



TACHOMETER CALIBRATOR

MODEL: RPMC 1700 – 3A

INSTRUCTION MANUAL



1. SYMBOL USED

SYMBOL	Indication
 DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	Warning of danger from electricity and its effects.
	Warning of danger for Do not touch the Target disc wheel during rotation.

2. INSTALLATION

2.1. PREPARING THE RPMC 1700 – 2A / 3A FOR TRANSIT

 **CAUTION :** If the RPMC 1700 – 2A / 3A needs to be shipped, always use the original carrying case provided by us. For air or truck shipping, supplement the RPMC 1700 – 2A / 3A with a sturdy cardboard box with at least 100mm of foam or other shock protection material surrounding all sides.

After transportation there may be maintenance & inspection needed before use. Refer 8. MAINTENANCE & INSPECTION.

2.2. POSITIONING OF RPMC 1700 – 2A / 3A

 **CAUTION :** Place the RPMC 1700 – 2A / 3A on a dedicated Anti vibration table flat surface with leather mate, at a height which allows noise free, easy & safe operation.

- Do not leave the RPMC 1700 – 2A / 3A near heat sources like radiators or air ducts, or where it can be subjected to direct sunlight, excess dust, rain, mechanical vibrations or impacts.
- Keep these minimum clearances to ensure perfect operation of the RPMC 1700 – 2A / 3A, as well as for easy and safe use and cleaning:



3. SAFETY INSTRUCTIONS

Use the RPMC 1700 series only as specified in this manual. Otherwise, the protection provided by the RPMC 1700 series may be impaired.

The following definitions apply to the terms “Warning” and “Caution”.



“WARNING” identifies conditions and actions that may pose hazards to the user.



“CAUTION” identifies conditions and actions that may damage the RPMC 1700 series being used.



WARNINGS

To avoid personal injury, follow these guidelines.

The RPMC 1700 series must not be used for any purposes other than those described in this manual.

The RPMC 1700 series has been designed for interior use only and should not be used in hazardous areas, where vapor or gas leaks, etc. may constitute a danger of explosion.

The RPMC 1700 series must be kept free within an area of 20 cm on all sides and 1 meter above the calibrator.

Never use heat transfer fluids such as silicone, oil, paste, etc. in the RPMC 1700 series.

These fluids may penetrate the RPMC 1700 series and cause damage or create poisonous fumes.

The RPMC 1700 series must be switched off before any attempt to service the RPMC 1700 series is made.

When cleaning the well, REMEMBER to wear goggles when using compressed air in the RPMC 1700 series.

The RPMC 1700 series must not be used in wet areas.

Do not touch the Disc plate, shaft when the RPMC 1700 series during rotation they may be give injury to your hand.



CAUTIONS

To avoid possible damage to the RPMC 1700 series, follow these guidelines.

DO NOT try to change the Factory setting values of the RPMC 1700 series .The correct setting of these parameters is important to the safety and proper operation of the RPMC 1700 series.

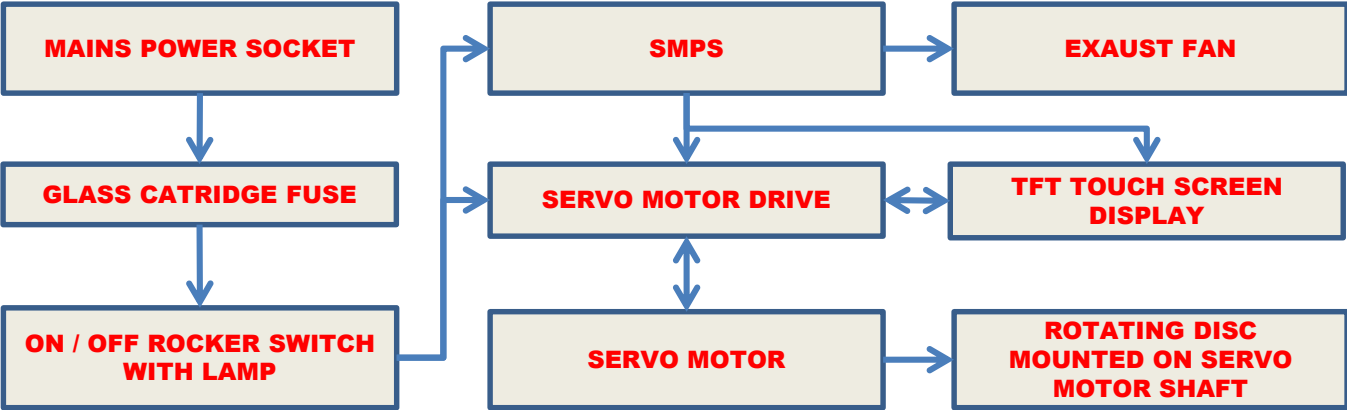
Always operate this RPMC 1700 series at room temperature between 41°F and 104°F (5°C to 40°C). Allow sufficient air circulation by leaving at least 8 inches (20 cm) of clearance around the RPMC 1700 series.

