ET7850 Dual Channel Automotive Diagnostic User Manual

※：The illustrations, interface, icons and characters in the user manual may be slightly different from the actual product. Please refer to the actual product.

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This product is under the protection of patent rights, including ones which have already obtained the patent rights and those pending. The information in this manual will replace all that in materials published previously.

The information in this manual was correct at the time of printing. However, Endeavour Tools will continue to improve products and reserves the rights to change specifications at any time without notice.

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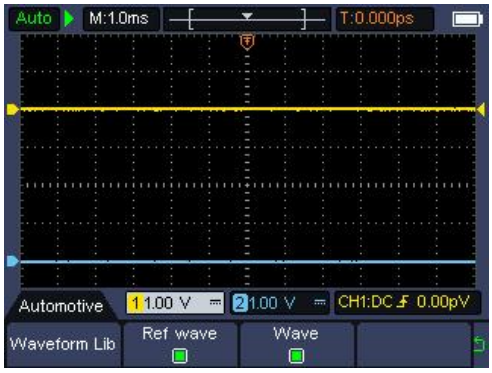
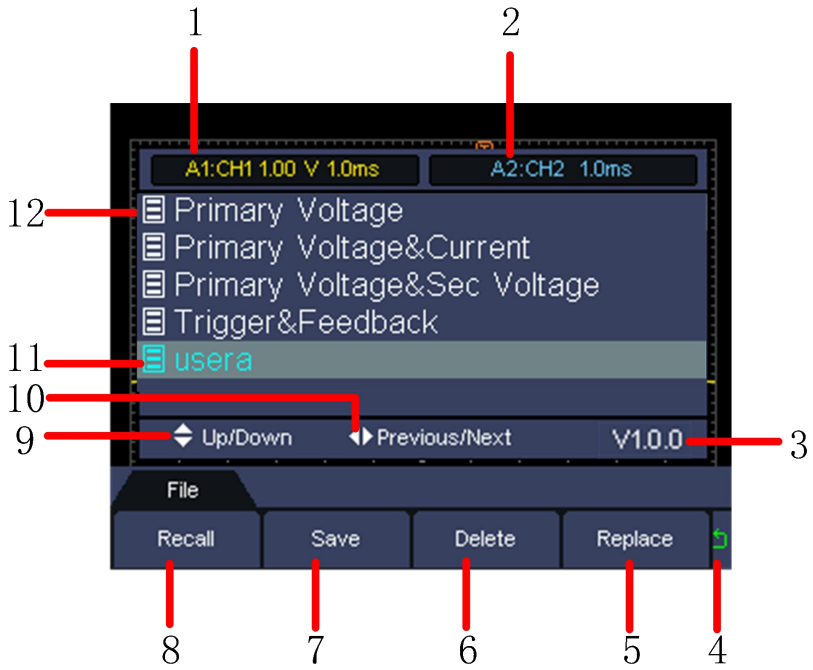
Table of Contents

Automotive Diagnostic

Press Measure Range key, press **F3** key to enter the automotive diagnostic waveform library menu. The menu includes Waveform Lib, Ref wave, and Wave display toggle.



1. Press **F1** to enter waveform library.



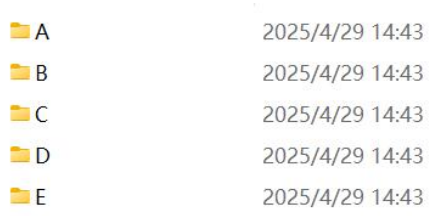
Num.	Description
1	The voltage and time base settings of reference waveform CH1 have been adjusted in the waveform library.
2	The voltage and time base settings of reference waveform CH2 have been adjusted in the waveform library.
3	Current waveform library version
4	Return to the previous menu
5	Update the waveform library file.

6	Delete saved waveform files (Note: System files cannot be deleted).
7	Save current waveform and settings.
8	Load the waveform library file and display it as a purple waveform.
9	Press ▲ or ▼ to select the waveform library file.
10	Press ◄ to go back to the previous directory or press ► to enter the next level directory.
11	Current waveform file name.
12	Waveform library file.

2. Press **F2** key toggles the reference waveform display on/off.
3. Press **F3** key to toggle waveform display on/off.

How to update waveform library files

1. Insert the USB cable into the instrument and connect it to the computer.
2. Press **F4** key to select **Replace**, and the waveform library file will appear on the computer.



3. Copy the files that need updating into the original folder.

4. Press the ⏻ power-off button to complete the waveform library file replace.

Note: All operations involve potential risks. Please follow standard operating procedures.

