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## **1. Safety Precautions and Warnings**

***To Prevent personal injury or damage to vehicles or the Car Tool, read this instruction manual first and observe the following safety precautions.***

1. When an engine is running, it produces carbon monoxide, a toxic and poisonous gas. To prevent serious injury or death from carbon monoxide poisoning, operate the vehicle ONLY in a well-ventilated area.
2. To protect your eyes from propelled objects as well as hot or caustic liquids, always wear approved safety eye protection.
3. Keep cigarettes, sparks, open flame and other sources of ignition away from vehicle. Keep a dry chemical (Class B) fire extinguisher rated for gasoline, chemical and electrical fires in work area.
4. Connecting or disconnecting test equipment when the ignition is ON can damage test equipment and the ignition OFF before connecting the Code Reader to or disconnecting the Code Reader from the vehicle's Data Link Connector(DLC).
5. To prevent damage to the on-board computer when taking vehicle electrical measurements. always use a digital multi meter with at least 10megOhms of impedance.
6. Keep the car ToFoI clean, dry and free from oil, water and grease. Use a mild detergent on a clean cloth to clean the outside of the Scan Tool, when necessary.

## **2. General OBD-II Information**

### **2.1 What is OBD-II?**

OBD-II stands for On-Board Diagnostics, II generation. It is a set of documents issued by SAE and ISO, which describe the interchange of digital information between on-board emission-related Electronic Control Units (ECUs) of road vehicles and an OBD-II scan tool. OBD-II also commonly refers to the physical on-board diagnostic system of a vehicle, which consists of an ECU (or multiple ECUs), Malfunction Indicator Light(MIL), Diagnostic Link Connector (DLC), and the wiring that connect the different elements.

### **2.2 How do I know whether my car is OBD-II compliant?**

There are several ways.

### **1996 or newer model year vehicle sold in the United States**

United States legislation requires all cars and light trucks model year (MY) 1996 and newer to be OBD-II compliant. More information is available on the [EPA's website](#).

### **2001 or newer model year gasoline vehicle sold in the European Union**

#### **Commission Directive 70/220/EEC, Annex I:**

Vehicles with positive-ignition engines

With effect from 1 January 2000 for new types and from 1 January 2001 for all types, vehicles of category M1, except vehicles the maximum mass of which exceeds 2500 kg, and vehicles of category N1 class I, must be fitted with an on-board diagnostic (OBD) system for emission control in accordance with Annex XI. [...]

Note that here "European Union" means countries which were members of the EU in 2000.

### **2004 or newer model year diesel vehicle sold in the European Union**

#### **Commission Directive 70/220/EEC, Annex I:**

Vehicles with compression-ignition engines

Vehicles of category M1, except

- vehicles designed to carry more than six occupants including the driver,

- vehicles whose maximum mass exceeds 2500 kg,

from 1 January 2003 for new types and from 1 January 2004 for all types, must be fitted with an on-board diagnostic (OBD) system for emission control in accordance with Annex XI.

Note that here "European Union" means countries which were members of the EU in 2003.

### **Other vehicles**

If your vehicle does not fall into any of the above categories, look under the hood and try to locate a label (Fig. 1) that explicitly states that the vehicle was designed to comply with OBD-II legislation.



Fig. 1 - Vehicle Emission Control Information Label

In this case, OBD-II is used as a general term and can mean any of the following:

- OBD II (California ARB)
- EOBD (European OBD)
- JOBD (Japanese OBD)

You may also consult your vehicle's owner's manual and perhaps contact your local dealer. However, be aware of the fact that many dealers do not know the difference between OBD and OBD-II.

If the vehicle is not OBD-II compliant, you cannot use a generic OBD-II scan tool such as U480 to obtain diagnostic information from your vehicle.

***But my car has the 16-pin OBD connector, shouldn't it be OBD-II compliant?***

No, not necessarily. A lot of European and Asian manufacturers equipped their vehicles with D-shaped 16-pin connectors long before they began installing OBD-II systems on those vehicles. One curious thing to note here is the fact that most non-EOBD compliant vehicles had a DLC that does not fully conform to SAE J1979. Compare figures 2 and 3, and notice the "ears" on the non-EOBD compliant Ford Focus.

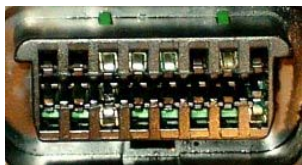


Fig. 2 - Ford Escort DLC  
(courtesy of [DigitalFriction](#), UK)

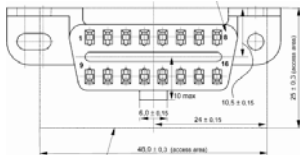


Fig. 3 - J1962 Vehicle Connector,  
Type A  
(courtesy of [SAE](#))

### 2.3 Which OBD-II protocol is supported by my vehicle?

All cars and light trucks built for sale in the United States after 1996 are required to be OBD-II compliant. The European Union OBD legislation is somewhat more complicated.

An OBD-II compliant vehicle can use any of the five communication protocols: J1850 PWM, J1850 VPW, ISO9141-2, ISO14230-4 (also known as Keyword Protocol 2000), and more recently, ISO15765-4/SAE J2480 (a "flavor" of CAN). US car manufacturers were not allowed to use CAN until model year 2003.

There are two types of diagnostic link connectors (DLCs) defined by SAE J1962 - Type A and Type B, shown in Figures 2 and 3, respectively. The main difference between the two connectors is in the shape of the alignment tab.