The RPMC 1700 series is a precision instrument. Although it has been designed for optimum durability and trouble free operation, it must be handled with care.

4. SPECIFICATIONS

MODEL	RPMC 1700 – 3A
Contact range	0 to 8000 rpm
Non contact range	0 to 1,36,000 rpm
Resolution	0.001 rpm
Display Stability	± 0.002 rpm (contact) & ± 0.01 rpm (non contact)
Stability	Contact : ± 0.1 rpm Non Contact : 1 Teeth : 6 rpm to 4000 rpm = ± 0.1 rpm 4001 rpm to 8000 rpm = ± 0.2 rpm 5 Teeth : 8001 rpm to 40,000 rpm = better than ± 0.5 rpm 17 Teeth : 40,001 rpm to 1,36,000 rpm = better than ± 0.8 rpm
Accuracy	Contact : 6 rpm to 4000 rpm = ± 0.005% of rdg + 0.1 rpm 4001 rpm to 8000 rpm = ± 0.005% of rdg Non Contact : 1 Teeth : 6 rpm to 4000 rpm = ± 0.005% of rdg + 0.1 rpm 4001 rpm to 8000 rpm = ± 0.005% of rdg 5 Teeth : 8001 rpm to 40,000 rpm = ± 0.005% of rdg 17 Teeth : 40,001 rpm to 1,36,000 rpm = ± 0.005% of rdg
Display	7 " multi color TFT touch screen display
Stability time	within 5 seconds
Noise level	< 50 dB
Operation Environment	25 °C ± 2 °C & 35 to 70 % RH(non condensed)
Motor	Ultra stable motor with high resolution encoder & controller
Dimension(L*W*H)in mm	260 L x 440 W x 230 H(Approx.)
Weight (Approx.)	13 kg
Power Consumption	750 VA
Power Supply	230V AC ± 10% / 50Hz (Optional 110V AC)
Outer Enclosure Construction	MS/Aluminium powder coated
Note: Due to continuous product improvements, Published specifications may change with out notice	
Standard Delivery I. Basic instrument II. Mains card III. Spare fuse IV. Instruction manual V. Calibration certificate.	
Optional I. Carrying case II. Reference instrument with Accredited calibration certificate	

5. BLOCK DIAGRAM



6. INTENDED USE OF RPMC 1700 – 2A / 3A

⚠ CAUTION : Use the RPMC 1700 series only as specified intended uses below. Otherwise the protection provided by the RPMC 1700 series may be impaired.

- I. Used to Testing or Calibrate the Contact & Non contact type Tachometers
- II. Used to Testing or Calibrate the Digital Speed(RPM) Indicators with sensor
- III. Used to Testing or Calibrate the Inductive, Photo electric(IR), Capacitive Proximity sensors

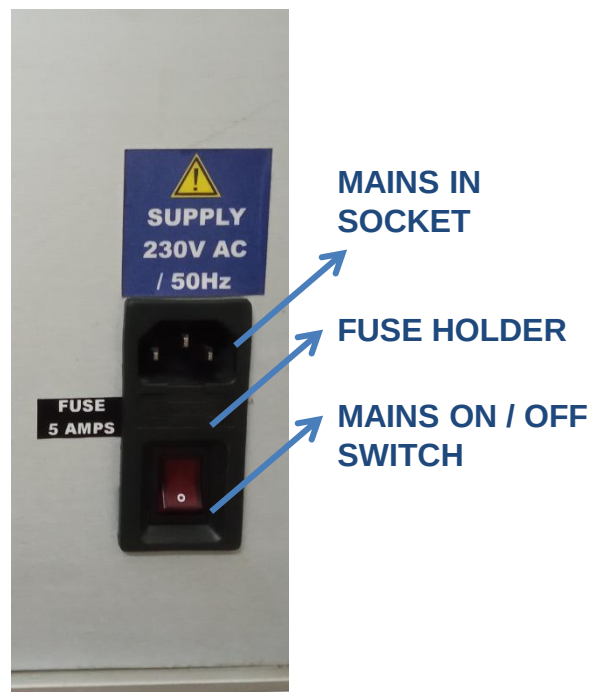
7. SUPPLY CONNECTION

⚠ CAUTION: To avoid electrical shock, connect the factory supplied three-prong line power cord to a properly grounded power outlet. Do not use a two-prong adapter or extension cord that will break the ground connection.

