Diagnostic Tool Introduction

Keeway Aftersale Service Division

2012/11/01

Index

Diagnostic tool Appearance/Measurement
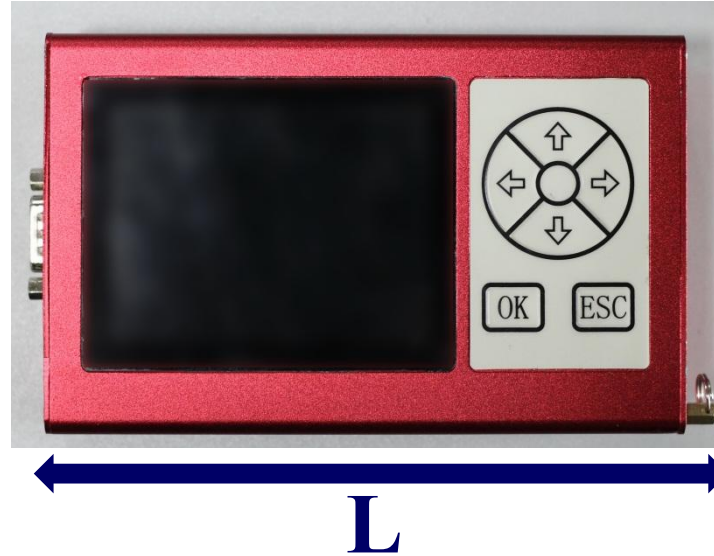
Left Side View

Right Side View

W

H

L

Computer connection cable (1 meter)

W: Width= 90mm

L: Length= 145mm

H: Height=30mm

Vehicle connection cable (2 meter)

* Specification may subject to changes without further notification

1. This hand-held diagnostic device is made for all Keeway EFi vehicles.

2. It can diagnose the problem and reflashing the ECU for current EFi configurations: MT05/MC21/MC10.

3. 4 Gigabyte internal memory for storage of ECU data and dynamic parameters from the ECU output.

4. 3.5" LCD screen with blue backlight.

5. Aluminum cased structure, impact resistance.

6. Language option now available: Chinese/English/French/Italian/Portuguese/Spanish/German.

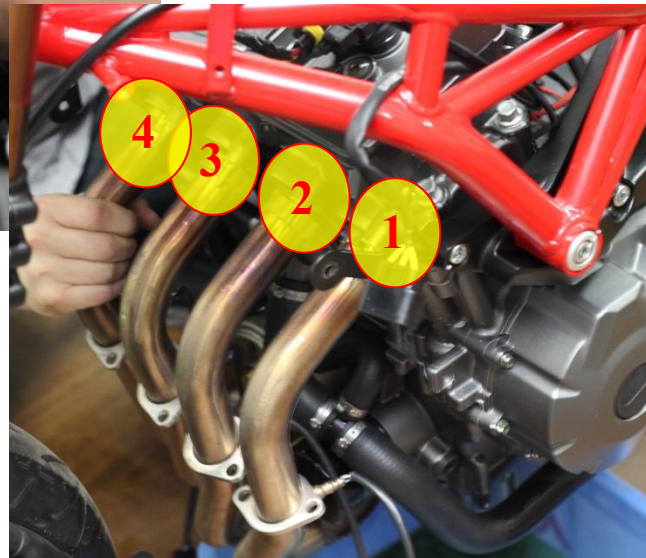7. Anti-slippery rubber sleeve/ hand strip will be   provided soon

Engine control unit (ECU)

The ECU for managing the Cylinder 3 & 4 is located near & higher than the reserved tank
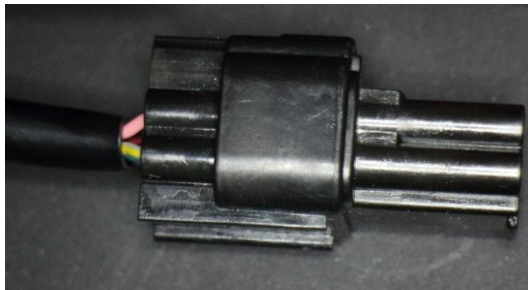

Diagnostic coupler for ECU(34) is black and under the rider seat

Igniting order: 1-2-4-3 (1=first from shift pedal side)

Diagnostic coupler for ECU(12) is white and under the passenger seat

The ECU(12) for managing the Cylinder 1 & 2 is assembled together with the reserved tank

Connection method

Diagnostic coupler for ECU(12) is white

Diagnostic coupler for ECU(34) is black

This arrangement is for:

1. Diagnosing the problem of vehicle
2. Recording the parameter when riding
3. Changing the mapping of the ECU

- There are three modes that the EFi diagnostic tools are connected to PC:

1. Firmware upgrade:

The diagnostic tool firmware, is the operation system that controls the button reaction and some beeping function when buttons are pressed.

2. ECU mapping update:

By first uploading the new ECU mapping from PC to the diagnostic tool, it can then connect to the vehicle and upgrade the mapping for better performance or local market demand (for removing the exhaust pollution control or else)

3. Data stream mode:

When engine running, this device can stay plugged and record real-time dynamic data during running. This PCHUD LOG file can be collected   and send back to Headquarter for detailed analysis.