**Location** - According to J1962, Type A DLC "shall be located in the passenger or driver's compartment in the area bounded by the driver's end of the instrument panel to 300 mm (~1 ft) beyond the vehicle centerline, attached to the instrument panel and easy to access from the driver's seat. The preferred location is between the steering column and the vehicle centerline."

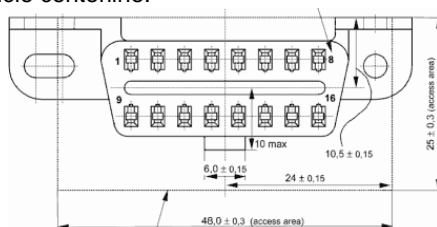


Fig. 1 - J1962 Vehicle Connector, Type A  
(courtesy of SAE)

Type B DLC "shall be located in the passenger or driver's compartment in the area bounded by the driver's end of the instrument panel, including the outer side, and an imagined line 750 mm (~2.5 ft) beyond the vehicle centerline. It shall be attached to the instrument panel and easy to access from the driver's seat or from the Co-drivers seat or from the outside. The vehicle connector shall be mounted to facilitate mating and unmating."

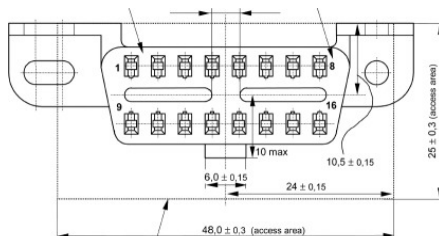
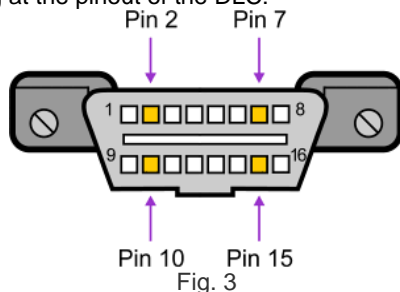


Fig.2 - J1962 Vehicle Connector, Type B  
(courtesy of SAE)

As a general rule, you can determine which protocol your vehicle is using by looking at the pinout of the DLC:



The following table explains how to determine the protocol:

Pin 2	Pin 6	Pin 7	Pin 10	Pin 14	Pin 15	Standard
must have			must have			<u>J1850 PWM</u>
must have						<u>J1850 VPW</u>
		must have			may have*	<u>ISO9141/14230</u>
	must have			must have		<u>ISO15765 (CAN)</u>

\*Pin 15 (also called the "L-line") is optional in newer vehicles that use the ISO9141-2 or ISO14230-4 protocols.

In addition to pins 2, 7, 10, and 15, the connector should have pins 4 (Chassis Ground), 5 (Signal Ground), and 16 (Battery Positive). This means that:

- PWM** The connector must have pins 2, 4, 5, 10, and 16
- VPW** The connector must have pins 2, 4, 5, and 16, but not 10.
- ISO** The connector must have pins 4, 5, 7, and 16. Pin 15 may or may not be present.
- CAN** The connector must have pins 4, 5, 6, 14, and 16.








### 3. Product Information

#### 3.1 Product Description

The device includes two parts: handled terminal and auto terminal.

##### 3.1-1 handled terminal

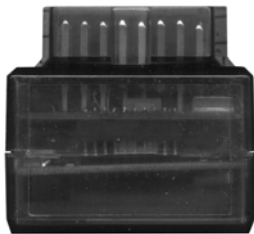


- 1) LCD Display , 128\*64 pixel display with contrast adjustment, Backlit
- 2) Enter key  selects displayed
- 3) EXIT key  go back to the previous screens
- 4) Up/down   arrows-moves the selection pointer and scrolls up or down.
- 5) LEFT/RIGHT   arrows-Select responses and moves cursor.
- 6) Power button 
- 7) OBDII connector cable, connect car and the scan tool
- 8) USB port for update soft

## 9) Exterior power and electrification supply port/Charge



### 3.1-2 Car terminal



## 3.2 Product Specifications

- **Transmission range:** 30m (no barrier)
- **Battery:** 280mAH 3.7V Lithium battery
- **Standby time:** 4 Hours
- **Display** - Backlit LCD, 128\*64 pixel display.
- **Operating Temperature** - 0 to 50°C ( - 32 to 122°F)
- **Internal Power** - Lithium battery
- You can use auto onboard power charger to charge the device while charging the lithium battery of the device.
- New function software can be upgraded by running after connecting the device to the computer.
- **External Power:** 5.0 volts provided via vehicle battery.
- **Dimensions:** host-108mm\*84mm\*21mm  
OBDII-50mm\*47mm\*28mm

### 3.3 Product Features

Works on all 1996 and newer cars & light trucks that are OBD II compliant (including the VPW, PWM, ISO, KWP 2000 and CAN protocols)

Reads and clears generic and manufacturer specific Diagnostic Trouble Codes (DTCs)

Reading Freeze Frame Data

Testing I/M Reading Status

Reading vehicle info

Rescanning Data

## 4. Operating Instructions

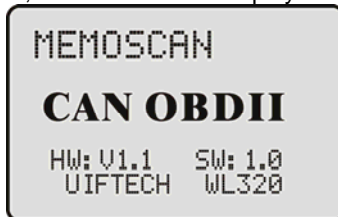
### 1. Car terminal Operating Instructions

- 1) Turn the ignition off
- 2) Locate the 16-pin Data Link Connector (DLC), and plug into the Car terminal to the DLC.
- 3) It enters the ECU system successfully when you see the red led flicker.

