

MANUAL



Nagman[®]
MULTIFUNCTION PROCESS CALIBRATOR
MFC 40

BRIEF PROFILE



An ISO 9001-2015 certified Instrumentation company (since 1972) serving Industries in India & Worldwide thro' the Manufacture & Supply of World-Class Calibration Instruments & Systems like Temperature, Pressure & Signal Calibrators, Black Body Calibration Sources, Pneumatic & Hydraulic Hand Pumps, Dead Weight & Comparison Testers, Calibration Test Benches, etc.

Dear User,

Thank you for selecting Nagman's Multifunction Process Calibrator and becoming a proud owner of this Calibration Instrument.

We have strived hard to ensure the Accuracy of the contents of this manual. If any errors noticed, we would appreciate to receive suggestions / feedback to improve the quality of the contents.

Specifications are subject to change owing to continuous development and we reserve rights to effect Changes / Modifications to this Manual.

*Read the Instructions before starting to use the Product.
Wishing you for a long association with us.*

For any spares requirement / service, please email to: service@nagman.com

VERSION CONTROL

Version No.	Updated on	Updated by
V 1.1	01.09.2022	Nagman

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1. INTRODUCTION

MFC 40 Multifunction Process Calibrator (referred to as “the calibrator”) is a handheld, battery-operated instrument that sources and measures electrical parameters (mV, V, mA, Ohms, T/c, RTD’s).

MFC 40 has the following features and functions :

- Easy to use
 - Compact, handy & lightweight
 - 128 x 64 Graphic Display with backlight
 - In/Out Data Memory : 20 Values can be stored manually
 - USB Computer Interface : Provided
 - Ingress Protection Rating : IP 55
 - Conforming to EN61010-1, EN61326-1, EN60529
-
- A split-screen display. The upper display allows to measure volts & current only. The lower display allows to source volts, current, resistance temperature detectors, thermocouples and ohms.
 - A thermocouple (TC) input/output terminal and an internal isothermal block with automatic reference junction temperature compensation.
 - Storage and recall functions
 - Manual stepping and ramping function.(only for mA Source Mode)

2. SPECIFICATION

Table IN-OUT Range :

Parameters	Range	Resolution	Accuracy (% reading)
mV (L)	-20 to +200 mV	0.001	$\pm(0.025\% + 3 \mu\text{V})$
mV (H)	-0.200 to +2000 mV	0.01	$\pm(0.025\% + 10 \mu\text{V})$
Volt	-2 to +20V	0.0001	$\pm(0.025\% + 0.1 \text{ mV})$
mA (In)	0 to 25 mA (Passive Loop), 0 to 100mA (Active)	0.0001	$\pm(0.025\% + 0.4 \mu\text{A})$
mA (Out)	4 to 20 mA (Passive Loop), 0 to 20mA (Passive Loop) 0 to 50mA (Active)	0.0001	$\pm(0.025\% + 0.4 \mu\text{A})$
Ohms	1 to 500 Ω	0.001	$\pm(0.025\% + 20 \text{ m}\Omega)$
Kilo Ohms	0.01 to 5K Ω	0.0001	$\pm(0.025\% + 200 \text{ m}\Omega)$
Frequency	100 to 10000Hz	0.1	$\pm(0.025\% + 0.1 \text{ Hz})$
RTD, Pt100	-100 to 850°C	0.01	$\pm(0.025\% + 0.01^\circ\text{C})$
RTD, Pt200	-100 to 850°C	0.1	$\pm(0.025\% + 0.15^\circ\text{C})$
RTD, Pt500	-100 to 530°C	0.1	$\pm(0.025\% + 0.1^\circ\text{C})$
RTD, Pt1000	-100 to 850°C	0.01	$\pm(0.025\% + 0.1^\circ\text{C})$
Thermocouple, J Type	-190 to 1200°C	0.1	$\pm(0.025\% + 0.1^\circ\text{C})$
Thermocouple, K Type	-160 to 1260°C	0.1	$\pm(0.025\% + 0.1^\circ\text{C})$
Thermocouple, T Type	0 to 400°C	0.1	$\pm(0.025\% + 0.1^\circ\text{C})$
Thermocouple, R Type	150 to 1700°C	0.1	$\pm(0.025\% + 0.2^\circ\text{C})$
Thermocouple, S Type	170 to 1700°C	0.1	$\pm(0.025\% + 0.2^\circ\text{C})$
Thermocouple, B Type	920 to 1820°C	0.1	$\pm(0.025\% + 0.3^\circ\text{C})$
Thermocouple, N Type	0 to 1200°C	0.1	$\pm(0.025\% + 0.1^\circ\text{C})$