⚡ DANGER: It is vital that you ensure that the RPMC 1700 – 2A / 3A is safely earthed. Risk of electric shock. Without low-resistance earthing no personal protection can be guaranteed and there is a risk of death from electric shock.

Do not open Instrument cover & unplug any connectors during operation. There is a risk of death or severe injury from touching exposed contacts. Power connections may be live even when the motor shaft is not rotating. This can cause flashovers with resulting injuries to persons and damage to the contacts.

- I. After the line voltage setting and correct fuse are verified, connect the INSTRUMENT to a properly grounded three-prong outlet using the provided line voltage cord.
- II. Only use 230V / 10A rated three-prong line power cord to a properly grounded power outlet.
- III. Only use fuse GLASS CATRIDGE FUSE 5A rated to replace.



8. MAINTANANCE & INSPECTION

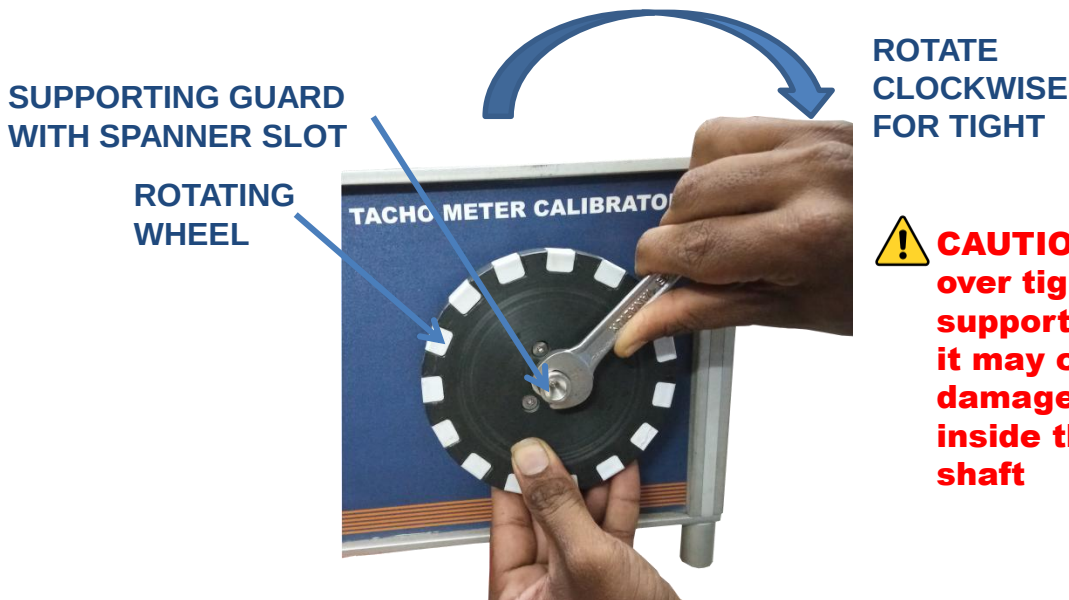


CAUTION:

The RPMC 1700 – 2A / 3A can become very high speed during operation. If the RPMC 1700 – 2A / 3A is operated without supervision, third-party persons in the vicinity could get injured. Moreover hand or finger could not get nearer to the RPMC 1700 – 2A / 3A and cause injury to human. Before maintenance & inspection ensure the main supply to RPMC 1700 – 2A / 3A is switched OFF & disconnection of power cord from main socket.

Avoid operating the RPMC 1700 – 2A / 3A in excessively wet, oily, dusty, or dirty environments. If the outside of the instrument becomes soiled it may be wiped clean with a damp cloth and mild detergent. DO NOT use harsh chemicals on the surface that may damage the paint or plastic.