### 2. Handled terminal Operating Instructions


#### 4.1 Start Handled terminal


Press "button power", Wait for the LCD display



"Vehicle Speed" diagrams




At Vehicle Speed diagram, please press  to enter Vehicle Diagnosis diagram.

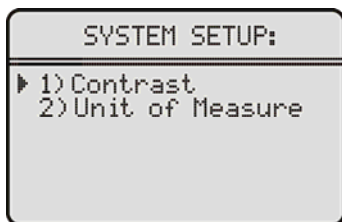
At Vehicle Speed diagram, please press  to enter Set Speed diagram.



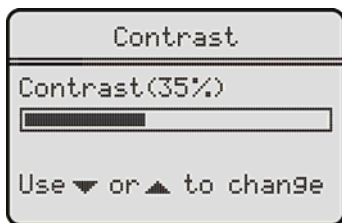
Press   to set car alarm speed and press  to save the setting.





Please press  to return to the previous menu.

At "Vehicle Speed" diagram, press  to enter System Setup diagram.

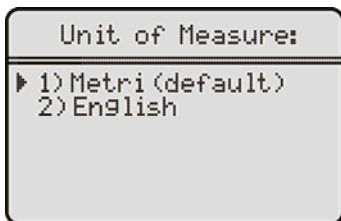


Contrast diagram



Press   to adjust the contrast value of LCD. Press  to save the setting and press  to return to the previous menu.

Unit of Measure diagram



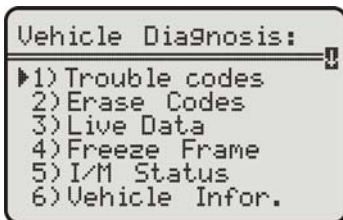
Turn the ignition on. Needn't start the engine . and press any key

#### 4.2 Read codes

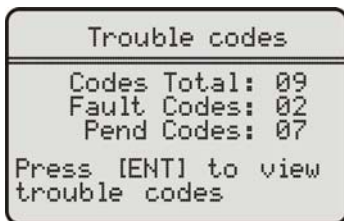
1. the trouble codes function read DTCs from the vehicle's computer modules there tow types of codes, Malfunction Indicator Lamp(MIL) Codes and pending codes

MIL Codes: These codes cause the computer to illuminate the MIL when an emission related or driveability fault occurs. The MIL is also known as the "service Engine Soon" or "Check Engine Lamp". MIL codes remain in the vehicle's memory until the fault is repaired.

2. Pending Codes: These codes are also referred as "continuous monitor" and "maturing codes". An intermittent fault will cause the computer to store a code in memory. If the fault does not occur within 40 warm-up cycles, the code will be cleared from memory. If the fault occurs a specific number of times, the code will mature into a DTC and the MIL will turn on.
3. Select Trouble codes and press ENTER, The WL320 retrieves the DTCs stored in the vehicle's computer modules.

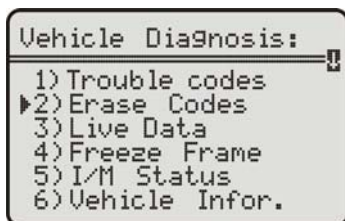


- ▲ if there are no trouble codes, it will display "NO CODES ARE FOUND"
- ▲ If there are any trouble codes, all information will be reported on the display

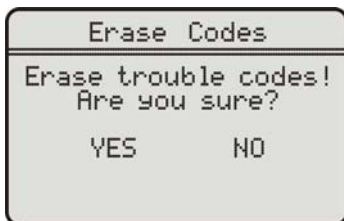


#### 4.3 Erase codes

- 1) Select Erase Codes and press the ENTER key.

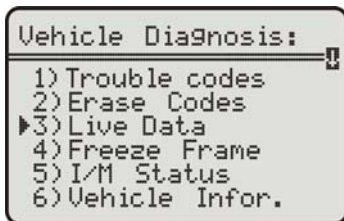


- 2) a message appears asking if you are sure. Press the LEFT/RIGHT arrow keys to move the brackets to the desired response and press ENTER



#### 4.4 Live data

- 1) Display the live data,



2) All live data are reported on the display

DataStream	
Fuel SYS1	
CL,using H025	
Fuel SYS2	
CL,using H025	
COOLANT(°F)	100

DataStream	
ST FTRM1 (%)	-2.3
LT FTRM1 (%)	1.5
MAP (in.hg)	10.9

DataStream	
ENGINE(RPM)	923
VEH SPEED(MPH)	0
IGN ADV(DEG)	22.0

DataStream	
IAT(°F)	88
MAF(lb/min)	10.115
ABSLT TPS(%)	6.2

DataStream		
02S11	(v)	(%)
	0.785	-3.1
02S12	(v)	(%)
	0.450	N/A
OBD2 STAT		NOT OBD

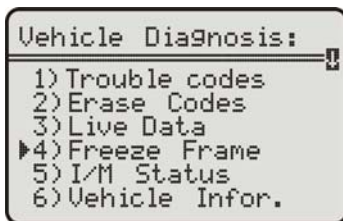
#### 4.5 Freeze Frame

1) When an emission-related fault occurs, certain vehicle conditions are recorded by the on-board computer. this information is referred to as a freeze.

