# FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

**118-119, First Floor, Sushant Tower, Sector – 56, Gurugram – 122011, Haryana, India.**

# CERTIFICATE OF ACCREDITATION

**(AS PER ISO/IEC 17025:2017)**

This is to attest that

**UNIMECH CALIBRATION SERVICES LLP**

A-56, Sector-72A, Tikri DLF, Gurugram- 122001(Haryana), India

**Calibration Laboratory**

has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories, and supplementary criteria for calibration laboratories.

**Certificate Number**: CL- 137

**Issue Date:** 29.10.2024 **Valid Until:** 28.10.2026

The certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard and the relevant requirements of FDAS. (For scope of accreditation visit website www. fdasindia.org).

DEVI SARAN TEWARI

Director

# FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

118-119, First Floor, Sushant Tower, Sector – 56, Gurugram – 122011, Haryana, India.

## SCOPE OF ACCREDITATION

**(Annexure to Certificate of CL - 137)**

**Laboratory Name:** Unimech Calibration Services LLP
A-56, Sector-72A, Tikri DLF, Gurugram
(Haryana) – 122001, India

**Validity**: 29.10.2024 to 28.10.2026 **Amended on** N/A

| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| **Group: Speed** | | | | |
| 1 | Contact type RPM (tachometer/rpm Indicator & rpm measurement of Equipment) | Using Tachometer & RPM Source as per SANASTR45-III-2023 | 50 to 8000 rpm | 3.10% to 0.50% |
| 2 | Non-Contact type RPM (tachometer & RPM Source & Stroboscope& Centrifuge/rpm Indicator & rpm measurement of Equipments) | Using Tachometer & RPM Source as per SANASTR45-III-2023 | 50 to 90000 rpm | 3.10% to 0.50% |
| **Group: Dimension** | | | | |
| 1 | Bevel Protractor LC:5 min | Angle Gauge Set as per (IS4239:2023) | upto 90 ° | 3.5 min |
| 2 | Caliper(vernier/Dial/Digital) LC: 0.01mm | Slip Gauge Block, Caliper Checker as per (IS 16491 (part-1) : 2016, RA 2021) | upto 300 mm | 8.7 µm |
| 3 | Caliper(vernier/Dial/Digital) LC: 0.01mm | Slip Gauge Block, Caliper Checker as per (IS 16491 (part-1) : 2016, RA 2021) | upto 600 mm | 9.5 µm |

Jimanshu

**Dealing Officer**

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(Haryana) – 122001, India

**Validity**: 29.10.2024 to 28.10.2026 **Amended on** N/A

| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|
| | | **Mechanical Calibration (Laboratory based)** | | |
| 4 | Combination Set/ Angle Protractor LC:1° | Angle gauge set by Comparison Method | upto 180 ° | 35 min |
| 5 | Depth Micrometer LC:0.01mm | Using Slip Gauge Set & caliper checker by Comparison Method | upto 100 mm | 8.4 µm |
| 6 | Depth Gauge - Vernier / Dial /Digital (L.C.:0.01 mm) | Using Slip Gauge Set & Caliper Checker as per IS 16491(part-2) :2016 RA 2021 | upto 100 mm | 8.1 µm |
| 7 | Snap Gauge | Slip Gauge Blocks as per (IS-8023 (part 1):1991 RA 2020) IS : 3455 : 1971 | 4 mm to 100 mm | 3.62 µm |
| 8 | Dial Thickness Gauge LC:0.01mm | Using Slip Gauge Set by comparison Method | upto 25 mm | 4.1 µm |
| 9 | External Micrometer LC:0.001 mm | Slip Gauge Blocks as per (IS 2967: 1983 RA 2019) | upto 100 mm | 1.2 µm |
| 10 | Feeler Gauge/Thickness Foils | Electronic Probe as per (IS – 3179:1990 RA 2020) | 0.01 to 2 mm | 0.8 µm |
| 11 | Height Gauge L.C 0.01 mm | Slip Gauge Blocks, Caliper Checker, Lever dial gauge as per (IS 2921:2016 RA 2021) | upto 600 mm | 15.52 µm |

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| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| 12 | Radius Gauge | Profile projector as per (IS – 5273:1969 RA 2019) | 1 to 25 mm | 9.36 µm |
| 13 | Taper Scale L.C: 0.1mm | Profile projector by comparison Method | 0.1 to 50 mm | 60 µm |
| 14 | Test Sieve | Digital Caliper as per (IS – 460 (PART-1,2&3) : 2020) | 4 mm to 150 mm | 17.8 µm |
| 15 | Test Sieve | profile Projector by (IS – 460 (PART-1,2&3) : 2020) | 0.03 to 4 mm | 4.7 µm |
| 16 | Ultrasonic Thickness Gauge LC:0.1mm | Slip gauge set by comparison Method | upto 100 mm | 58.5 µm |
| **Group : Force** | | | | |
| 1 | Push Pull Gauge, Force Gauge - Push/Pull Mode | Slotted Weights, Hanger Weights & Frame Weights based on VDI/VDE 2624-2.1 :2008 | 1 N to 500 N | 0.55% |