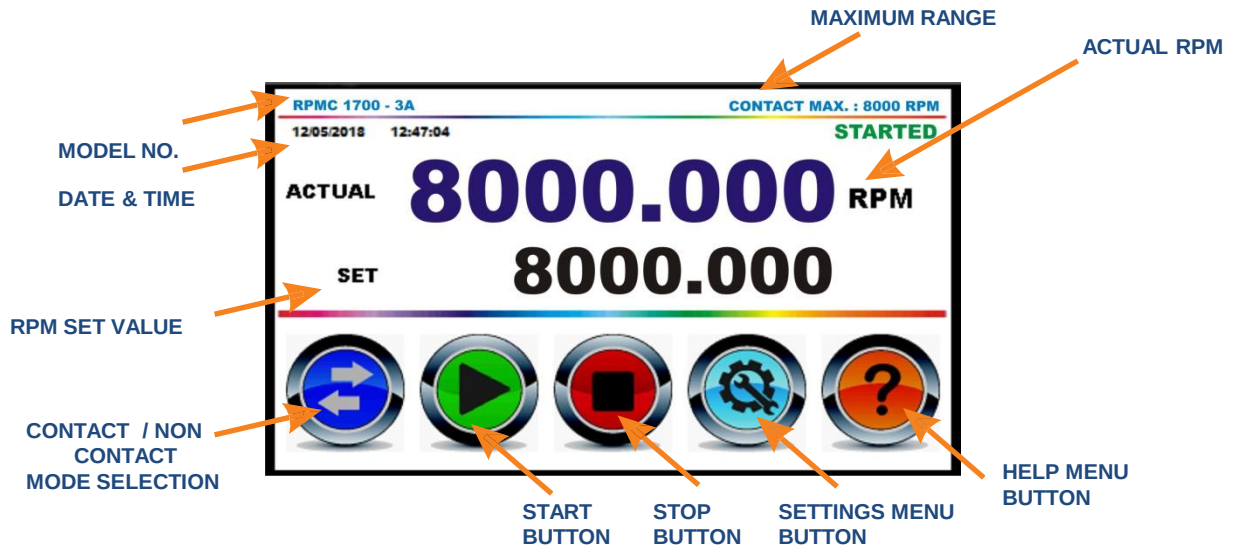
- I. Ensure before start the RPMC 1700 – 2A / 3A use the proper tightening of rotating wheel front supporting guard by hand tightening in clockwise direction using proper spanner(14 x 15) as below.



CAUTION: Don't over tight the supporting guard, it may cause damage of thread inside the motor shaft

- I. The instrument should be handled with care. Avoid knocking, dropping, or vibrating the instrument. (Refer 2.2. POSITIONING OF RPMC – 1700 – 2A / 3A).
- II. This instrument is tested and calibrated at the factory. Continued regular testing and calibration is recommended.

9. MAIN SCREEN DESCRIPTION



10. OPERATION PROCEDURE

10.1. TACHOMETER (CONTACT TYPE)



STEP - 1 : Click on "CONTACT" button to calibrate the contact type UUC.



STEP - 2 : Click on "SET" value to set required calibration point



STEP - 3 : Set required RPM and Click on "ENT" set to set required calibration point



STEP - 4 : Press "START" button to run



Avoid touching the rotating wheel during running, it may cause injury.

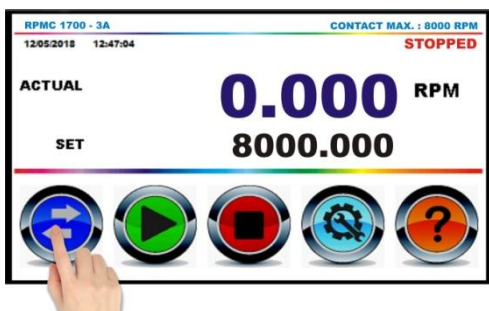
STEP - 5 : Now the motor starts run at set RPM, after few seconds and stabilized

STEP - 6 : Place the Contact type UUC carefully at given test port on centre of the disc and hold without any shake of hands



STEP - 7 : After taking both Master and UUC readings, click on "STOP" button

10.2. TACHOMETER (NON CONTACT TYPE)



STEP - 8 : To calibrate Non contact type UUC click on "MODE" button



STEP - 9 : Click on "NON CONTACT" button to enter non contact mode



STEP - 10 : Click on "SET" value to set required calibration point



STEP - 11 : Set required RPM and Click on "ENT" to set required calibration point



STEP - 12 : Press "START" button to run



STEP - 13 : Now the motor starts run at set RPM / 15, after few seconds and stabilized



Avoid touching the rotating wheel during running, it may cause injury.

STEP - 14 : Focus the Non Contact type UUC steadily to given test port on corner of the disc(white colour slots given) and hold without any shake of hands



STEP - 15 : After taking both Master and UUC readings, click on "STOP" button

10.3. SET POINT LIMIT(CONTACT & NON CONTACT)

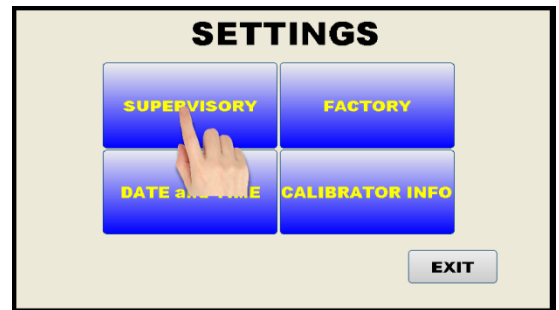


CAUTION: Provided password, for protect this supervisory settings menu from unauthorised persons operation. Don't share it to third person or unauthorised person. Mishandling of this menu may leads to affect calibrator working.