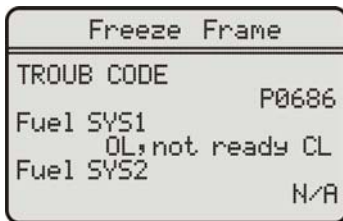
Frame data. this data can be overwritten by faults with a higher priority.

2) If codes were erased, the freeze frame data may not be stored in vehicle memory.

Select Freeze Frame from the menu and press ENTER

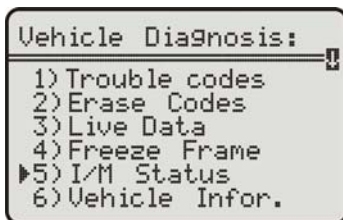


3) All Freeze Frame data are reported on the display



#### 4.6 IM Status

1) Select I/M Status and press ENTER



2) Using the UP/DOWN arrows to view status of the following monitors.



**Abbreviated Name**

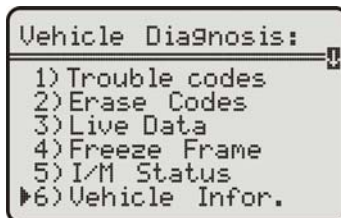
- Misfire Monitor
- FUEL System Mon
- Com Component
- Catalyst Mon
- Htd Catalystr
- Evap System Mon
- Sec Air System
- A/C Refrig Mon
- OXYGEN Sens Mon
- Oxygen Sens HTR
- EGR System Mon

**Expanded Name**

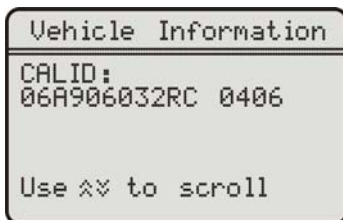
- Misfire monitor
- Fuel System Monitor
- Comprehensive Components Monitor
- Catalyst Monitor
- Heated Catalyst Monitor
- Evaporative System Monitor
- Secondary Air System Monitor
- Air Conditioning Refrigerant Monitor
- Oxygen Sensor Monitor
- Oxygen Heater Sensor Monitor
- Exhaust Gas Recirculation System Monitor

**4.7 Vehicle info**

1) Select "Vehicle info" from the main menu, press the "ENTER" button.



- 2) Use the SCROLL button to view additional digits of the 17-digit string.



- 3) If the vehicle does not support this mode, a message will show " the selected mode is not supported!"

#### 4.8 Battery

- 1) 280mAH 3.7V Lithium battery.
- 2) If the battery power is not enough, the WL320 power off automatically.
- 3) When the battery is charging, the LED charge state show is on. The LED will off if charge fulfill.

**Attention:** If the battery power is not enough, the WL320 will emit some noise and show “Battery Low!” on LCD, please to charge up.

## 5. Warranty and Servicing

### 5.1 One Year Warranty

- 1) WL320 warrants to its customers that this product will be free of all defects in materials and workmanship under normal use and maintenance for a period of one (1) year from the date of the original purchase.
- 2) This warranty does not apply to damages caused by improper use, accident, abuse, lightning , or if the product was altered or repaired by anyone other than the Manufacturer’s Service Center.

### 5.2 Service Procedures

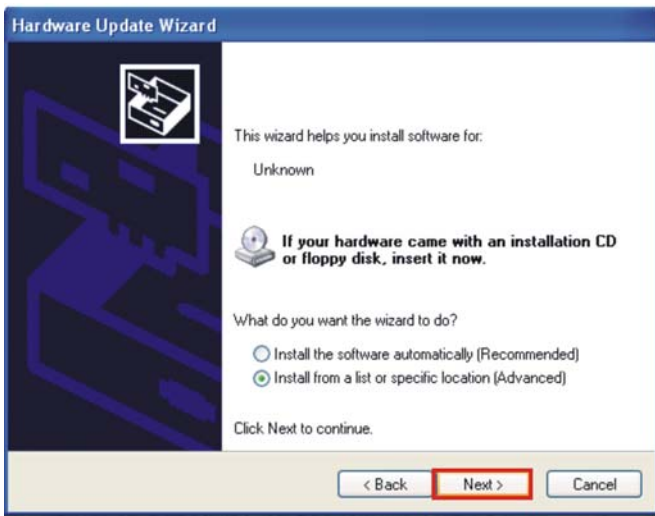
If you have any questions, please contact our local store, distributor or the Service Center

## 6. The use of upgrading software

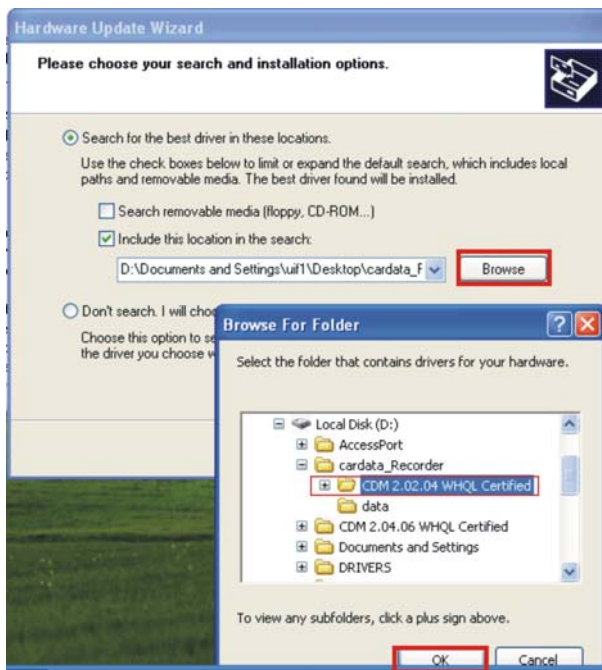
### 6.1 Set the hardware drive

Correct installation of updated software is through USB cable connecting the usb mouth of the computer(You don't need to open the power of the memo scanner). You will be automatically reminded as the following.