Firmware upgrade method

**To upgrade the firmware, please follow these steps:**

1. **Press and hold the OK button**

2. **Connect to the USB and you can see the system storage disk (device name should be "CRP2 ENABLD")**

3. **Delete the firmware.bin and copy the memory.bin to the storage disk.**

4. **Remove the USB device and complete the diagnostic tool upgrade procedure(when re-boot, the memery.bin will be changed to firmware automatically)**

退出 USB Bootlaader
- CRP2 ENABLD (D:)
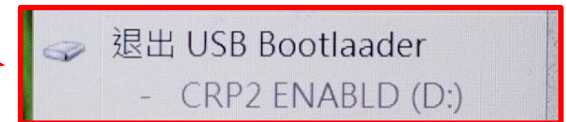
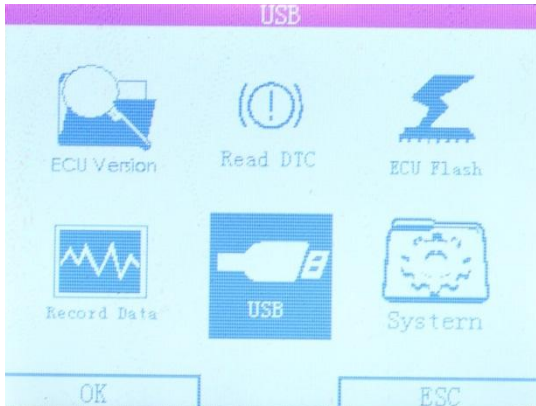**or**
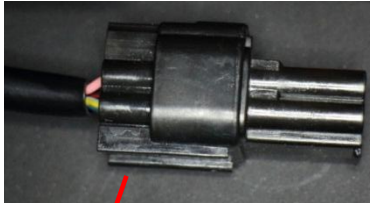
Before connection, please make sure:

1. **Side stand and in neutral gear,**

2. **Engine stop switch to "running"**

3. **Battery good charging status.**

4. **Power fuse ok.**

This Diagnostic tool is powered by ECU on the vehicle, no extra power source needed.

ECU mapping update (PC OPERATION)

To update the mapping, please follow these steps:

1. Connect to the USB and the diagnostic tool should be powered-on and enter the user interface.

2. Select the USB storage mode, and you can see a USB storage space, device name "Keil MCB2300 Memory".

3. Copy and paste the upgraded DELPHI mapping package PAC file, provided by Headquarter, and remove the USB device securely.

4. When the diagnostic tool was connected to the vehicle, you can select the MT05 ECU updating function, and input the PAC files with updated mapping. (shown in the following pages)

ECU mapping update (on bike operation)
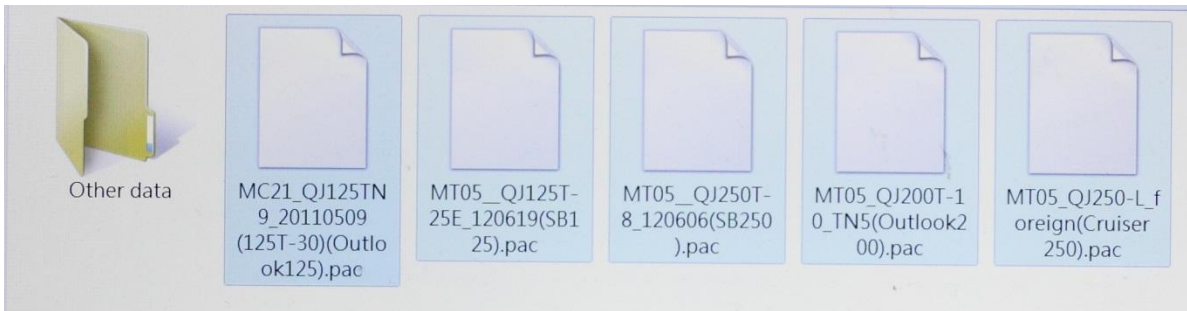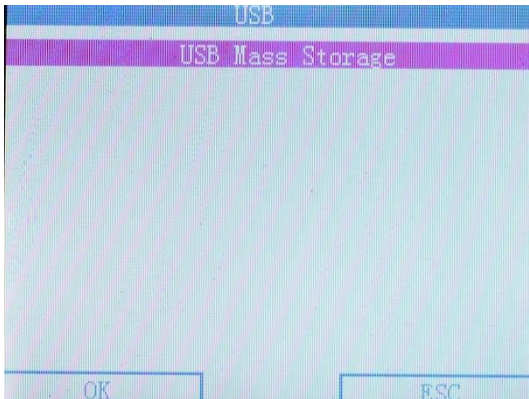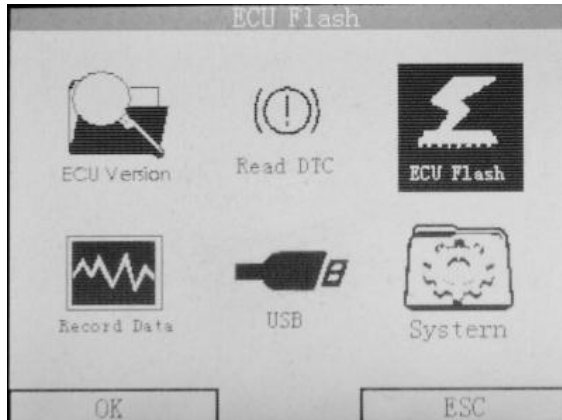
1. Connect the tool to the bike, select the ECU flash function
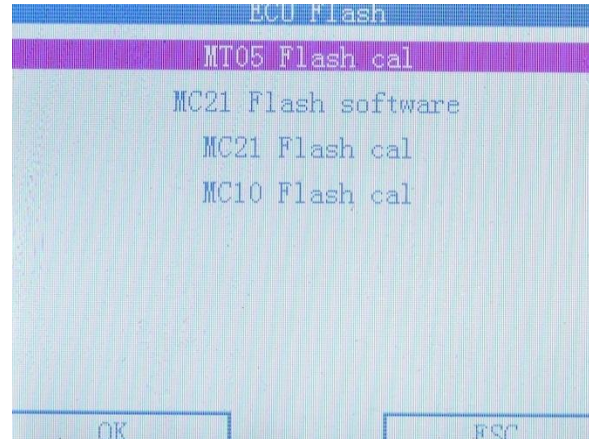
2. Select MT05 flash function (For Silverblade/ZAFFERANO 250 and BN600)

