SEALEY Professional TOOLS
Auto Service Line

INSTRUCTIONS FOR:
11 FUNCTION DIGITAL AUTOMOTIVE ANALYSER
MODEL NO: TA102

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.

⚠ ***IMPORTANT:*** **PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.**

1. SAFETY INSTRUCTIONS

1.1. PERSONAL PRECAUTIONS

✓ When using the analyser, please observe all normal safety rules concerning**:**
Protection against the dangers of electric current.
Protection of the analyser against misuse.
✓ Full compliance with safety standards can only be guaranteed if used with the test leads supplied. If necessary, these must be replaced with genuine Sealey leads with the same electronic ratings. Failure to do so will invalidate the warranty.
✗ **DO NOT** use leads if damaged or if the wire is bared in any way.

1.2. GENERAL SAFETY INSTRUCTIONS

✓ Familiarise yourself with the application and limitations of the analyser as well as the potential hazards. *IF IN ANY DOUBT CONSULT A QUALIFIED ELECTRICIAN.*
✓ When the analyser is linked to a measurement circuit, do not touch unused analyser terminals.
✓ When the scale of the value to be measured is unknown set the selector to the highest range available.
✓ Before rotating the function dial to change functions, disconnect test leads from the circuit under test.
❒ **WARNING!** *Never perform resistance measurements on live circuits.* Only measure on disconnected circuits.
✓ Use caution when working with voltages above 60V DC or 30V AC. Keep fingers behind the probe barriers whilst measuring.
✓ When not in use, store the analyser carefully in a safe, dry, childproof location. Storage temperature range -10°C to 50°C.
✓ Never apply voltage or current to the analyser that exceeds the specified maximum.
❒ **WARNING!** Do not make current measurements on the 10A scale for longer than 15 seconds in every 15 minutes. Exceeding 15 seconds may cause damage to the analyser and test leads.

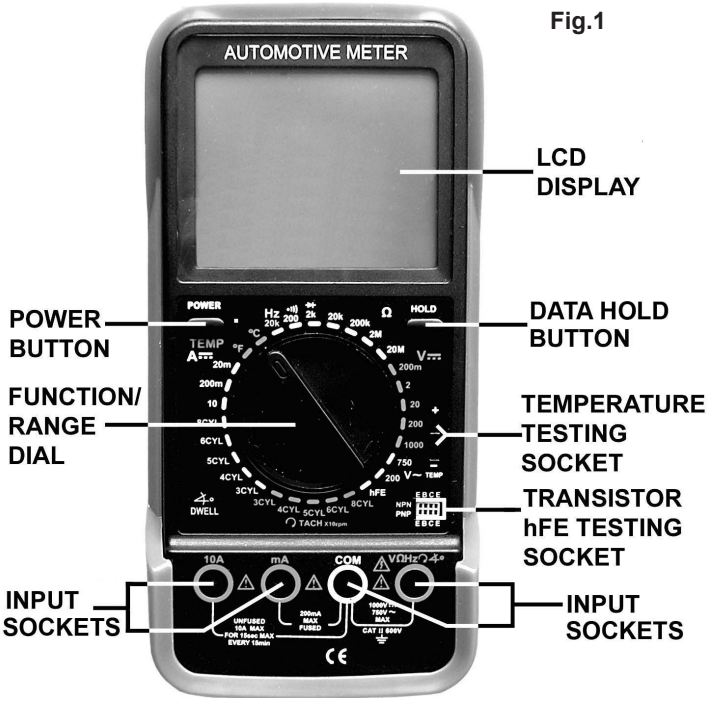
2. INTRODUCTION

Large, hi-contrast LCD display with 34mm high digital read-out. Durable bi-composite case and integral stand, suitable for the toughest workshop conditions. Test Lead Connection feature indicates correct hook-up. Includes over-ranging, auto-zeroing, data hold, auto power-off and low battery display functions. Supplied with capped test probes and K-type thermocouple.

Functions

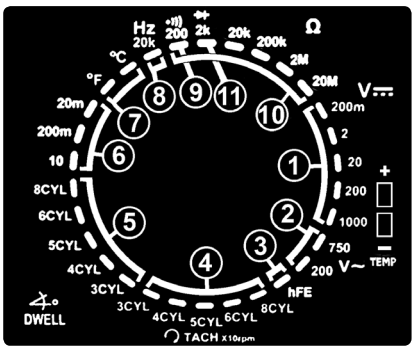
Function	Test Range	Connections
AC Voltage	200V - 750V	VΩHz⏀+COM
DC Voltage	200mV - 1000V	
Resistance	200Ω – 20MΩ	
Diode Test	Typically 1mA	
Continuity Test	<30 Ohms	
Frequency	20kHz	
Dwell Angle	3cyl 120°- 8cyl 45°	
Tachometer	180 - 10000rpm	
DC Current	20mA - 10A	**mA or 10A + COM**
Temperature	-20°C to 750°C -4°F to 1382°F	**Temp. sockets & thermocouple**
Transistor Test (hFE)	Vce=3V, Ib=10μA	**Transistor socket**