- 1) Find new hardware
- 2) Install the driver (see driverinstall1.bmp, driverinstall2.bmp, driverinstall3.bmp,)
- 3) The driver has finished being installed and can run now.( see driverinstall4.bmp)



Foun.bmp



driverinstall1.bmp



driverinstall2.bmp



Driverinstall3



Driverinstall4

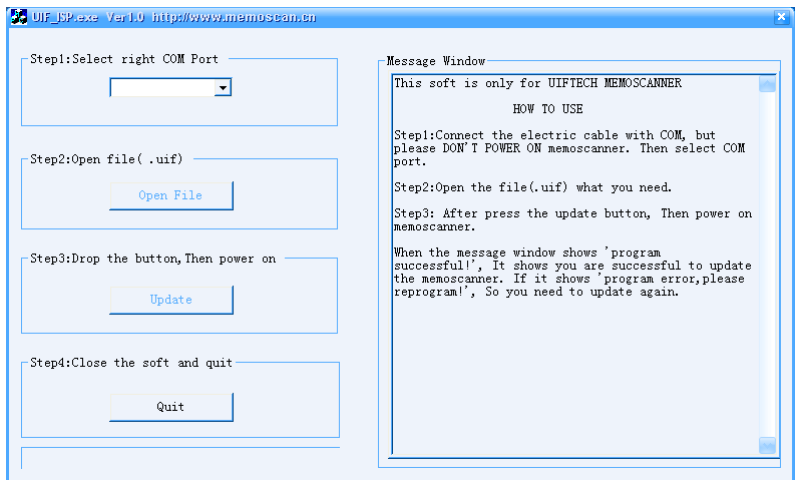
## 6.2 Two parts

Software update via Handled terminal and auto terminal

### 6.2-1 Software update for handled terminal

Visit website [ww.memoscan.cn](http://ww.memoscan.cn), download the software

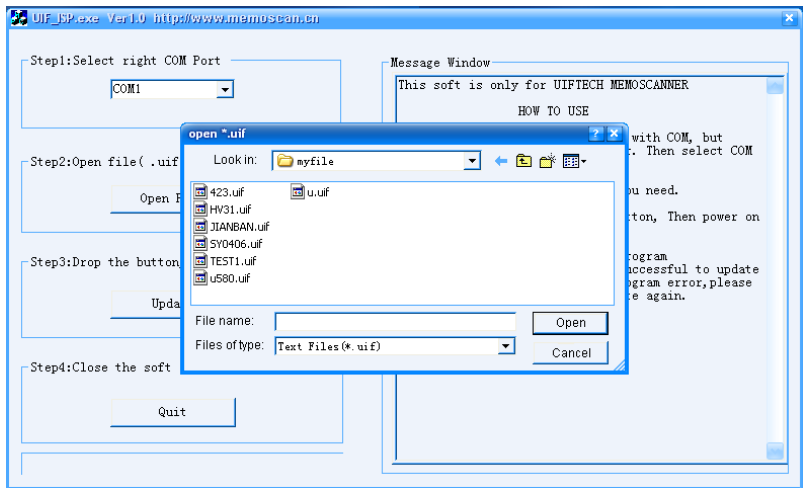
1) Run UIF-ISP.exe. there will be the interface as follows



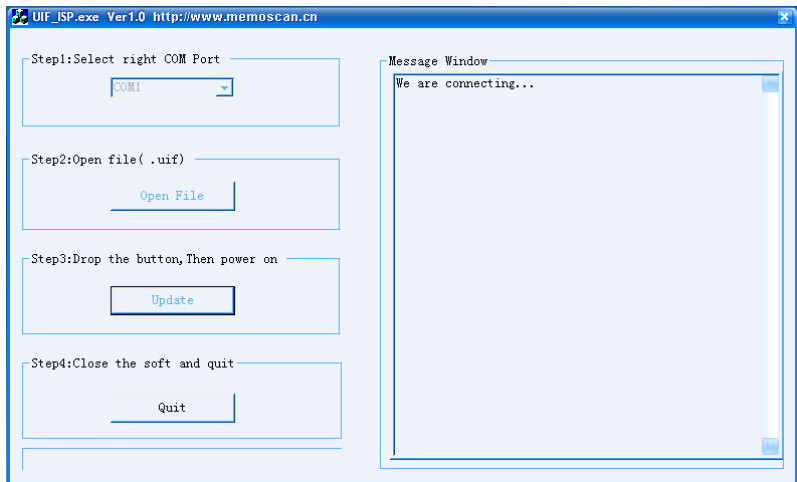
2) Select the com port.