3. Select the update PAC file, in this case, we select the QJ250T-8 for Silverblade/ZAFFERANO 250

4. This is the confirmation for the mapping (for developers)
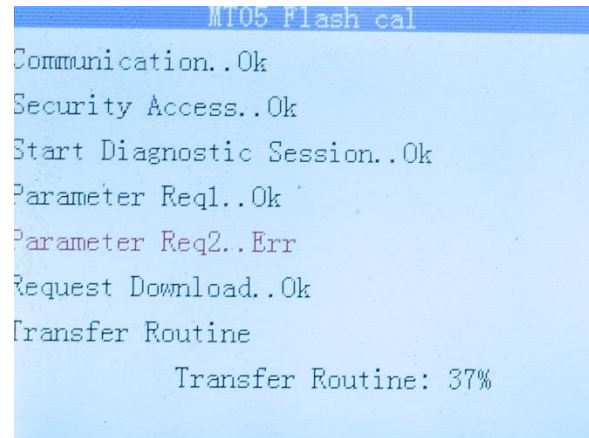
5. Communicating with ECU and should end with a "success" message

Data stream mode(recording data for developers' analysis)
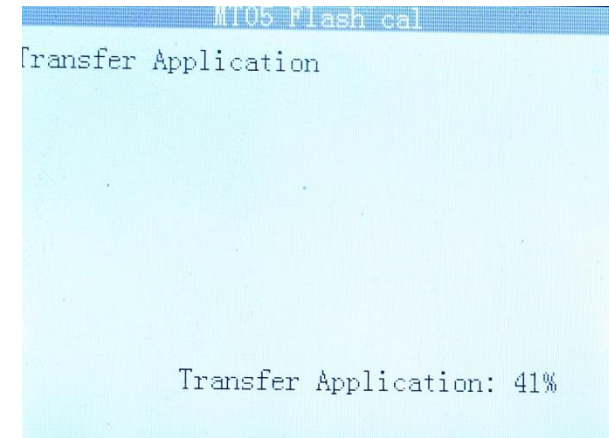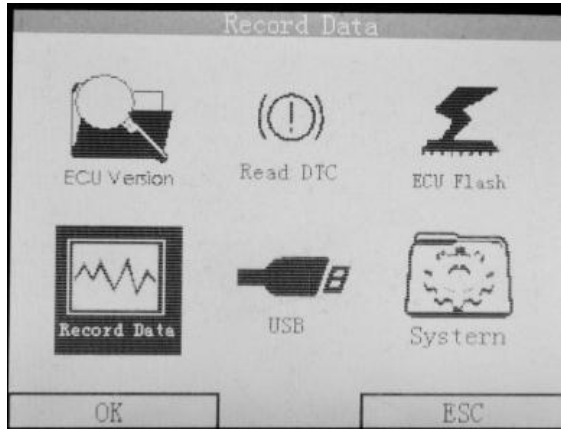
1. Connect the tool to the bike, select the Record data function

2. Select the "Record data" function in the sub-menu

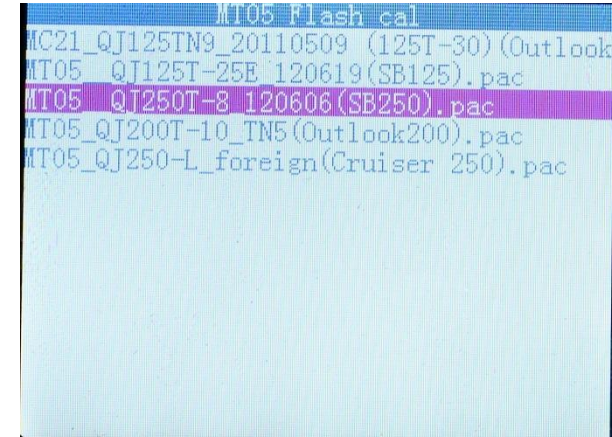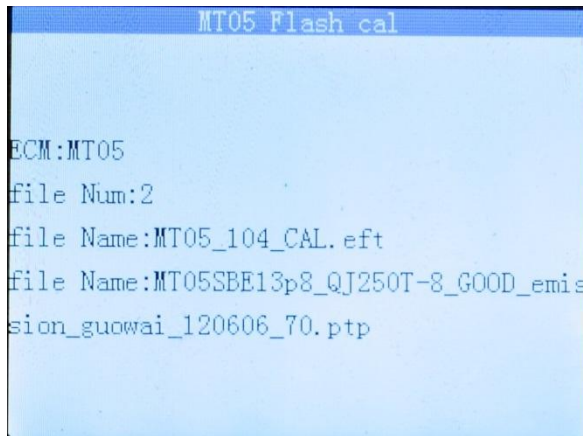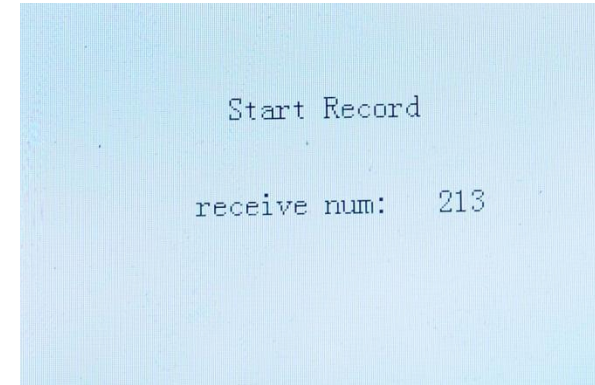3. The tool will start recording the real time data from ECU. Press the ESC button to stop recording.
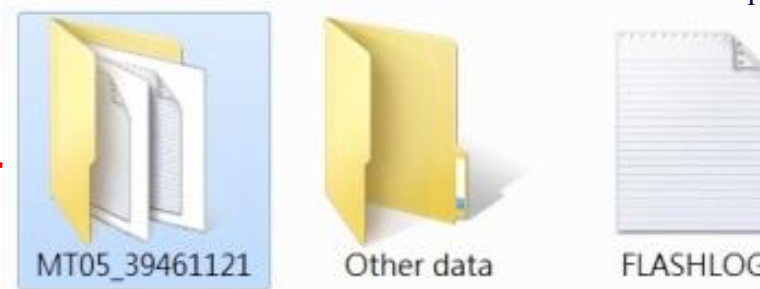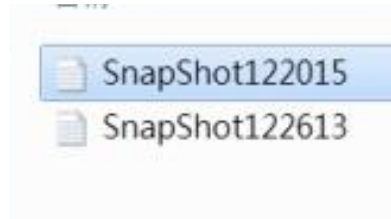
4. Connect the Diagnostic tool to PC, enter the user interface and select the USB storage mode, and you can see a USB storage space, device name "Keil MCB2300 Memory". There will be a folder where the LOG files are stored. In this case we recorded two data streams so there are two files.