3. STANDARD DELIVERY & OPTIONAL ACCESSORIES

Standard Delivery

- Inbuilt Rechargeable Batteries with Power Adaptor
- Test Leads
- Calibration Certificate issued in Accordance with our Scope as granted by NABL per ISO/IEC 17025:2017 Standards
- Instruction Manual

Optional Accessories : NIL

4. PARTS IDENTIFICATION

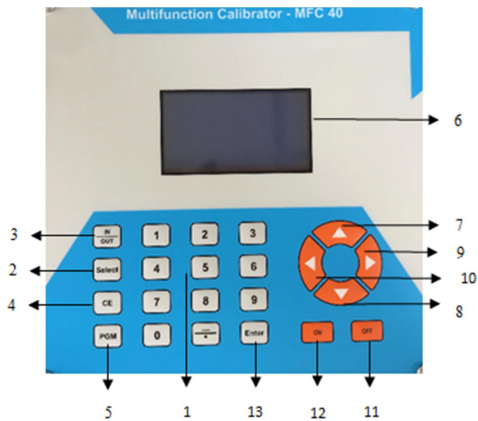


Display :

The Display indicates in two parts :

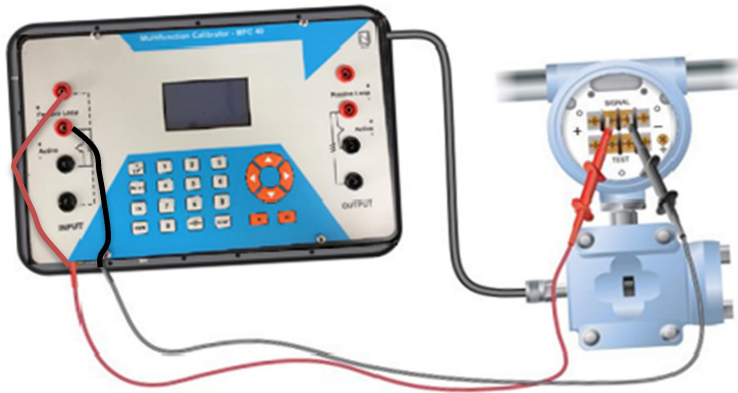
- Upper portion indicates 'Input' Channel
- Lower portion indicates 'Output' Channel

Keypad :









S. No.	Description
1	NUMERIC KEYS used to enter values.
2	Select Key (Shows the Different Parameters)
3	Input and Output channel selection switch
4	CE KEY (Escape key) used to cancel a selection/edit or return to previous menu.
5	PROGRAM KEY used to CJ INT status and to enter room (ambient) temperature CJ EXT
6	LCD (128 x 64) Graphic display
7 & 8	Up and Down keys to select menu
9 & 10	Left arrow stores the data and Right arrow recalls the data
11 & 12	ON-OFF button to switch ON and switch OFF the instrument
13	ENTER KEY to accept selected options or entered values.

5. CONNECTION DIAGRAM



1. MFC 40
2. Pressure Transmitter

6. SAFETY INSTRUCTIONS

S.No	Symbol	Description
1		Read the user manual before operating the instrument.
2		Warning- conditions that may pose hazards to the user.
3		Caution-conditions that may damage the instrument.
4		Special Information
5		Hot surface- areas which are at high temperature
6		Electric shock- condition that may pose shock to the user.