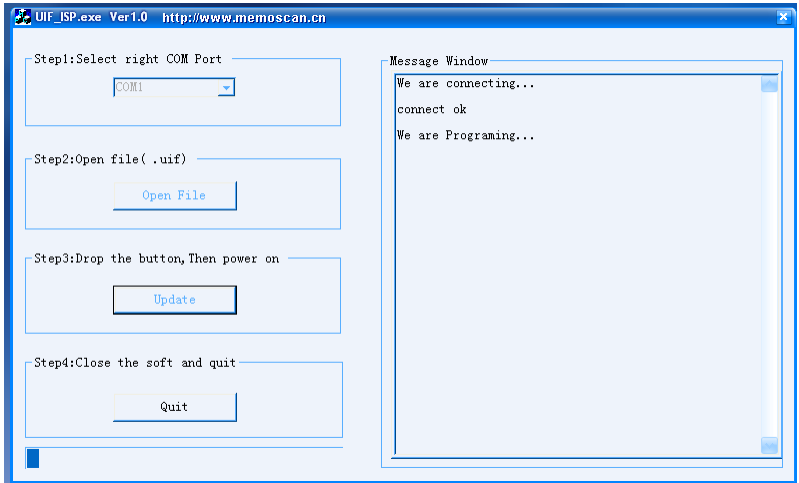
3) Press “Open File” button, select the file for update(expand: .uif)



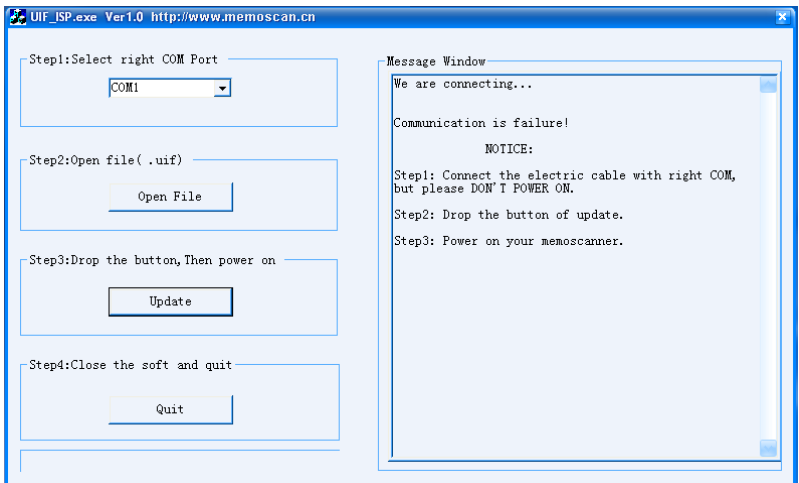
4) Press “update”, open the power of memo scanner, there will be the interface as follows. The Memo scanner is trying to connect with PC.



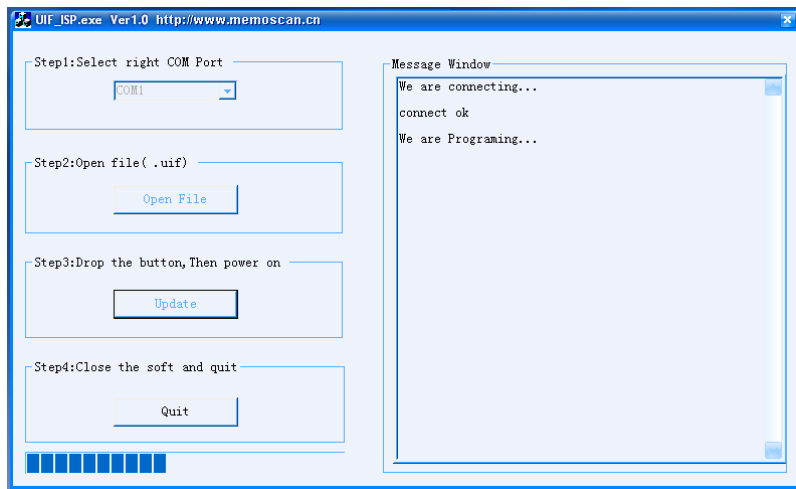
4-1) The blow interface will appear if the connection is success.



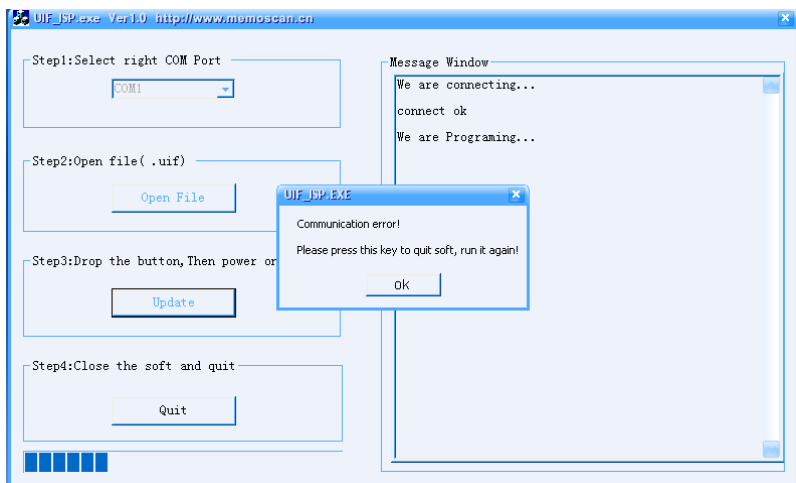
4-2) If the connection is fail, this time requests to close the power of memo scanner and check whether the connection and the choice of COM mouth are right or not.