Please send this LOG file upon request, for the headquarter to check the parameters to see if any abnormal signs of the system and the engine.

ECU version	
ECU Version	Read DTC	ECU Flash
Record Data	USB	System
OK	ESC

ECU version

ECU Pin Definition

ECU version

OK   ESC

ECU Version(1/1)
Base model:01AF5DCF
Software Version:ST25CA17

Record Data

| ECU Version | Read DTC | ECU Flash |
| Record Data | USB | System |

OK   ESC

Display/Record Data

Display Data

Record Data

Read Freeze Data

OK   ESC
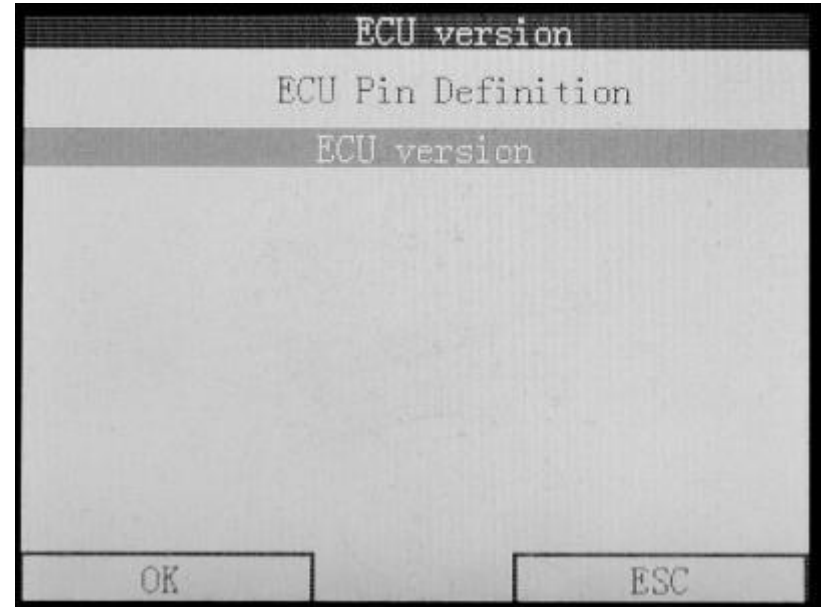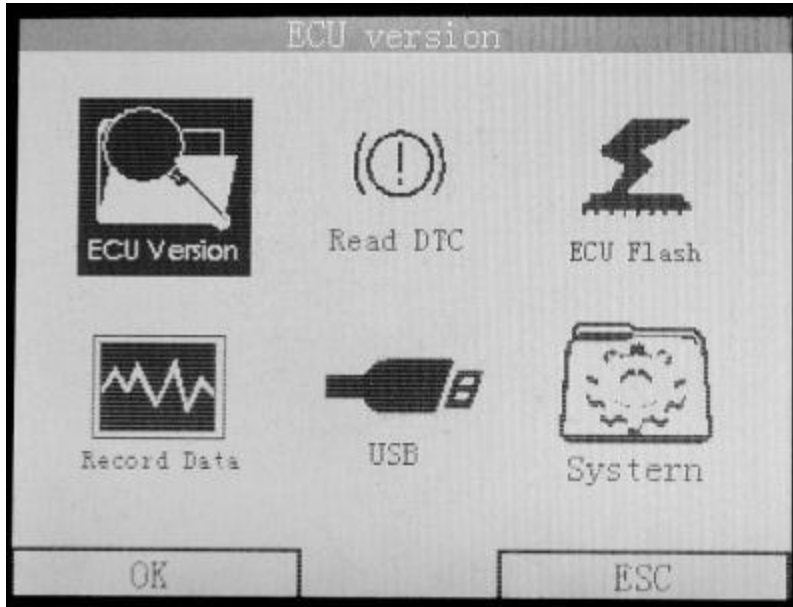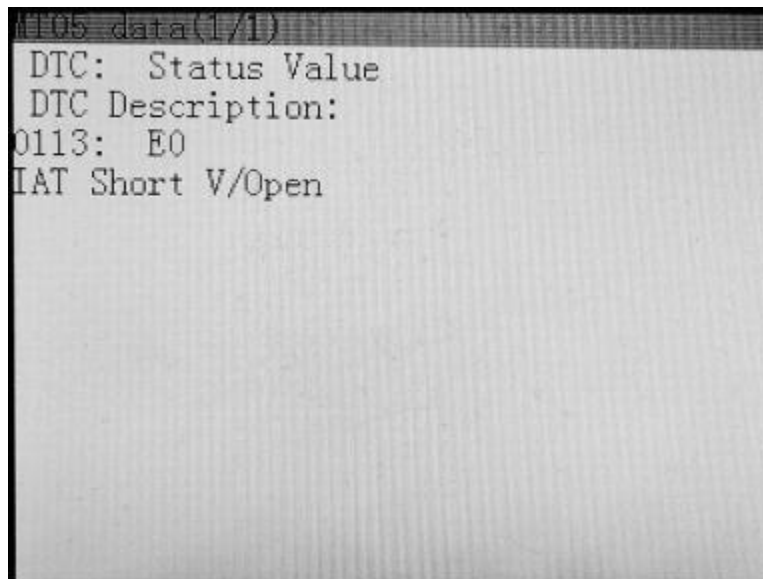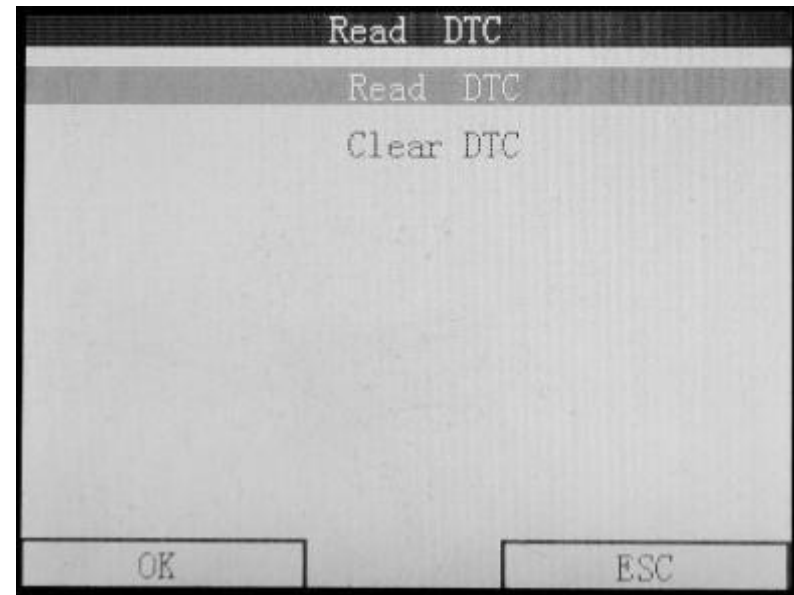