Ignition System

The operation instructions are as follows:

Function	CH1 Probe Type	CH2 Probe Type	CH1 Connection	CH2 Connection

COP Ignition System	Primary Voltage	Attenuator (20:1)	×	The red connector of the test line is connected to the power supply voltage line of the ignition coil through a probe needle, while the black connector is grounded.	×
	Primary Voltage &Current	Attenuator (20:1)	40A range	The red connector of the test line is connected to the power supply voltage line of the ignition coil through a probe needle, while the black connector is grounded.	Clamp the current probe onto the power supply voltage wire of the ignition coil.
	Primary Voltage &Sec Voltage	Attenuator (20:1)	Attenuator (10000:1)	The red connector of the test line is connected to the power supply voltage line of the ignition coil through a probe needle, while the black connector is grounded.	The vehicle has spark plug wires, with an attached spark plug extension wire connecting between the ignition coil and the spark plug. The secondary ignition sensing test wire clip is attached to the ignition extension wire, and the grounding clip is grounded.
	Trigger &Feedback	1:1	1:1	The red connector of the test line is connected to the trigger signal wire of the ignition coil through a needle probe.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	The red connector of the test line is connected to the feedback signal wire of the ignition coil through a probe.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to

					connect to the test wire.
DIS	Primary Current	40A range	×	Clamp the current probe onto the power supply voltage wire of the ignition coil.	×
	Primary Voltage	Attenuator (20:1)	×	The red connector of the test line is connected to the negative terminal of the ignition coil through a probe needle, while the black connector is grounded.	×
	Primary Voltage &Current	Attenuator (20:1)	40A range	The red connector of the test line is connected to the negative terminal of the ignition coil through a probe needle, while the black connector is grounded.	Clamp the current probe onto the power supply voltage wire of the ignition coil.
	Primary Voltage &Sec Voltage	Attenuator (20:1)	Attenuator (10000:1)	The red connector of the test line is connected to the negative terminal of the ignition coil through a probe needle, while the black connector is grounded.	The secondary ignition sensing test clip is attached to the spark plug, and the grounding clip is grounded.
	Sec DIS(Negative-fired)	Attenuator (10000:1)	×	The secondary ignition sensing test clip is attached to the spark plug, and the grounding clip is grounded.	×
	Sec DIS(Positive-fired)	Attenuator (10000:1)	×	The secondary ignition sensing test clip is attached to the spark plug, and the grounding clip is grounded.	×

Sensors System

The operation instructions are as follows:

Function	CH1 Probe	CH2 Probe	CH1 Connection	CH2 Connection

			Type	Type		
Accelerator Pedal	Digital		1:1	1:1	The red connector of the test line is connected to the analog output line through a probe needle, while the black connector is grounded.	The red connector of the test line is connected to the digital output line through a probe needle, while the black connector is grounded.
	Analog		1:1	1:1	The red connector of the test line is connected to an output wire through a probe needle, while the black connector is grounded.	The red connector of the test line is connected to another output line through a probe needle, while the black connector is grounded.
Grankshaft	Inductive	Granking(Floating Ground)	1:1	1:1	The red connector of the test line is connected to an output wire through a probe needle, while the black connector is grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	The red connector of the test line is connected to an output wire through a probe needle, while the black connector is grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.
		Granking(Non-Floating Ground)	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is	×

					grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	
		Running(Floating Ground)	1:1	1:1	The red connector of the test line is connected to an output wire through a probe needle, while the black connector is grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	The red connector of the test line is connected to an output wire through a probe needle, while the black connector is grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.
		Running(Non-Floating Ground)	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	×
	Hall Effect Type		1:1	×	The red connector of the test line is connected to the signal output line	×

				through a probe needle, while the black connector is grounded.	
ABS	Inductive Type	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
	Reluctance Type	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
	Hall Effect Type	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
Camshaft	Inductive Type	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
	Hall Effect Type	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×

Lambda	Sensor Titania	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
	Sensor Zirconia	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
MAP	Digital(Fuel)	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
	Simulated Turbocharging(Diesel)	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
	Analog(Fuel)	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
	Pressure &Temperature(Turbochargin	1:1	1:1	The red connector of the test line is connected to the signal output line	The red connector of the test line is connected to the

	g Diesel Engine)			through a probe needle, while the black connector is grounded.	temperature sensor's signal output wire through a probe needle, while the black connector is grounded.
Throttle Position	Switch	1:1	1:1	The red connector of the test line is connected to the idle speed signal output wire through a probe needle, while the black connector is grounded.	The test line is red, the connector is connected to the full load signal output line through a needle, and the black connector is grounded.
	Potentiometer	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
Knock Sensor		1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
Coolant Temperature(5V)		1:1	×	The red connector of the test line is connected to the power supply voltage line through a probe needle, while the black connector is grounded.If the connector size is appropriate, disconnect the	×

				connector and use the attached 6-way lead wire to connect to the test wire.	
Common Rail Diesel		1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	×
Road Speed Sensor		1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×

Bus Diagnosis System

The operation instructions are as follows:

Function		CH1 Probe Type	CH2 Probe Type	CH1 Connection	CH2 Connection
Physical Layer	FlexRay-P	10:1	×	Connect to high-level signal wire.	×
	FlexRay-N	10:1	×	Connect to low-level signal line.	×
	K-line	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector	×

				is grounded.	
	LIN	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×
	CAN	1:1	×	The red connector of the test line is connected to the signal output line through a probe needle, while the black connector is grounded.	×

Engine System

The operation instructions are as follows:

Function				CH1 Probe Type	CH2 Probe Type	CH1 Connection	CH2 Connection
Fuel Injector	Diesel Engine	Piezoelectric Current(Bosch Common Rail Diesel)		40A range	×	Clamp the current probe onto the injector power cable.	×
		Solenoid Current(Bosch Common Rail Diesel)		40A range	×	Clamp the current probe onto the injector power cable.	×
	Gasoline	Multi-Point Injector	Voltage	20:1	×	The red connector of the test line is connected to the injector's switching/grounding wire through a needle probe, while the black connector is grounded.If the connector size is	×

						appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	
			Voltage &Current	1:1	4A range	The red connector of the test line is connected to the injector's switching/grounding wire through a needle probe, while the black connector is grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	Connect the current probe to the power cable of the fuel injector. If the connector size matches, disconnect the connector and use the provided 6-way lead wire to extract the connection.
			Current	4A range	×	Connect the current probe to the power cable of the fuel injector. If the connector size matches, disconnect the connector and use the provided 6-way lead wire to extract the connection.	×
		Gasoline Direct Injector	Voltage	20:1	20:1	The red connector of the test line is connected to the positive wire of the fuel injector through a probe needle, while the black connector is grounded.	The red connector of the test line is connected to the negative wire of the fuel injector through a probe needle, while the black connector is

							grounded.
			Voltage &Current	20:1	40A range	The red connector of the test line is connected to the positive wire of the fuel injector through a probe needle, while the black connector is grounded.	Connect the current probe to the positive wire of the fuel injector.
			Current	40A range	×	Connect the current probe to the positive wire of the fuel injector.	×
Diesel Glow Plugs	Voltage(Single)			1:1	×	The red connector of the test line is connected to the power supply through a probe needle, while the black connector is grounded.	×
	Voltage&Current(Single)			40A range	1:1	Clamp the current probe onto the power cord.	The red connector of the test line is connected to the power supply through a probe needle, while the black connector is grounded.
	Current			400A range	×	Clamp the current probe onto the power cord.	×
Fuel Rump Current				40A range	×	The current probe is clamped onto the voltage power wire of the fuel pump.	×
Pressure Regulator Valve Bosc				1:1	×	The red connector of the test line is connected to the pressure regulating valve through a needle probe, and the black	×

h CRD				connector is grounded.If the connector size is appropriate, disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	
Canister Purge Solenoid Valve Voltage		1:1	×	The red connector of the test line, through the probe needle, connects to the carbon canister solenoid valve's on/off ground wire, while the black connector is grounded.	×
Variable Speed Cooling Fan		1:1	40A range	The red connector of the test line is connected to the ECM signal line through a probe needle, while the black connector is grounded.	Clamp the current probe onto the power cord.
Exhaust Gas Recirculation Solenoid Valve		1:1	×	The red connector of the test line is connected to the ground wire through a probe needle, while the black connector is grounded.	×
Flow Control Valve (Bosch Common Rail Dies		1:1	×	The red connector of the test line is connected to the switching/on-off ground wire through a needle probe, while the black connector is grounded.If the connector size is appropriate,	×

el)				disconnect the connector and use the attached 6-way lead wire to connect to the test wire.	

Charge & Startup System

The operation instructions are as follows:

Function			CH1 Probe Type	CH2 Probe Type	CH1 Connection	CH2 Connection
Charging Circuits	Alternator AC Ripple	No ECM Control	1:1	×	Connect the red terminal of the test line to the generator's B+ terminal via an alligator clip, and ground the black terminal.	×
		ECM Control	1:1	×	Connect the red terminal of the test line to the generator's B+ terminal via an alligator clip, and ground the black terminal.	×
	Alternator Voltage&Current	12V System	1:1	400A range	The red connector of the test line is connected to the positive terminal of the battery via an alligator clip, while the black connector is connected to the negative terminal of the battery via an alligator clip.	Clamp the current probe onto the positive cable of the battery.
		24V System	1:1	40A range	The red connector of the test line is connected to the positive terminal of the battery via an alligator clip, while the black connector is connected to the negative terminal of the battery via an	Clamp the current probe onto the positive cable of the battery.

					alligator clip.	
	Parasitic Drain Current		1:1	4A range	Connect the red terminal of the test line to the generator's B+ terminal via an alligator clip, and ground the black terminal.	Clamp the current probe onto the positive cable of the battery.
Starting Circuit	Relative Cylinder Compression Pressure	Diesel Engine	400A range	×	Clamp the current probe onto the positive cable of the battery.	×
		Gasoline Engine	400A range	×	Clamp the current probe onto the positive cable of the battery.	×