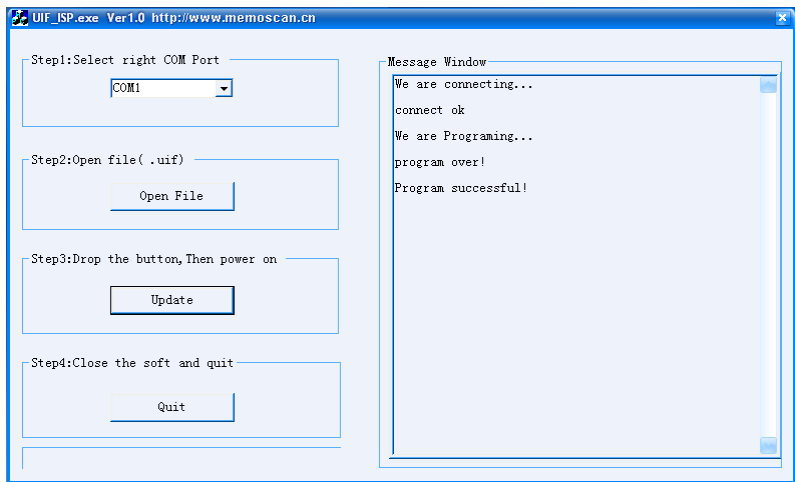
5) Connection succeed, upgrading starts.



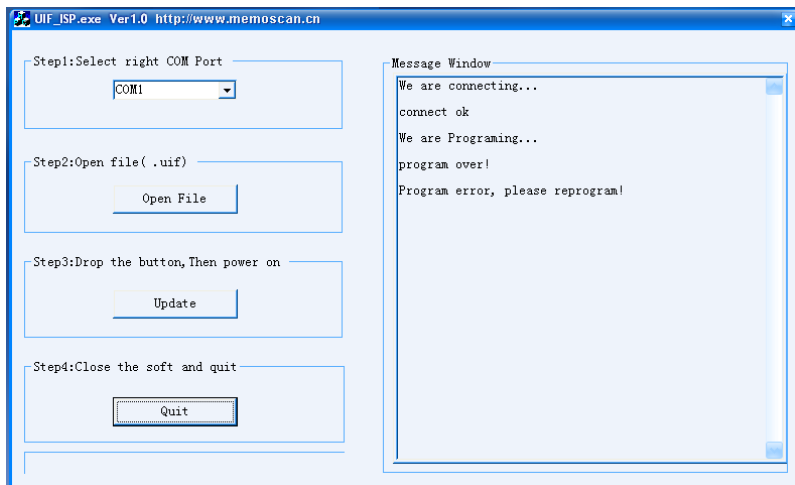
5-1) If the below interface appears in the process of upgrading, that's to say the communications failures, this time requests to close the procedures and re-run the programmer



## 6) update successful

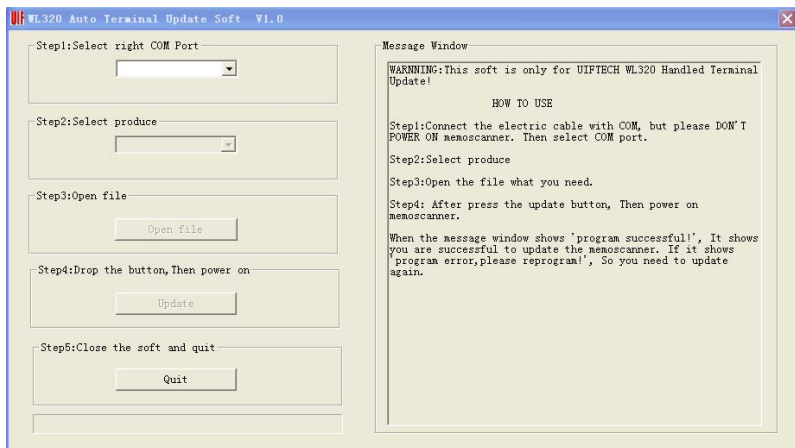


6-1) If the below interface appears, that's to say the upgrading failure. This time requests to close the power of memo scanner and back to step 1 to re-upgrading .

