INSTRUCTIONS FOR:

PROFESSIONAL AUTO-RANGING DIGITAL CLAMP METER NCVD - 6 FUNCTION

MODEL No: **TM105**

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 this multimeter, please observe all normal safety rules concerning:
Protection against the dangers of electrical current.
Protection of the meter against misuse.

✓ Full compliance with safety standards can only be guaranteed if used with the test leads supplied. If necessary, they must be replaced with genuine Sealey leads with the same electrical ratings. Failure to do so will invalidate the warranty.
DO NOT use leads if damaged or if the wires are bared in any way.

1.2. GENERAL SAFETY INSTRUCTIONS

✓ Familiarise yourself with the application and limitations of the multimeter as well as the potential hazards.
IF IN ANY DOUBT CONSULT A QUALIFIED ELECTRICIAN.

✓ **USE EXTREME CAUTION** when working with high voltages.

✓ When the meter is connected to a circuit, **do not** touch unused meter terminals.

✓ When the magnitude of the value to be measured is unknown, set the range selector to the highest value available.

✓ Before commencing testing, follow instructions below and select the correct input sockets, function and range on the multimeter.

✓ Before rotating the rotary switch to change functions, disconnect the test leads from the circuit under test.

✓ Take care when working with voltages above 35V DC or 25V AC rms. These voltages are considered a shock hazard. Keep fingers behind the probe barriers whilst measuring.

✗ **DO NOT** test voltages above 600V - the circuitry of the multimeter may be destroyed.

❒ **WARNING! NEVER** connect the multimeter to a voltage source / live circuit when the rotary switch is set to any other function apart from Voltage testing.

❒ **WARNING! NEVER** perform resistance, transistor, diode or continuity measurements on live circuits.
ALWAYS discharge filter capacitors in power supplies and disconnect the power when making resistance or diode tests.

❒ **WARNING!** Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Other means should be used to ensure that the terminals are not “live”.

✗ **DO NOT** use the multimeter in a potentially explosive atmosphere.

✓ **NEVER** operate the meter unless the back cover and the battery and fuse doors are in place and fastened securely.

❒ If any abnormal readings are observed, the multimeter must be checked out by an authorised technician.

✓ When not in use, store the multimeter carefully in a safe, dry, childproof location out of direct sunlight.
Storage temperature range -20°C to 60°C.

✓ **ALWAYS** turn off the power and disconnect the test leads before opening the doors to replace the fuse or batteries.

✓ **The user shall ensure that test probes are correctly selected in order to prevent danger. Probes shall be selected to ensure that adequate barriers guard against inadvertent hand contact with live conductors under test and that probes have minimal exposed probe tips. Where there is a risk of the probe tip short circuiting with other live conductors under test, it is recommended that the exposed tip length shall not exceed 4mm.**

NOTE: The warnings, cautions and instructions referred to in this manual cannot cover all possible conditions and situations that may occur. It must be understood that common sense and caution are factors which cannot be built into this product, but must be applied by the operator.

1.3. SAFETY SYMBOLS.

This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operating Instructions to avoid personal injury or damage to the meter.

WARNING This WARNING symbol indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.

CAUTION This CAUTION symbol indicates a potentially hazardous situation, which if not avoided, may result damage to the product.

This symbol, adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.

This symbol indicates that a device is protected throughout by double insulation or reinforced insulation.

❒ **WARNING! NEVER** apply voltage or current to the meter that exceeds the specified maximum as shown below:

Input Limits	
Function	**Maximum Input**
A AC	400A
V DC, V AC	600V DC/AC
Resistance, Diode, Continuity ,	250V DC/AC

❒ **WARNING! USE EXTREME CAUTION** when working with high voltages.

1.4. BATTERY INSTALLATION

❒ **WARNING!** To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery cover.
Disconnect the test leads from the meter.
Open the battery cover by loosening the cover screw using a Phillips head screwdriver.
Insert the battery into battery holder, observing the correct polarity.
Replace the battery. Secure with the screw.

❒ **WARNING!** To avoid electric shock, do not operate the meter until the battery cover is in place and fastened securely.

NOTE! If the meter does not work properly, check the battery to make sure that it is still good and that it is properly inserted.

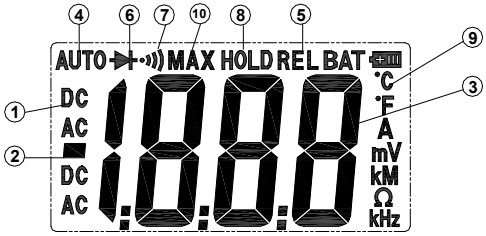
2. FEATURES

High precision clamp meter. Conforms with EN61010-1 CATIII 600V safety requirements for electrical equipment for measurement, control, and laboratory use.
Features Non-contact AC voltage detection function while controls are laid out to enable use with one hand. Includes data/max hold functions. Double moulded housing with soft grip case and large, backlit display for ease of use even in dark areas. Supplied in zipped pouch with carry strap.