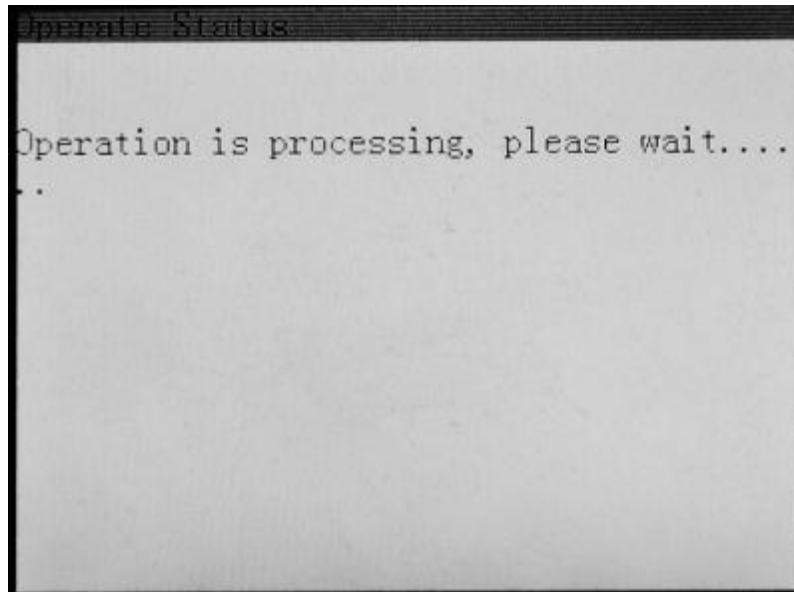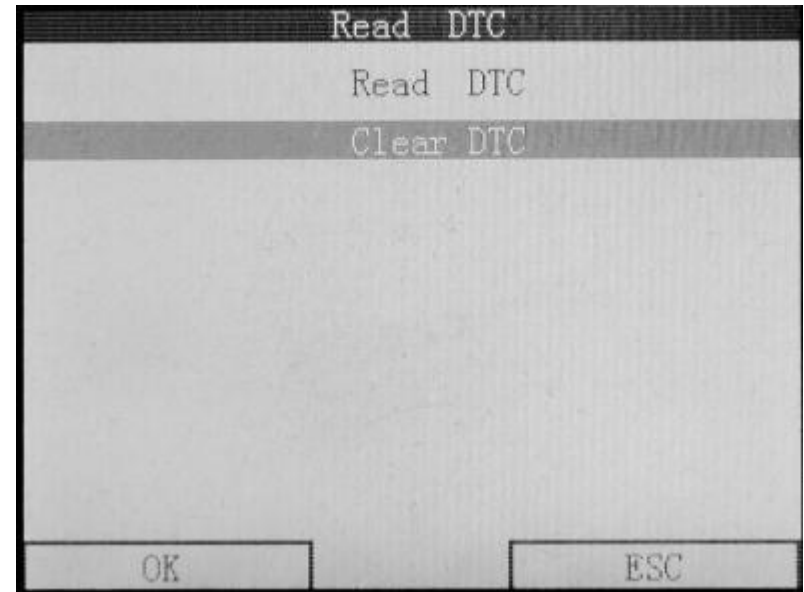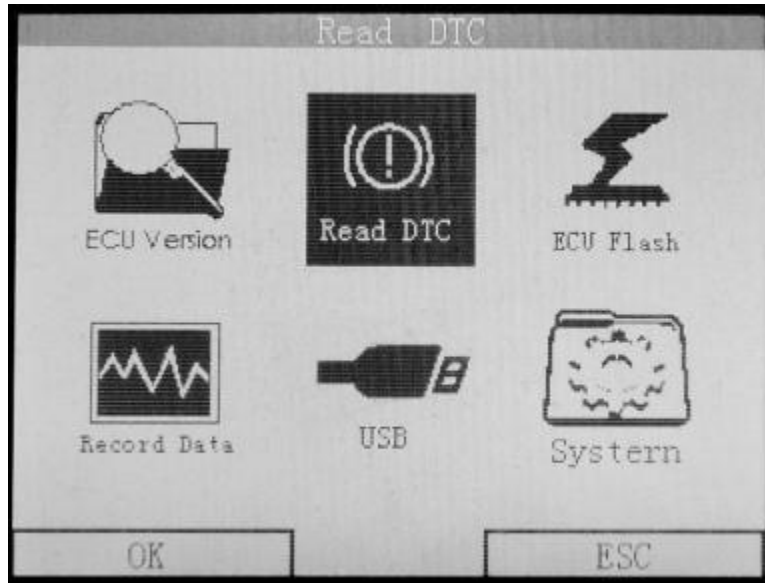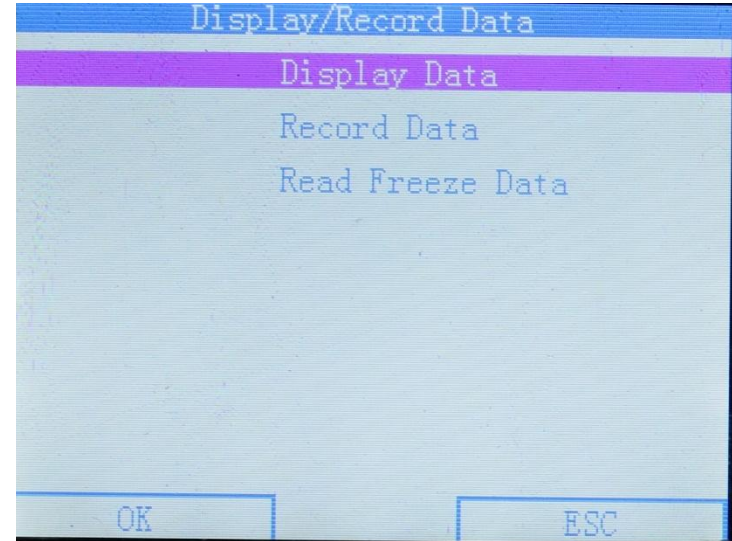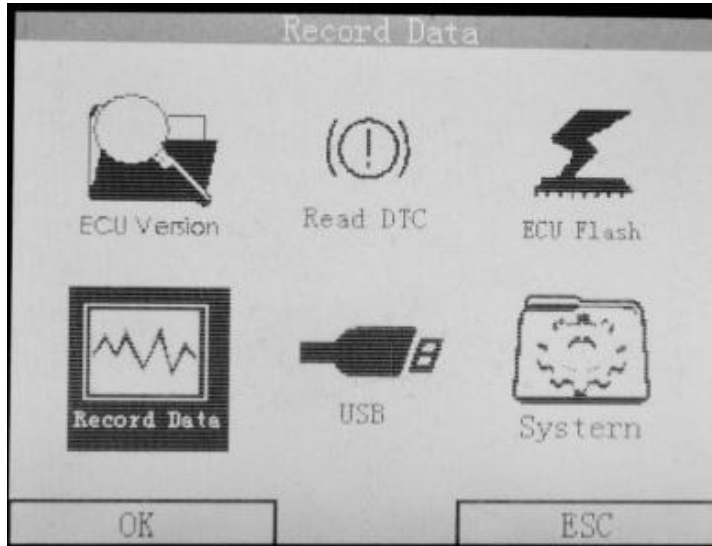
MT05 data(1/7)

```
Vclts:                  26.4   degC
cold:Normal temperature
low idle:80~96degC
high idle:80~96degC,  drive:80~96degC
Fpwvcl:                 0.00    ms
low idle:2~4ms,high idle:2~4ms
Saesta:                 4.0
low idle:5~12degC,  high idle:20~30degC
Vmapexp:                77.2 kpa
cold:101kPa,  low idle:40~55kPa
drive:20kPa~101kPa
Vrpm:                   0     rpm
low idle:1500-100rpm~1500+100rpm
drive:2500-50rpm~2500+50rpm
```