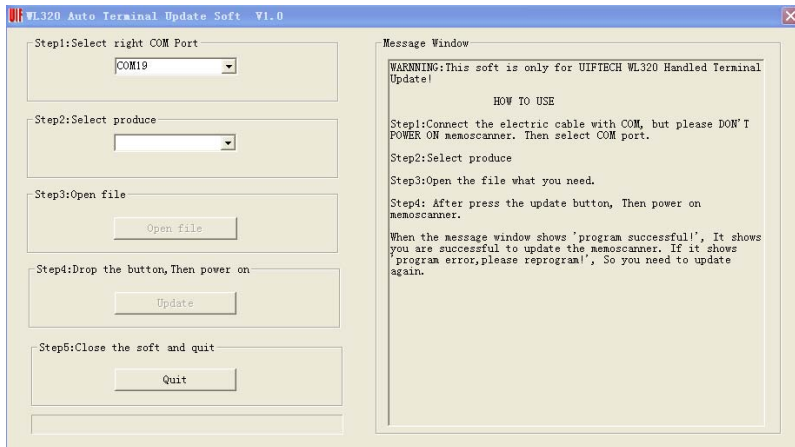


## 6.1-2 Software update for auto terminal

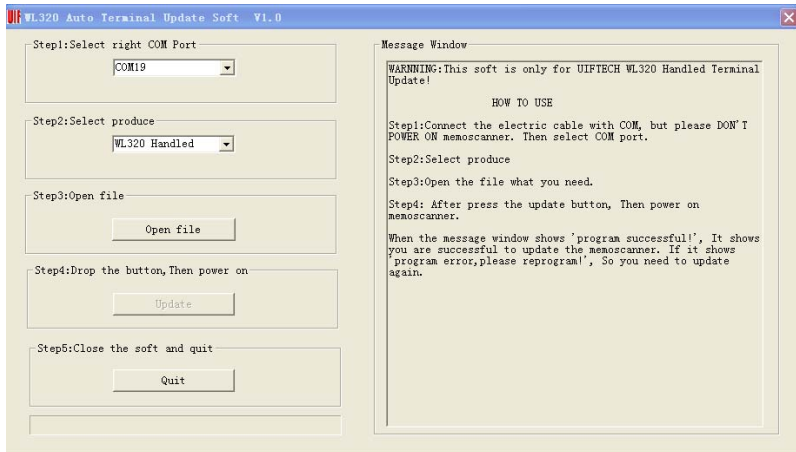
- 1) Visit website [ww.memoscan.cn](http://ww.memoscan.cn), download the software WL320 Handled Terminal Update.exe
- 2) Run WL320 Handled Terminal Update.exe, there will be the interface as follows



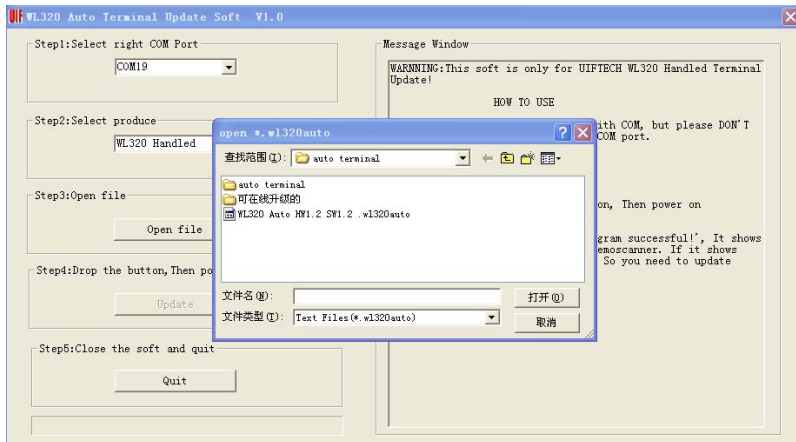
- 3) Select the com port.



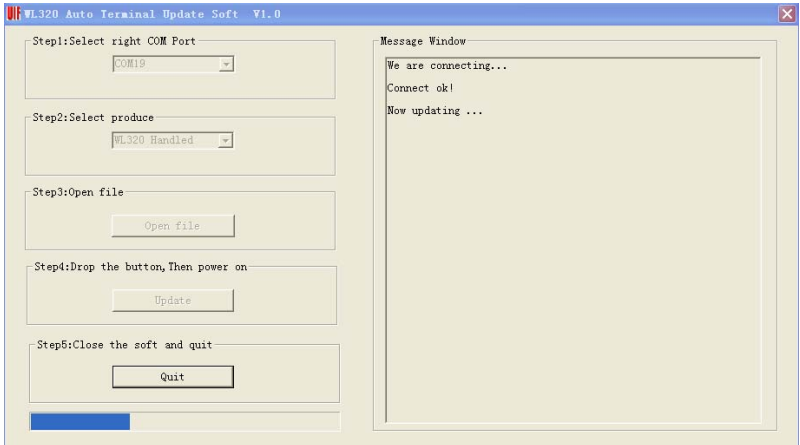
#### 4) Select the produce.



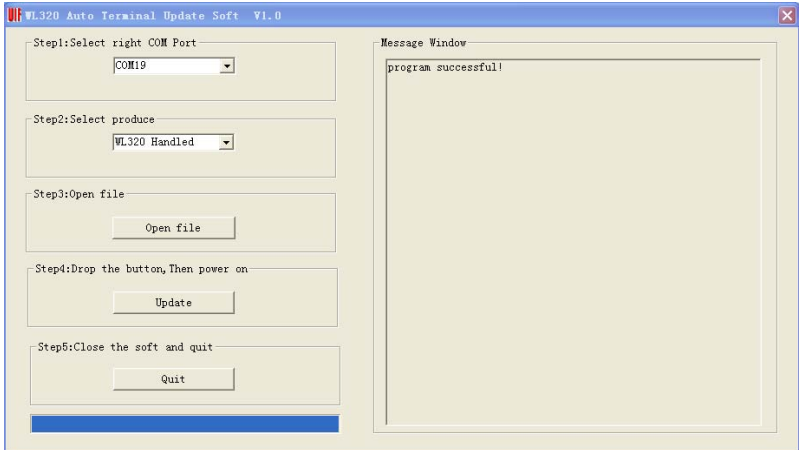
#### 5) Press "Open File" button, select the file for update (expand: .wl320auto)



6) The blow interface will appear if the connection is success.



7) update successful



7-1) If the below interface appears, that's to say the upgrading failure. This time requests to close the power of memo scanner and back to step 1 to re-upgrading .