CONTROLS AND JACKS

1. Current Clamp
2. Non-Contact AC Voltage Indicator Light
3. Clamp Trigger
4. Rotary Function Switch
5. Data Hold Button
6. Back Light Button
7. LCD Display
8. Mode Select Button
9. Range Button
10. Max Hold Button
11. Com Input Jack
12. V, Ω CAP, TEMP, Hz, Jack.
13. Battery Cover

1) AC DC AC (alternating current) and DC (direct current).
2) Minus sign.
3) 1.8.8.8 2000 count (0 to 1999) measurement reading.
4) AUTO AutoRange mode.
5) REL Relative mode.
6) Diode test mode.
7) •))) Audible Continuity.
8) HOLD Data Hold mode.
9) °C, °F, µ, m, V, A, K, M, Ω, Units of measure list.
10) MAX MAX hold mode.



3. SPECIFICATION

Function	Range	Accuracy (% of reading)
AC Current (50/60Hz)	2.000AAC	± (2.5 % + 10 digits)
	20.00AAC	± (2.5 % + 4 digits)
	200.0AAC	± (2.5 % + 4 digits)
	400.0 AAC	± (3 % + 4 digits)
DC Voltage	200.0 mVDC	± (0.8% + 2 digits)
	2.000 VDC	± (1.5% + 2digits)
	20.00 VDC	
	200.0 VDC	
	600.0 VDC	± (2 % + 2 digits)
AC Voltage	200.0 mVAC	± (1.5% + 35 digits)
	2.000 VAC	± (1.8% + 8 digits)
	20.00 VAC	
	200.0 VAC	
	600.0 VAC	± (2.5% + 8 digits)
Resistance	200.0 Ω	± (1.0% + 4 digits)
	2.000KΩ	± (1.5% + 2 digits)
	20.00KΩ	
	200.0KΩ	
	2.000MΩ	± (2.5% + 3 digits)
	20.00MΩ	± (3.5% + 5 digits)

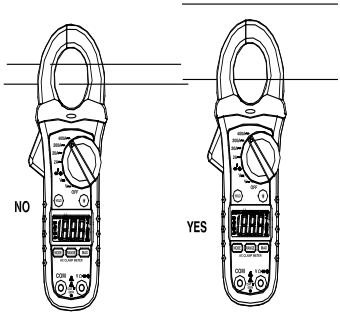
Clamp size..... Opening 1.2" (30mm) approx.
Diode Test..... Test current of 0.3mA typical; Open circuit voltage 1.5V DC typical.
Continuity Check ..... Threshold <150Ω; Test current < 0.5mA.

Low Battery Indication ..... " " is displayed.
Overrange Indication ..... "OL" is displayed.
Measurements Rate ..... 2 per second, nominal.
Input Impedance..... 10MΩ (VDC and VAC).
Display..... 2000 counts LCD.
AC Current..... 50-60Hz (AAC).
AC Voltage bandwidth ..... 50-60Hz (VAC).
Operating Temperature..... 41 to 104oF (5 to 40°C).
Storage Temperature..... -4 to 140oF (-20 to 60°C).
Operating Humidity..... Max 80% up to 87°F (31°C) decreasing linearly to 50% at 104°F(40°C).
Storage Humidity ..... <80%.
Operating Altitude..... 7000ft. (2000meters) maximum.
Over voltage ..... Category III 600V.
Battery ..... One 9V Battery.
Auto OFF ..... approx. 15 minutes
Dimensions/Weight..... 197x70x40mm/183g
For indoor use and in accordance with Overvoltage Category II, Pollution Degree 2. Category II includes local level, appliance, portable equipment, etc., with transient overvoltages less than Overvoltage Cat. III

4. OPERATING INSTRUCTIONS

NOTICE: Read and understand all warning and precaution statements listed in the safety section of this operation manual prior to using this meter. Set the function select switch to the OFF position when the meter is not in use.

4.1. AC Current Measurements



❒ **WARNING!** Ensure that the test leads are disconnected from the meter before making current clamp measurements.

4.1.1. Set the Function switch to the 400.0A ~ 2.000A range.

4.1.2. If the range of the measured is not known, select the higher range first then move to the lower range if necessary.

4.1.3. Press the trigger to open jaw. Fully enclose one conductor to be measured. The clamp meter LCD will display the reading.