This set point limit used to limit the RPM set on front screen for both low & high values(contact & non contact individually). Use following steps to update the set value limits to your required range.



STEP - 1 : Click on "SETTINGS" icon to enter into settings menu



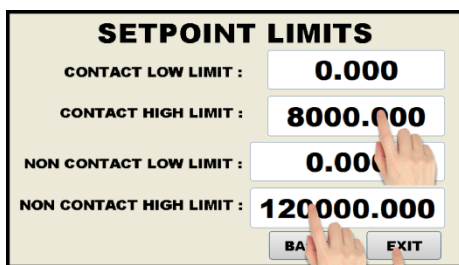
STEP - 2 : in SETTINGS MENU, Click on "SUPERVISORY" icon to enter into supervisory menu



STEP - 3 : Enter supervisory password = 3579 and click on "ENT" button.



STEP - 4 : in SUPERVISORY MENU, Click on "LIMITS" icon to enter into SETPOINT LIMIT MENU



STEP - 5 : In setpoint limit menu, click on required limit value to update and enter your required limit and click on "EXIT"



STEP - 6 : Now return back to "mode select" screen. Now select your required mode and continue calibration with your required setpoint limit.

11. CALIBRATION PROCEDURE

PRECAUTIONS

- I. Standards are so chosen that the TUR of 3:1 is maintained at any point of calibration. Once the STDs are chosen, the valid calibration and traceability are confirmed and calibration certificates are referred before using the standard.
- II. Rubber Shoes, Gloves and rubber mat are used while working in the lab.
- III. Proper connectors and cables are used and they are checked for their cleanliness and tightness. Where ever applicable shielded cables are used for minimizing the error due to noise.
- IV. Calibration Procedures are available for all type of Tachometers & Centrifuges that the lab wishes to calibrate.
- V. The DUC and Standard should attain temp equilibrium before taking of for calibration. Hence enough warm up is given before calibration and it is followed as for instrument Instruction manual.

STEP - 1 : The calibration of a non-contact optical tachometer shall include a verification that both the Transmitter and receiver are functional over the range of specified distances. The calibration of a non-contact optical tachometer using a stroboscope is not acceptable due to the high light output of a stroboscope.

STEP - 2 : The calibration of a non-contact optical tachometer using a stroboscope is not acceptable Due to the high light output of a stroboscope.

STEP - 3 : Any test rig shall be of adequate design, and any mechanical loading caused by the UUT Should not influence the measurement result.

STEP - 4 : calibration of contact tachometers shall include either direct coupling or measurement using the supplied rubber cone tip and/or surface measuring wheel. The procedure shall also address the contact angle of the probe tip with the rotating object, the applied pressure, The condition of the rubber tip or wheel, and slippage under working conditions.

STEP - 5 : The procedure for the calibration of a stroboscope shall address the method of detection, and detection distance.

STEP - 6 : procedure for the calibration of inductive and acoustical tachometer shall address the Stroke and cylinder selection.

STEP - 7 : The tachometer should be calibrated in accordance with the manufacture's specification; In the absence of such procedures the laboratory shall perform at least 5 measurements through the range of the tachometer. Dual or multi-range tachometers shall be calibrated at least 3 points per range.

STEP - 8 : Multi function tachometers shall be calibrated for contact and non-contact functions. In Instances where only one of the functions has been calibrated the calibration label and Certificate shall clearly indicate 'limitation imposed – partial calibration'.

STEP - 9 : Switch on the standard and DUC.

STEP - 10 : Focus the DUC towards the "optical tacho" sensor of Motor Disk.

STEP - 11 : Vary the RPM in STD to see that the tachometer response accordingly.

STEP - 12 : Record the readings. From the recorded readings check whether they are with in specified accuracy limits. If not adjustment is carried out as per manual.

STEP - 13 : Affix the appropriate label indicating the Nomenclature, Make, Model, SL.No, Cal ON, Cal Due and Cal By.

12. CONTACT US

SANSEL INSTRUMENTS AND CONTROLS
No.1/46, GANGA NAGAR, MMDA COLONY, MADURAVOYAL,
NEAR METTUKUPPAM, CHENNAI - 600 095, TN
CELL : 72999 72092

EMAIL : production@sansel.net, info@sansel.net website : www.sansel.net