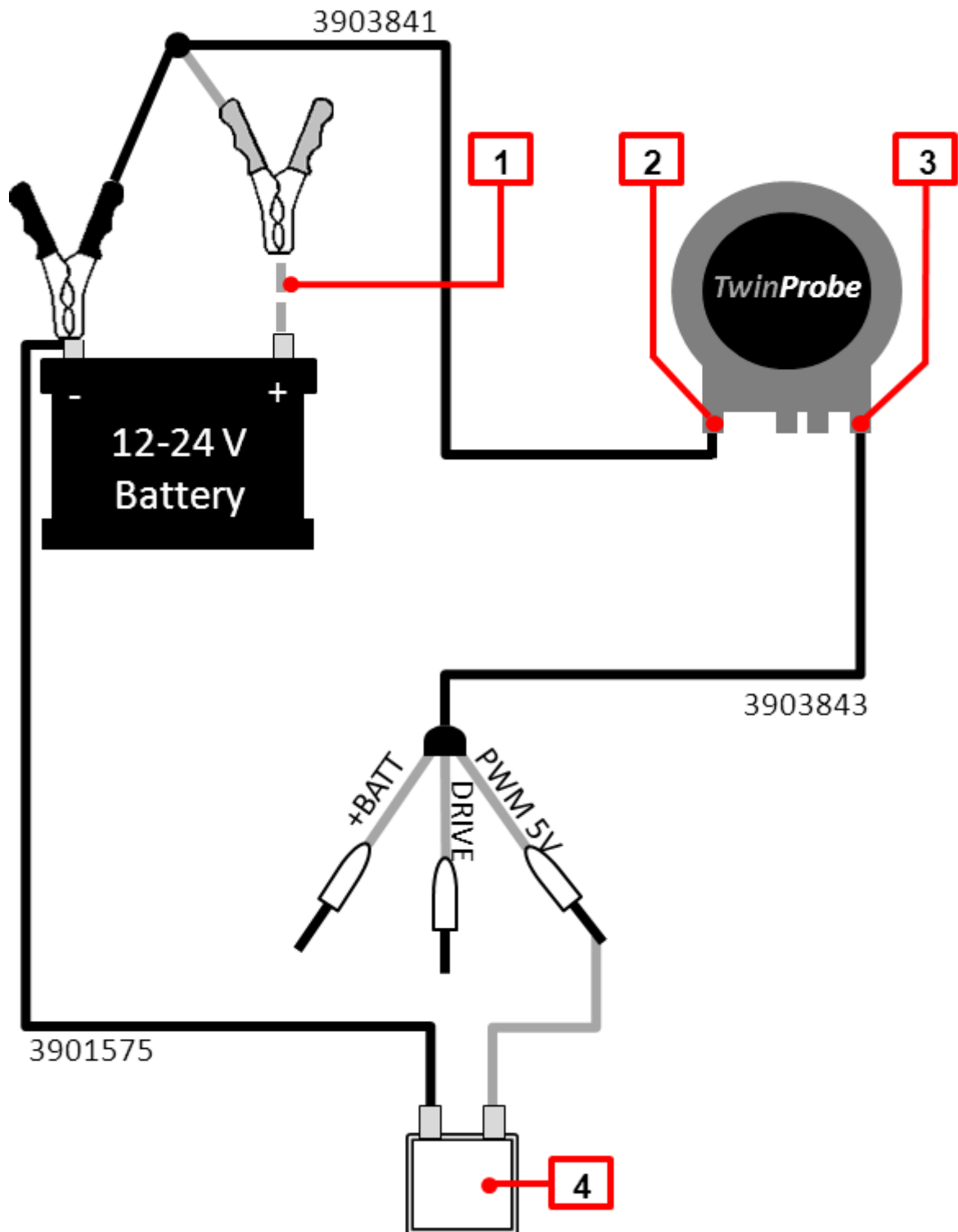


1. Terminal for the connection to the device
2. Clamp for connection to the battery

Proceed as follows:

1. Connect the clamp to the negative pole of the battery.
2. Connect the ground cable to the negative of the device (sensor).

The connection scheme for mode **PMW 5 V** is displayed below.



1. The connection to the positive pole of the battery is optional
2. Battery Power
3. Function Gen
4. Tool to be tested (sensor)



Proceed as follows:

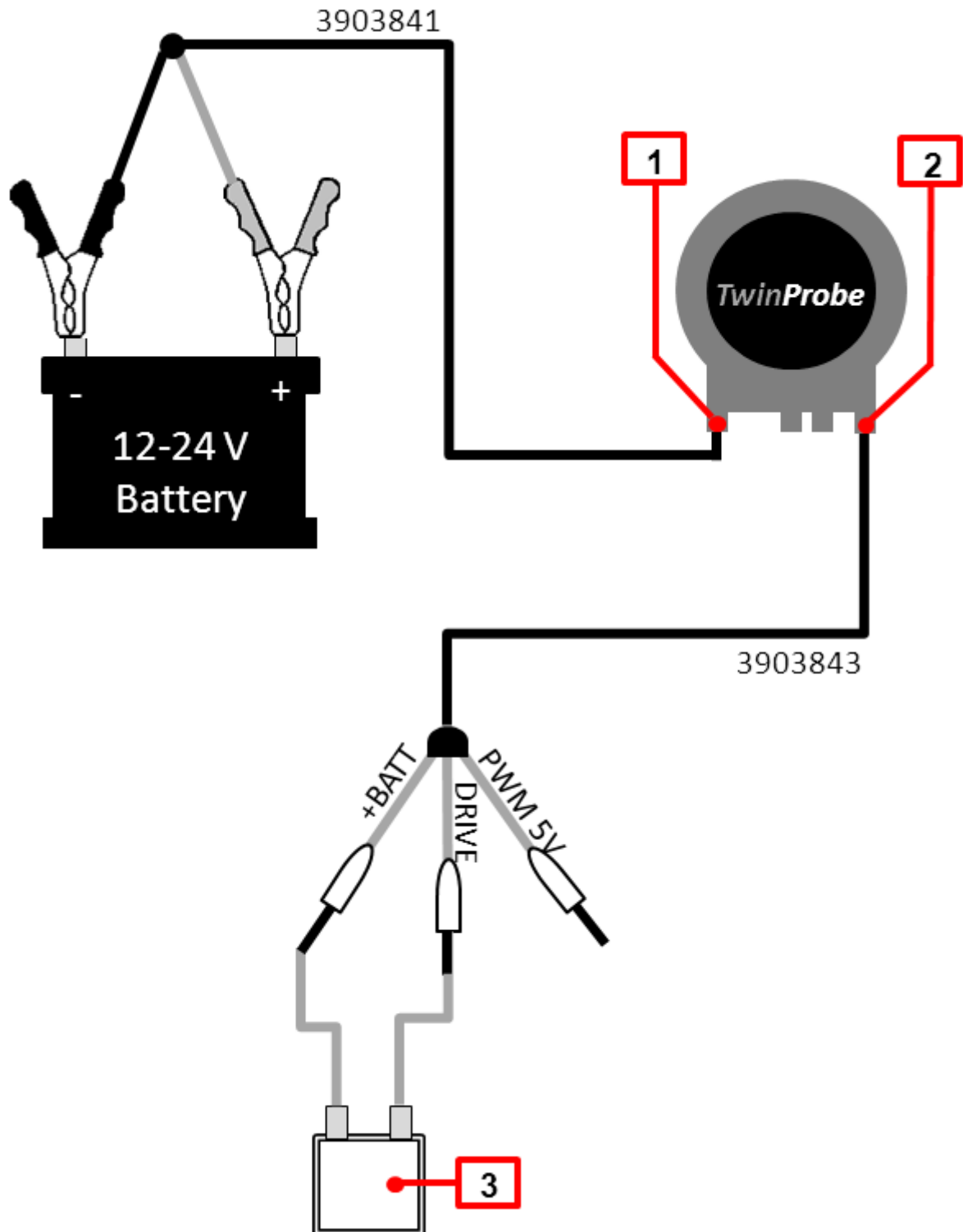
- *Connect the negative pole of the battery clamps (black clamp) to the vehicle's mass.*
- *Connect the mass cable's clamp to the battery.*
- *Connect the mass cable's terminal to the device that you wish to test; using, if necessary, the accessories supplied.*
- *Connect **PWM 5 V** terminal to the device that you wish to test; using, if necessary, the accessories supplied.*
- *Follow the instructions supplied by the software.*
- *Start mode **PWM 5 V** through the software.*

**Cables with code 3903843 and 3901575 are part of the cables kit for signal generator (optional).**

### 10.5.3 PWM CURRENT DRIVE

Mode **PWM CURRENT DRIVE** allows to test all the devices that work if activated by circulation of current (for example.: EGR valve, compressor of catalytic converter, etc.).

The connection scheme for mode **PWM CURRENT DRIVE** is displayed below.



1. *Battery Power*
2. *Funtion Gen*
3. *Tool to be tested (actuator)*

Proceed as follows:

1. *Connect the clamps to the vehicle battery.*
2. *Connect the terminals +BATT and DRIVE to the actuator or device that you wish to test; using, if necessary, the accessories supplied.*
3. *Follow the instructions supplied by the software.*
4. *Start mode **PWM CURRENT DRIVE** through the software.*

Below are described some test examples that is possible to operate in mode **PMW CURRENT DRIVE**.