Fig.1



Maximum Display: 1999 counts - (3 1/2 digits) LCD display with automatic polarity indication.
Measurement Rate: 2-3 times per second.
Measuring Method: Dual-slope integration A/D converter system.
Over Range Indication: Figure "1" displayed on the LCD.
Low Battery Indication: The symbol is displayed when the battery voltage drops below the operating level.
Auto-Power-Off: Meter automatically shuts down after approx. 15 minutes of inactivity.
Operating Environment: 0°C to 40°C (32°F to 104°F) at <75% relative humidity.
Storage Environment: -10°C to 50°C (14°F to 122°F) at <75% relative humidity.
Power: Single standard 9 Volt battery (PP3).
Fuse: 250mA/250V.
Dimensions: 200 x 97 x 48 mm.
Weight Approx: 495g including battery and holster.

Fig.2



Function Guide (Fig.2)

1. **DC Voltage**
2. **AC Voltage**
3. **Transistor Check**
4. **Tachometer**
5. **Dwell Angle**
6. **DC Current**
7. **Temperature**
8. **Frequency**
9. **Audible Continuity Check**
10. **Resistance**
11. **Diode check**

3. SPECIFICATION

DC Voltage

Range	Resolution	Accuracy
200mV	100µV	± (0.5% + 5)
2V	1mV	± (0.8% + 5)
20V	10mV	
200V	100mV	
1000V	1V	± (1.0% + 5)

Input Impedance: 1MΩ for all ranges.
Overload protection: 1000V DC/AC rms
(for 200mV range) 250V AC rms

AC Voltage

Range	Resolution	Accuracy
200V	100mV	± (1.0% + 5)
750V	1V	± (1.2% + 5)

Input Impedance: About 450kΩ for all ranges.
Frequency Range: 40Hz~400Hz
Indication: Average (RMS of sine wave).
Overload protection: 1000V DC/AC rms

DC Current

Range	Resolution	Accuracy
20mA	10µA	± (1.8% + 3)
200mA	100µA	
10A	10mA	± (3.0% + 7)

Overload Protection: F 250mA L 250V (Range 10A unfused).
Maximum Input Current: 10A (less than 15 seconds).
Maximum Voltage Drop: 200mV.
Indication: Average (RMS of sine wave).

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	± (1.0% + 5)
2kΩ	1Ω	± (0.8% + 5)
20kΩ	10Ω	
200kΩ	100Ω	
2MΩ	1kΩ	
20MΩ	10kΩ	± (2.0% + 7)

Open circuit voltage: less than 2.8V
Overload protection: 250V DC/AC rms

Transistor hFE test

Range	hFE	Test Current	Test Voltage
PNP and NPN	0~1000	Ib=10µA	Vce = 3V

Dwell Angle

Cylinder	Range	Resolution	Accuracy
3CYL	0~120.0°	0.1°	± (2.5% + 5)
4CYL	0~90.0°		
5CYL	0~72.0°		
6CYL	0~60.0°		
8CYL	0~45.0°		

Frequency

Range	Resolution	Accuracy
20kHz	10Hz	± (1.5% + 5)

Tachometer

Range	Scope (RPM)	Resolution	Accuracy
RPM	180~10000	1*10RPM	± (2.5% + 5)

Temperature

Range	Resolution	Accuracy
-20°C~750°C	1°C	-20~0°C(-4°F~32°F)±(6.0% +6) 0~400°C(32°F~752°F)±(1.0% +7)
-4°F~1382°F	1°F	400~750°C(752°F~1400°F)±(2.0%+7)

Audible Continuity Test

Description	Test condition
If the resistance of the circuit under test is lower than 30Ω, the audible warning will sound.	Open circuit voltage is approximately 3V.

Diode test

Description	Test condition
The approximate forward voltage of the diode under test will be displayed on the LCD.	The forward DC current is approximately 1mA, the reversed DC voltage is approximately 3V.

4. OPERATION

❒ **WARNING!** Ensure that you read, understand and apply the safety and operational instructions before connecting the analyser. Only when you are sure that you understand the procedures is it safe to proceed with testing.

❒ **WARNING!** Risk of electrocution. High voltage circuits, both AC and DC are very dangerous and should be measured with great care.
Operating temperature range 0°C to 40°C.