Use the instrument only as specified in this manual. Otherwise, the protection provided by the instrument may be impaired. Refer to the safety information below.



To avoid possible electric shock or personal injury:

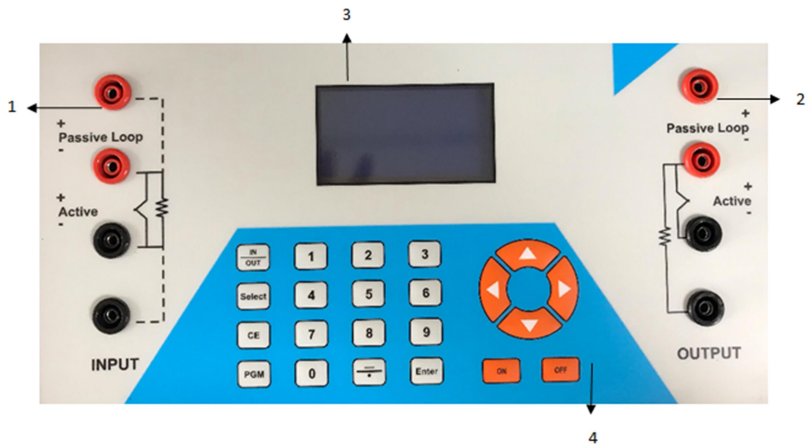
- Do not use the calibrator if it is damaged. Before you use the calibrator, inspect the case (look for cracks). Pay particular attention to the insulation surrounding the terminal connectors.
- Before using, verify the calibrator's operation by measuring a known voltage. Follow all equipment safety procedures.
- Do not apply more than the rated voltage, as marked on the calibrator (between the terminals), or between any terminals and earth / ground (30V, 24mA max all terminals).
- Never touch the probe to a voltage source when the test leads are plugged into the current terminals.
- Select the proper function and range for your measurement.
- Make sure the battery door is closed and latched before you operate the calibrator.
- Remove test leads from the calibrator before you open the battery door.

- Inspect the test leads for damaged insulation or exposed metal conductors. Check test leads continuity. Replace damaged test leads before you use the calibrator.
- When using the probes, keep your fingers away from the probe contacts. Keep your fingers behind the finger guards on the probes.
- Connect the common test lead before you connect the live test lead. When you disconnect test leads, disconnect the live test lead first.
- Do not use the calibrator if it operates abnormally. Protection may be impaired. When in doubt, get the calibrator serviced.
- Do not operate the calibrator in and around explosive areas like gas, vapor or dust.

7. OPERATING INSTRUCTIONS

Switch ON the instrument.

Select In or Out Mode.

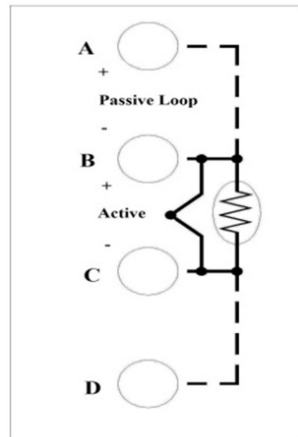


S. No.	DESCRIPTION
1	Input Channel
2	Output Channel
3	Display
4	Keypad

INPUT CHANNEL :

Input for mVL , mVH & Volt :

- B for Positive (+) and C for Negative (-)
- Note that this connection is for potential free contact



Input For mA:

- Passive Loop for 2 wire Transmitter with Internal Power Supply (A for Positive (+) and B for Negative (-))
- Active Loop Transmitter with External Power Supply (B for Positive (+) and C for Negative (-))

Input For Ohms & RTD:

RTD Input Connection details are Shown In fig.