MT05 data(2/7)

```
Vthrot:                 0.0   pct
cold:0~99.5
Vo2:                    1014.77mV
Vo2b:                   1014.77mV(50~950mv)
cold:1024mv,  low idle:100~900mv/>=6
high idle:100~900mv/>=10, drive:50~950mv
Vign:                   12.0voltage
cold:11.5~13V,  low idle:13~14.5V
high idle:13~14.5V,  drive:13~14.5V
Vafcmult:               0.89factor
Affnlafr:               7.04 afr
Aftafr:                 7.04 afr
Fblmcor1:               0.945factor
Fblmcor2:               0.945factor
```

Fcatcyl1:	25.8	degC
Fcatcyl2:	25.8	degC
Fclcint1:	0	count
Fclcint2:	0	count
Fclcmul1:	0.000	pct
Fclcmul2:	0.000	pct
Fcno:	33	cellNo.
Fppdc:	0.00pct	
Fpwvc2:	0.00	ms
Fve1:	82.00 pct	
Fve2:	86.30 pct	
Iacvdsmp:	128step	
Iaintegofst:	16.21 pct	
Iardrpm:	0	rpm

Iarpmerr:	0	rpm
Malfcurr:	0x0000	
Malfhist:	0x0000	
Runtime:	0	Sec
Saglobal1:	4.0	
Saidldyn:	0.0	
Spdwell:	1.39	ms
Statusbyte1:	0x00	
Fuelcoff:	0	
Fcocrfld:	0	
Dfcocmet:	0	
Dfcoenbl:	0	
Dfcoeenbl:	0	
Fcohrpm:	0	

Vrlvenbl:	0
Fclrest2:	0
Statusbyte2:	0x00
Fclcen1:	0
Ppdsebl:	0
Fpenabl:	0
Ftrnsaes:	0
Ftrnsdes:	0
Ftrnsaedcload:	0
Ftrnsdeinload:	0
Fclcen2:	0
Statusbyte3:	0x83
Fo2stat1:	1
Fclrest1:	1

Foshtren:	0
Fo2redy1:	0
if IACV mode=0:	0
Iamtrlost:	0
Iacmvihb:	0
Vigns:	1
Statusbyte4:	0x00
Cycsenbl:	0
Vcsinsyn:	0
Idlconm:	0
Fpestat:	0
Fpeafren:	0
Pnswtch:	0
Diagswtch:	0

```
VbVios_MIL_Status:0
Statusbyte5:        0x00
Vafcmet:            0
Vbarocmet:          0
Vcsinsynsprk:       0
Satitrig:           0
Catloenb:           0
If engstate=3:      0
Nistblidle:         0
Fo2redy2:           0
Terrcnt:            0
Vafcclnum:          0
Vvehspd:            512KmperH
Ccpdc:              6  pct
```