Remember to turn off the analyser when measurement is completed.

NOTE: If '1' appears in the display during a measurement, the value exceeds the range you have selected. Select a higher range.

NOTE: On some low AC and DC ranges, with the test leads not connected to a device, the display may show a random fluctuating reading. This is normal and is caused by the high input sensitivity. The reading will stabilise and give a correct measurement when connected to a circuit.

4.1. Data Hold Button

4.1.1. The data hold function allows the analyser to freeze a measurement reading for later reference.

4.1.2. Press the data hold button once to freeze the reading in the display. The indicator 'H' will appear in the display.

4.1.3. Press the data hold button again to return to normal operation.

4.2. AC Voltage Measurement

4.2.1. Insert the black test lead into the negative COM socket and the red test lead into the positive VΩHz socket.

4.2.2. Turn the function dial to the appropriate AC voltage setting as required and switch the analyser on (see ranges above). If the voltage range to be measured is not known, set to the highest range setting, and then select to the correct range when first reading is taken, until a satisfactory resolution is obtained.

4.2.3. Connect the test leads to the circuit under test and read the voltage on the display.

4.3. DC Voltage Measurement

4.3.1. Insert the black test lead into the negative COM socket and the red test lead into the positive VΩHz socket.

4.3.2. Turn the function dial to the appropriate DC voltage setting as required and switch the analyser on (see ranges above). If the voltage range to be measured is not known, set to the highest range setting, and then select to the correct range when first reading is taken, until a satisfactory resolution is obtained.

4.3.3. Connect the test leads to the circuit under test and read the voltage on the display.

4.4. DC Current Measurement

❒ **WARNING! Do not make current measurements at 10A for longer than 15 seconds in every 15 minutes. Exceeding this may cause damage to the analyser and test leads.**

4.4.1. Insert the black test lead into the negative COM socket, and the red test lead into the positive mA socket (or the positive 10A socket for currents from 200mA to 10A).

4.4.2. Turn the function dial to the appropriate setting as required (see ranges above). If the current range to be measured is not known, set to the highest range setting, and then select to the correct range when the first reading is taken, until satisfactory resolution is obtained.

4.4.3. Connect the test leads in series with the circuit under test and read the current on the display.

4.5. Diode Measurement

4.5.1. Insert the black test lead into the negative COM socket and the red test lead into the positive VΩHz socket.

4.5.2. Turn the function dial to the position and switch the analyser on.

4.5.3. Connect the red test lead to the anode of the diode, and the black test lead to the cathode of the diode.

4.5.4. The approximate forward voltage drop of the diode will be displayed. If the connection is reversed, a fig “1” will be displayed.

4.6. Transistor Measurement

4.6.1. Determine whether the transistor to be tested is NPN or PNP and locate the E, B and C leads. Insert the leads into the respective slots in the testing socket located on the front of the analyser.

4.6.2. Turn the function dial to the **hFE** position and switch the analyser on.

4.6.3. The approximate hFE value of the transistor will be shown on the display, at the test condition of base current 10uA and Vce 3V.

4.7. Resistance Measurement

4.7.1. Insert the black test lead into the negative COM socket and the red test lead into the positive VΩHz socket.

4.7.2. Turn the function dial to the desired Ω position and switch the analyser on.

4.7.3. Connect the test leads to the resistor to be tested and read the value on the display.

4.8. Audible Continuity Test

4.8.1. Insert the black test lead into the negative COM socket and the red test lead into the positive VΩHz socket.

4.8.2. Turn the function dial to the position and switch the analyser on.

4.8.3. Connect the test leads to the two terminals of the circuit to be tested.

4.8.4. If the resistance is less than 30Ω, then an audible warning will be given.

4.9. Frequency Measurement

4.9.1. Insert the black test lead into the negative COM socket and the red test lead into the positive VΩHz socket.

4.9.2. Turn the function dial to the **Hz 20k** position and switch the analyser on.

4.9.3. Connect the test leads to the source or load to be measured and read the value on the display.

4.10. Temperature Measurement

4.10.1. Insert the type K thermocouple plug into the temperature socket on the front of the analyser, ensuring the positive '+' pin on the plug is inserted into the positive slot, and the negative '-' pin on the plug is inserted into the negative slot.

4.10.2. Turn the function dial to the °C or °F position and switch the analyser on.

4.10.3. Place the thermocouple on the item to be measured and read the temperature on the display.

4.11. RPM (Tachometer) Measurement

4.11.1. Insert the black test lead into the negative COM socket and the red test lead into the positive VΩHz socket.

4.11.2. Turn the function dial to the desired TACH position, according to the number of cylinders of the engine being tested, and switch the analyser on.