- 2- Wire : Use terminals BC for 2 wire with AB and CD to be short
- 3- Wire : Use terminals ABC for 3 wire with CD to be short
- 4- Wire : Directly insert to ABCD

Input For TC:

- In all TC, B for Positive (+) and C for Negative (-)

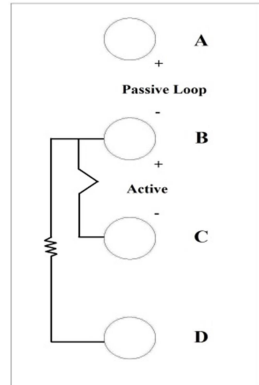
OUTPUT CHANNEL :

Generate for mVL , mVH & Volt :

B for Positive (+) and for C Negative (-).

Generate mA:

- Passive Loop for 2 wire Transmitter with Internal Power Supply(A for Positive (+) and B for Negative (-))
- Active Loop Transmitter with External Power Supply(B for Positive (+) and C for Negative (-))



Generate Ohms & RTD:

- The RTD ohms output connection details are shown In fig. Use terminals B and D

Generate for TC:

- In all TC, B for Positive (+) and C for Negative (-)

CE Certified Product

- Confirming to EU Standards



EURO
CERT

EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.

CERTIFICATE OF CONFORMITY

FULLNESS EXAMINATION OF TECHNICAL FILE

Certificate No.	: LVM.0116
Issue Date	: 19/03/2021
Expiry Date	: 18/03/2026
Applicant (Name & Address)	: NAGMAN INSTRUMENTS AND ELECTRONICS PRIVATE LIMITED 27 TH KM STONE, CHENNAI BANGALORE NATIONAL HIGHWAY, CHEMBARAMBARKAM, CHENNAI - 600123, TAMILNADU, INDIA
Manufacturer (Name & Address)	: Same as Applicant
Test Report No.	: ITC/TEST/N/2012/27, ITC/TEST/NN/2012/11, ITC/TEST/N/2103/05
TCF No.	: TCF/NIEPL/MFC/01
Product Description	: MULTIFUNCTION PROCESS CALIBRATOR
Model(s)	: MFC 40
Directive(s)	: Low Voltage Directive 2014/35/EU Electromagnetic Compatibility Directive 2014/30/EU
Standard(s)	: EN 61010-1:2010/A1:2019, EN 61326-1:2013, EN 60529:1991/A2:2013.

This is to certify that, upon the relevant application of the above-mentioned company, EUROCERT as Third-Party Authority has reviewed the Technical Construction File of the described product which found to fulfill the basic health and safety prerequisites of above-mentioned Directive(s).

Note:

- The manufacturer should issue a EU Declaration of Conformity according to the basic requirements of the applicable and relevant EC directives.
- The holder of the certificate shall use it in connection with the EU declaration of conformity.
- The CE marking can be affixed on the above-mentioned product with the manufacturer's responsibility, if all relevant and applicable EU directives are complied with.
- All modifications to the Technical File should be first submitted to the Third-Party Inspection Authority to ensure further validity of this attestation.
- This certificate is valid only for the product and configuration described above.

Please check the validity of the certificate from our website using the password **ApNhpvDD**



Third-Party Authority Stamp

On Behalf of EUROCERT



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8. TROUBLESHOOTING / MAINTENANCE

To avoid electrical shock or damaging the calibrator, never allow water to get inside the case.

To avoid damaging the plastic case, do not use solvents or abrasive cleansers.

Clean the Calibrator with a soft cloth dampened with water or water and mild soap.

If the calibrator operates abnormally, inspect the batteries first and replace them if necessary.

Calibration, Maintenance or repair work unmentioned in this manual, should be undertaken only by authorized / experienced personnel.

Ensure that the calibrator is being operated in accordance with the instructions in this manual.

Returning Instrument for Service

When returning the instrument to the manufacturer for service, please provide complete information about the problems faced for clear analysis of the problem. The calibrator should be returned in the original packing.

Nagman's liability ceases if :

- Parts are replaced / repaired using spare parts which are not identical to those recommended by the manufacturer.
- Non-original parts are used in any way when operating the instrument.

Nagman's liability is restricted to errors that originated from the factory.

For more details, write to :

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