Record Data

ECU Version	Read DTC	ECU Flash
Record Data	USB	System

OK   ESC

Display/Record Data

Display Data

Record Data

Read Freeze Data

OK   ESC

MT05 data (1/8)

```
Vclts:              26.4  degC
cold:Normal temperature
low idle:80~96degC
high idle:80~96degC, drive:80~96degC
Fpwvcl:             0.00   ms
low idle:2~4ms,high idle:2~4ms
Saesta:             4.0
low idle:5~12degC, high idle:20~30degC
Vmapexp:            77.2 kpa
cold:101kPa, low idle:40~55kPa
drive:20kPa~101kPa
Vrpm:               0    rpm
low idle:1500-100rpm~1500+100rpm
drive:2500-50rpm~2500+50rpm
```

MT05 data (2/8)

```
Vthrot:             0.0  pct
cold:0~99.5
Vo2:                1014.77mV
Vo2b:               1014.77mV(50~950mv)
cold:1024mv, low idle:100~900mv/>=6
high idle:100~900mv/>=10, drive:50~950mv
Vign:               12.0voltage
cold:11.5~13V, low idle:13~14.5V
high idle:13~14.5V, drive:13~14.5V
Vafcmult:           0.89factor
Affnlafr:           7.04 afr
Aftafr:             7.04 afr
Fblmcor1:           0.945factor
Fblmcor2:           0.945factor
```

Fcatcyl1:	25.8	degC
Fcatcyl2:	25.8	degC
Fclcint1:	0	count
Fclcint2:	0	count
Fclcmul1:	0.000	pct
Fclcmul2:	0.000	pct
Fcno:	33	cellNo.
Fppdc:	0.00pct	
Fpwvc2:	0.00	ms
Fve1:	82.00	pct
Fve2:	86.30	pct
Iacvdsmp:	128step	
Iaintegofst:	16.21	pct
Iardrpm:	0	rpm

Iarpmerr:	0	rpm
Malfcurr:	0x0000	
Malfhist:	0x0000	
Runtime:	0	Sec
Saglobal1:	4.0	
Saidldyn:	0.0	
Spdwell:	1.39	ms
Statusbyte1:	0x00	
Fuelcoff:	0	
Fcocrfld:	0	
Dfcocmet:	0	
Dfcoenbl:	0	
Dfcoeenbl:	0	
Fcohrpm:	0	

Vrlvenbl:	0
Fclrest2:	0
Statusbyte2:	0x00
Fclcen1:	0
Ppdsebl:	0
Fpenabl:	0
Ftrnsaes:	0
Ftrnsdes:	0
Ftrnsaedcload:	0
Ftrnsdeinload:	0
Fclcen2:	0
Statusbyte3:	0x83
Fo2stat1:	1
Fclrest1:	1

Foshtren:	0
Fo2redy1:	0
if IACV mode=0:	0
Iamtrlost:	0
Iacmvihb:	0
Vigns:	1
Statusbyte4:	0x00
Cycsenbl:	0
Vcsinsyn:	0
Idlconm:	0
Fpestat:	0
Fpeafren:	0
Pnswtch:	0
Diagswtch:	0

```
VbVios_MIL_Status:0
Statusbyte5:          0x00
Vafcmet:             0
Vbarocmet:           0
Vcsinsynsprk:        0
Satitrig:            0
Catloenb:            0
If engstate=3:       0
Nistblidle:          0
Fo2redy2:            0
Terrcnt:             0
Vafcclnum:           0
Vvehspd:             512KmperH
Ccpdc:               6    pct
```

```
Vbaro:               100.6kpa
Vcsfc:               0      count
Vcspc:               0      count
Viat:                25.2   degC
Vmap:                85.0 kpa
VmapAltc:            85.2 kpa
Vmaprang:            105 CA
Vthrotia:            4.6    pct
Vthrotraw:           12352count
Pruntime:            90     Sec
```