4.11.3. If the vehicle uses a DIS ignition system with no distributor, connect the red test lead to the TACH (tachometer) signal line (which is connected to the computer DIS module of the engine). If the vehicle uses an ignition system with a distributor, connect the red test lead to the primary negative end of the ignition coil. Connect the black test lead to an earthing point, or the negative terminal of the vehicle battery.
Note: Refer to the vehicle manufacturer's manual for the specific location and more details.

4.11.4. Start the engine and the RPM will be shown on the display.

4.12. Dwell Angle Measurement

4.12.1. Insert the black test lead into the negative COM socket and the red test lead into the positive VΩHz socket.

4.12.2. Turn the function dial to the position that corresponds with the correct number of cylinders for the engine being tested and switch the analyser on.

4.12.3. If the vehicle uses a DIS ignition system with no distributor, connect the red test lead to the TACH (tachometer) signal line (which is connected to the computer DIS module of the engine). If the vehicle uses an ignition system with a distributor, connect the red test lead to the primary negative end of the ignition coil. Connect the black test lead to an earthing point, or the negative terminal of the vehicle battery.
Note: Refer to the vehicle manufacturer's manual for the specific location and more details.

4.12.4. Start the engine and the dwell angle will be shown on the display.
Note: Refer to vehicle manufacturer's manual for detailed procedures for dwell angle settings and adjustments.

4.13. Replacing The Battery

❒ **WARNING! To avoid electric shock, disconnect the test leads from any source of voltage and from the analyser before removing the rear cover.**

4.13.1. When the battery drops below the operating voltage, the symbol will appear in the display. Replace the battery.

4.13.2. Remove the analyser from its protective case.

4.13.3. Loosen and remove the two screws using a Phillips screwdriver, and remove the rear cover from the analyser.

4.13.4. Remove the old battery (PP3) and insert a new one, observing the correct polarity.

4.13.5. Replace the rear cover and secure with the two screws.

❒ **WARNING! To avoid electric shock, DO NOT operate the analyser until it has been fully re-assembled.**

4.14. Replacing The Fuse

❒ **WARNING! To avoid electric shock, disconnect the test leads from any source of voltage and from the analyser before removing the fuses.**

4.14.1. Remove the analyser from its protective case.

4.14.2. Loosen and remove the two screws using a Phillips screwdriver, and remove the rear cover from the analyser.

4.14.3. Loosen and remove the six small screws from the upper circuit board and remove the board to gain access to the fuse holder.

4.14.4. Remove the old fuse from its holder by gently pulling it out.

4.14.5. Install the new fuse into its holder.
Note: Always use a fuse of the correct size and value, 250mA/250V.

4.14.6. Replace the rear cover and secure with the screws.

❒ **WARNING! To avoid electric shock, DO NOT operate the analyser until it has been fully re-assembled.**

5. MAINTENANCE

❒ **WARNING! DO NOT** attempt to repair or service the analyser unless qualified to do so and have the relevant calibration, performance test, and service information to hand. To avoid electrical shock or damage to the analyser do not get water inside the case.

5.1. Periodically wipe the case with a damp cloth and mild detergent. Do not use solvents.

5.2. Turn the analyser off when not in use and remove the battery if stored for a long period of time.

5.3. Do not store the analyser in a place of high humidity or high temperature.

6. PARTS LIST

Item	Description	Parts
1.	TA101.01	TEST LEADS
2.	TA101.02	9V BATTERY
3.	TA101.03	THERMOCOUPLE 'K' TYPE

Environmental Protection.

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycle centre and disposed of in a manner which is compatible with the environment.

When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.

WARNING: Do not dispose of by fire.This could result in an explosion.
Before disposing of battery, cover exposed terminals with heavy duty electrical tape to prevent shorting.
DO NOT expose battery to intense heat or fire as this could cause an explosion.

Battery Removal: See Section 4.13.
ONLY dispose of or recycle according to local authority regulations. Under the Waste Batteries and Accumulators Regulations 2009, Jack Sealey Ltd are required to inform potential purchasers of products containing batteries (as defined within these regulations), that they are registered with Valpak's registered compliance scheme. Jack Sealey Ltd's Batteries Producer Registration Number (BPRN) is BPRN00705.

NOTE: *It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.*
IMPORTANT: No liability is accepted for incorrect use of this product.
WARRANTY: Guarantee is 12 months from purchase date, proof of which will be required for any claim.
INFORMATION: For a copy of our latest catalogue and promotions call us on 01284 757525 and leave your full name and address, including postcode.

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