In addition to these it is possible to list, including but not limited to:

- *EGR and FLOW METER diagnosis.*
- *Diagnosis of variable-geometry turbocharger blades, with engine on.*
- *Diagnosis of A/C pressure sensor.*
- *A/C compressor diagnosis.*
- *Seal diagnosis of diesel common rail injectors.*
- *Diagnosis of flow regulator and common rail high pressure pump.*
- *Flow and seal diagnosis of diesel common rail injectors.*

**Cable with code 3903843 is part of the cables kit for signal generator (optional).**

## **EGR CLEANING**

Proceed as follows:

1. *Turn off the vehicle and pull out the key.*
2. *Electrically disconnect the EGR from the vehicle.*
3. *Connect the clamps to the vehicle battery.*
4. *Connect the terminals **+BATT** and **DRIVE** of the signal generator to the EGR.*
5. *Set the frequency at 1Hz and duty cycle at 50%, then enable the generation **PWM CURRENT DRIVE** and leave it for at least 10 seconds, then stop the generation.*
6. *Set the frequency at 10Hz and duty cycle at 50%, then enable the generation **PWM CURRENT DRIVE** and leave it for at least 10 seconds, then stop the generation.*
7. *Repeat steps 4 and 5 at least 3 times.*
8. *If possible, remove the remains with an air jet, taking care not to damage the EGR.*
9. *Disconnect the signal generator and restore the original connections of the vehicle.*
10. *Start the engine and accelerate slightly for 10s.*

## **VARIABLE-GEOMETRY TURBOCHARGER: DIAGNOSIS OF BLOCKED BLADES WHEN ENGINE IS OFF**

If the control dipstick of the geometry is visually accessible and the turbine has an electric actuator, it may be sufficient to check visually the control dipstick itself.

The check has to be operated when the engine is off and while the signal generator is controlling the blades.

Proceed as follows:

1. *Contact the vehicle's builder to obtain the frequency, together with the valid interval of duty cycle to pilot the actuator of the turbocharger geometry.*
2. *Turn off the vehicle and pull out the key.*
3. *Electrically disconnect the control of the variable geometry from the vehicle.*
4. *Connect the clamps to the vehicle battery.*
5. *Connect terminals **+BATT** and **DRIVE** of the signal generator to the control of variable geometry.*
6. *Set a suitable frequency to the turbine under test, and a duty value in the validity interval indicated at step 1, then activate the generation **PWM CURRENT DRIVE**.*
7. *Make sure that, by changing the duty cycle in the validity interval indicated at step 1, the turbine geometry will move the blades correctly.*
8. *Disconnect the signal generator and restore the connections of the vehicle.*

## **TURBINE UNLOCK PROCEDURE**

Proceed as follows:

1. *Turn off the vehicle and pull out the key.*
2. *Electrically disconnect the control of the variable geometry from the vehicle.*
3. *Connect the clamps to the vehicle battery.*
4. *Connect terminals **+BATT** and **DRIVE** of the signal generator to the control of variable geometry.*
5. *Set the frequency at 1Hz and duty cycle at 50%, then enable the generation **PWM CURRENT DRIVE** and leave it for at least 10 seconds, then stop the generation.*
6. *Set the frequency at 10Hz and duty cycle at 50%, then enable the generation **PWM CURRENT DRIVE** and leave it for at least 10 seconds, then stop the generation.*
7. *Repeat steps 4 and 5 at least 3 times.*
8. *Disconnect the signal generator and restore the original connections of the vehicle.*
9. *Start the engine and accelerate slightly for 10s.*

## 11 ACCESSORIES

The following image displays the tips supplied with the tool.



**You are advised to use only the accessories supplied by TEXA S.p.A.**

## 12 TOOL FIRMWARE UPDATE

You can update the tool firmware through appropriate cabling and software functions.

**For more information consult the software User Manual.**

## 13 MAINTENANCE

This product does not require special maintenance.

For a longer tool life, keep the product clean and follow the instructions detailed in this manual carefully.



**For further help, contact your Retailer or the Technical Assistance Service.**



# 14 TROUBLESHOOTING

For any technical problem contact your retailer/distributor.

Below you will find a list of simple instructions that the client can carry out without having to ask for technical assistance.

PROBLEM	PROBABLE CAUSE	POSSIBLE SOLUTION
The tool does not communicate with the display unit through Bluetooth.	The display unit is off.	Switch on the display unit.
	The display unit is not within range of the tool.	Bring the display unit in the tool's range.
		Place the tool within the display unit's operating range.
	The tool has not been properly configured.	Operate the configuration through the special function in the software.
	Other wireless communications are disturbing the signal.	Place the tool away from shielding materials.
		Move away from possible sources of interference.
		If possible, turn off the devices causing the interference.
Wait and try to communicate again.		
The tool has been configured for USB communication.	Disconnect USB cable from the tool and switch it off. Turn on the tool again.	
The tool does not communicate with the display unit through USB.	The display unit is off.	Switch on the display unit.
	The USB cable is damaged.	Contact Technical Assistance.
	The tool has been configured for Bluetooth communication.	Turn off the tool. Connect the tool to the display unit. Switch on the display unit. Turn on the tool.

## 15 LEGAL NOTICES

For information regarding the legal notices, please refer to **International Warranty Booklet** provided with the product in your possession.