System setting

ECU Version Read DTC ECU Flash

Record Data USB System

OK ESC

System setting

Language

OK ESC

Langange choose

English
Chinese
Spanish
Italian
Portuguese
French
German

OK ESC

Langange choose

English
Chinese
Spanish
Italian
Portuguese
French
German

OK ESC

Screen 1:
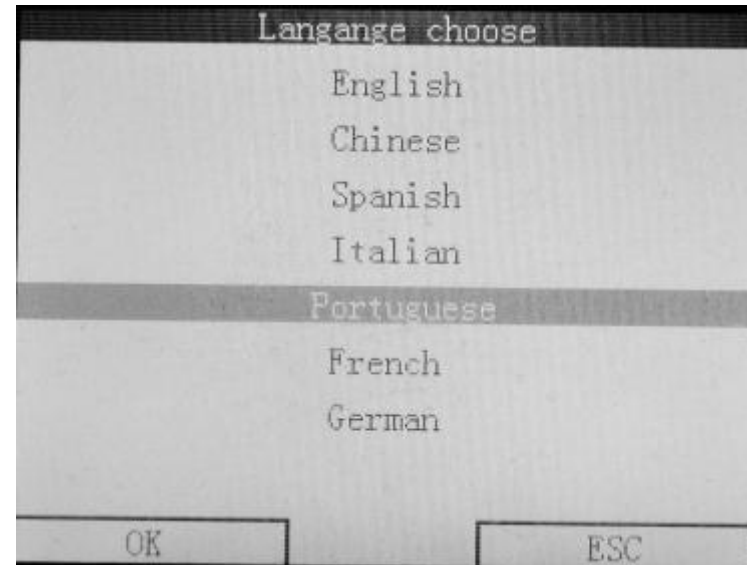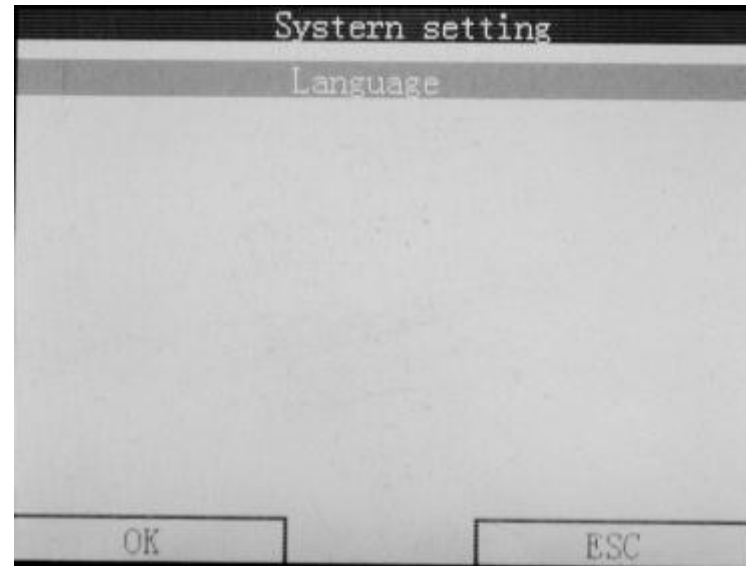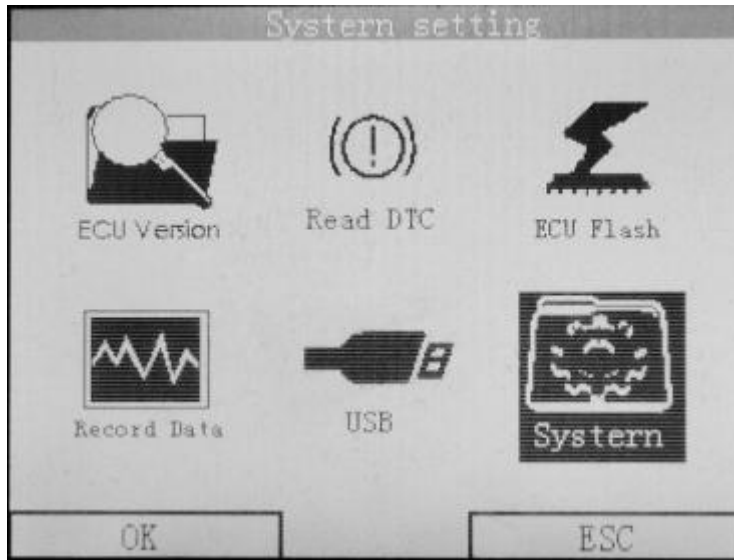
```
Mostrar/registo de dados
    dados de exibição
  registro de dados
   Ler dados freeze




   OK                        ESC
```

Screen 2 — MT05 data(1/7):

```
MT05 data(1/7)
Vclts:                    34.3   degC
cold:Normal temperature
low idle:80~96degC
high idle:80~96degC, drive:80~96degC
Fpwvc1:                   3.23   ms
low idle:2~4ms,high idle:2~4ms
Saesta:                   8.8
low idle:5~12degC, high idle:20~30degC
Vmapexp:                  43.5 kpa
cold:101kPa, low idle:40~55kPa
drive:20kPa~101kPa
Vrpm:                     1449 rpm
low idle:1500-100rpm~1500+100rpm
drive:2500-50rpm~2500+50rpm
```

Screen 3 — MT05 data(2/7):

```
MT05 data(2/7)
Vthrot:                   0.0   pct
cold:0~99.5
Vo2:                      673.28 mV
Vo2b:                     673.28 mV(50~950mv)
cold:1024mv, low idle:100~900mv/>=6
high idle:100~900mv/>=10, drive:50~950mv
Vign:                     13.6voltage
cold:11.5~13V, low idle:13~14.5V
high idle:13~14.5V, drive:13~14.5V
Vafcmult:                 0.85factor
Affnlafr:                 14.41afr
Aftafr:                   14.41afr
Fblmcor1:                 0.945factor
Fblmcor2:                 0.945factor
```

Screen 4 — MT05 data(3/7):

```
MT05 data(3/7)
Fcatcyl1:                 34.0   degC
Fcatcyl2:                 33.9   degC
Fclcint1:                 -3     count
Fclcint2:                 -3     count
Fclcmul1:                 -0.028 pct
Fclcmul2:                 -0.028 pct
Fcno:                     33   cellNo.
Fppdc:                    1.00pct
Fpwvc2:                   4.45   ms
Fve1:                     65.73 pct
Fve2:                     86.30 pct
Iacvdsmp:                 72 step
Iaintegofst:              26.05 pct
Iardrpm:                  1600 rpm
```

MT05 data(4/7)

```
Iarpmerr:          22     rpm
Malfcurr:          0x0000
Malfhist:          0x0000
Runtime:           95     Sec
Saglobal1:         7.7
Saidldyn:          0.0
Spdwell:           1.20    ms
Statusbyte1:       0x00
Fuelcoff:          0
Fcocrfld:          0
Dfcocmet:          0
Dfcoenbl:          0
Dfcoeenbl:         0
Fcohrpm:           0
```

MT05 data(5/7)

```
Vrlvenbl:          0
Fclrest2:          0
Statusbyte2:       0x07
Fclcen1:           1
Ppdsebl:           1
Fpenabl:           1
Ftrnsaes:          0
Ftrnsdes:          0
Ftrnsaedcload:     0
Ftrnsdeinload:     0
Fclcen2:           0
Statusbyte3:       0x9d
Fo2stat1:          1
Fclrest1:          0
```

MT05 data(6/7)

```
Foshtren:          1
Fo2redy1:          1
if IACV mode=0:    1
Iamtrlost:         0
Iacmvihb:          0
Vigns:             1
Statusbyte4:       0x07
Cycsenbl:          1
Vcsinsyn:          1
Idlconm:           1
Fpestat:           0
Fpeafren:          0
Pnswtch:           0
Diagswtch:         0
```

MT05 data(7/7)

```
VbVios_MIL_Status:0
Statusbyte5:       0x25
Vafcmet:           1
Vbarocmet:         0
Vcsinsynsprk:      1
Satitrig:          0
Catloenb:          0
If engstate=3:     1
Nistblidle:        0
Fo2redy2:          0
Terrcnt:           0
Vafcclnum:         1
Vvehspd:           512KmperH
Ccpdc:             6     pct
```