4.2. DC/AC Voltage Measurements

4.2.1. Insert the black test lead into the negative COM terminal and the red test lead into the positive V terminal.

4.2.2. Set the function switch to the V position.

4.2.3. Select AC or DC with the MODE button.

4.2.4. Connect the test leads in parallel to the circuit under test.

4.2.5. Read the voltage measurement on the LCD display.

4.3. Resistance Measurements

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

4.3.2. Set the function switch to the Ω ⊣◀ •))) position.

4.3.3. Touch the test probe tips across the circuit or component under test. It is best to disconnect one side of the device under test so the rest of the circuit will not interfere with the resistance reading.

4.3.4. For Resistance tests, read the resistance on the LCD display.

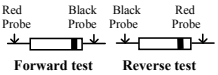
4.4. Diode and Continuity Measurements

4.4.1. Insert the black test lead banana plug into the negative COM jack and the red test lead banana plug into the positive diode jack.

4.4.2. Turn the rotary switch to the Ω ⊣◀ •))) position.

4.4.3. Press the MODE button until " ⊣◀ " appears in the display.

4.4.4. Touch the test probes to the diode under test. Forward voltage will indicate 0.4V to 0.7V. Reverse voltage will indicate "OL". Shorted devices will indicate near 0mV and an open device will indicate "OL" in both polarities.



For Continuity tests, if the resistance is < 150Ω, a tone will sound.

4.5. Non-Contact AC Voltage Measurements

❒ **WARNING!** Risk of Electrocution. Before use, always test the Voltage Detector on a known live circuit to verify proper operation

4.5.1. Touch the probe tip to the hot conductor or insert into the hot side of the electrical outlet.

4.5.2. If AC voltage is present, the detector light will illuminate.

NOTE! The conductors in electrical cord sets are often twisted. For best results, rub the probe tip along a length of the cord to assure placing the tip in close proximity to the live conductor.

NOTE! The detector is designed with high sensitivity. Static electricity or other sources of energy may randomly trip the sensor. This is normal operation

4.6. MODE BUTTON

To select DC/ACV, OHM / Diode / Continuity

4.7. DATA HOLD BUTTON

To freeze the LCD meter reading, press the data hold button. The data hold button is located on the left side of the meter (top button). While data hold is active, the HOLD display icon appears on the LCD. Press the data hold button again to return to normal operation.

4.8. MAX HOLD BUTTON

The max. Hold position is used to measure the maximum value. The maximum measured value is up dated continuously. Press once again the button, will release the hold and allow a further measurement.

4.9. RANGE BUTTON

When the meter is first turned on, it automatically goes into AutoRanging. This automatically selects the best range for the measurements being made and is generally the best mode for most measurements. For measurement situations requiring that a range be manually selected, perform the following:

4.9.1. Press the RANGE button. The "Auto Range" display indicator will turn off, The "Manual Range" display indicator will turn on

4.9.2. Press the RANGE button to step through the available ranges until you select the range you want.

4.9.3. Press and hold the RANGE button for 2 seconds to exit the ManualRanging mode and return to AutoRanging.

5. MAINTENANCE

5.1. REPLACING THE BATTERY.

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

5.1.1. When the battery become exhausted or drop below the operating voltage, “BAT” will appear in the right-hand side of the LCD display. The battery should be replaced.

5.1.2. Follow instructions for installing batteries. See the Battery Installation section of this manual (page 2). Dispose of the old battery properly.

❒ **WARNING!** To avoid electric shock, do not operate your meter until the battery cover is in place and fastened securely.

5.2. Clean the multimeter’s casing using a slightly dampened cloth and mild detergent - do not use any abrasives or solvents. Clean the inside of each terminal using a swab soaked in isopropyl alcohol, use a new swab to apply a light coat of machine oil to each terminal.

5.3. If the multimeter is to be stored for a long period of time, remove the battery first to avoid any damage.

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.

Battery Removal.

❒ **WARNING!** To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery cover.
Disconnect the test leads from the meter.
Open the battery cover by loosening the cover screw using a Phillips head screwdriver (FIG.A below).
Lift the 9V battery from the meter and unclip from the battery socket.
Replace the battery cover back in place. Secure with the screw.

❒ **WARNING!** To avoid electric shock, do not operate the meter until the battery cover is in place and fastened securely.

Dispose of batteries according to local authority guidelines.

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.

FIG.A

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.

CE

Sole UK Distributor, Sealey Group,
Kempson Way, Suffolk Business Park,
Bury St. Edmunds,
Suffolk, IP32 7AR

01284 757500 www.sealey.co.uk
01284 703534 sales@sealey.co.uk