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|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| Group : Pressure & Vacuum | | | | |
|---|---|---|---|---|
| 1 | Digital/Dial (pressure gauge/Pressure Transmitter/Pressure Switch/Pressure Controller/PSV/PRV) | Digital Pressure Gauge as per (DKD R6-1:2014) | upto 2 bar | 0.01 bar |
| 2 | Digital/Dial (pressure gauge/Pressure Transmitter/Pressure Switch/Pressure Controller/PSV/PRV) | Digital Pressure Gauge as per (DKD R6-1:2014) | upto 70 bar | 0.11 bar |
| 3 | Digital/Dial (pressure gauge/Pressure Transmitter/Pressure Switch/Pressure Controller/PSV/PRV) | Digital Pressure Gauge as per (DKD R6-1:2014) | upto 700 bar | 0.15bar |
| 4 | Digital/Dial (Vacuum gauge/Vacuum Transmitter/Vacuum Switch/Vacuum Controller) | Digital Pressure Gauge as per (DKD R6-1:2014) | -0.9 to 0 bar | 0.01 bar |

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| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| **Group : Torque(torque generating devices)** | | | | |
| 1 | Torque Wrench /Screw Drivers,Torque Gauge/Electric Screw Gauge (Type I & II) | Using Torque Wrench Calibration system as per IS/ISO 6789-2017(Part-2) | 2 Nm to 20 Nm | 0.52% |
| 2 | Torque Wrench /Screw Drivers,Torque Gauge/Electric Screw Gauge (Type I & II) | Using Torque Wrench Calibration system as per IS/ISO 6789-2017(Part-2) | 20 Nm to 2000 Nm | 0.55% |
| **Group : Torque(torque measuring devices)** | | | | |
| 1 | Torque Meter/Torque Sensor/Transducer (Class 0.5 & coarser) | Using Torque Toll system with lever arm & SS Weight as per BS 7882 : 2017 | 2 Nm to 2000 Nm | 0.05% |
| **Group : Mass (Weights/Standards of mass)** | | | | |
| 1 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 1 mg | 0.02 mg |

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| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| 2 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 2 mg | 0.02 mg |
| 3 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 5 mg | 0.02 mg |
| 4 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 10 mg | 0.025 mg |
| 5 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 20 mg | 0.03 mg |

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|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| 6 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 50 mg | 0.04 mg |
| 7 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 100 mg | 0.05 mg |
| 8 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 200 mg | 0.06 mg |
| 9 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 500 mg | 0.08 mg |

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|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| 10 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 1g | 0.10 mg |
| 11 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 2g | 0.12 mg |
| 12 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 5g | 0.16 mg |
| 13 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 10g | 0.20 mg |

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|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| 14 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 20g | 0.25 mg |
| 15 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.01 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 50g | 0.30 mg |
| 16 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.1 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 100g | 0.5 mg |
| 17 | Weight(Conventional Mass F2 Class and Coarser) | Using E2 Class Weight and Weighing Balance L.C : 0.1 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 200g | 1.0 mg |

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|---|---|---|---|---|

**Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| 18 | Weight(Conventional Mass M1 Class and Coarser) | Using F1 Class Weight and Weighing Balance L.C : 1 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 500g | 8 mg |
| 19 | Weight(Conventional Mass M1 Class and Coarser) | Using F1 Class Weight and Weighing Balance L.C : 1 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 1 kg | 16 mg |
| 20 | Weight(Conventional Mass M1 Class and Coarser) | Using F1 Class Weight and Weighing Balance L.C : 1 mg by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 2 kg | 30 mg |
| 21 | Weight(Conventional Mass M1 Class and Coarser) | Using F1 Class Weight and Weighing Balance L.C : 0.1g by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 5kg | 80 mg |

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| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|

. **Mechanical Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| 22 | Weight(Conventional Mass M1 Class and Coarser) | Using F1 Class Weight and Weighing Balance L.C : 0.1g by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 10kg | 160 mg |
| 23 | Weight(Conventional Mass M1 Class and Coarser) | Using F1 Class Weight and Weighing Balance L.C : 0.1g by Substitution Method (ABBA Cycle ) as per OIML R-111 : 2004 | 20kg | 300 mg |

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| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|

**Mechanical Calibration (Site based)**

| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|
| **Group: Speed** | | | | |
| 1 | Contact type RPM Indicator & rpm measurement of Equipments) | Using Tachometer & RPM Source as per SANASTR45-III-2023 | 50 to 8000 rpm | 3.10% to 0.50% |
| 2 | Non-Contact type RPM ( RPM Source & Centrifuge/rpm Indicator & rpm measurement of Equipments) | Using Tachometer & RPM Source as per SANASTR45-III-2023 | 50 to 90000 rpm | 3.10% to 0.50% |
| **Group: Dimension** | | | | |
| 1 | Linear Height Gauge/ 2D Height Gauge(Height only) LC:0.0001mm | Using Caliper Checker & Slip gauge Set as per IS 2921 : 2016 RA 2021 | upto 600 mm | 9.8 µm |
| 2 | Surface Plate - Flatness | Using Electronic Level as per IS 12937:1990 RA2020 | upto 5000 X 5000 mm | 1.29 x sqrt (L+W)/125 µm, L & W in mm |
| 3 | Profile Projector /VMM Angular Scale (L.C: 1'') | Angle Gauge Set as per (JIS B 7184 : 2021) | upto 360 ° | 5.79 min |
| 4 | Profile Projector /VMM Linear Scale (L.C:0.001mm) | Glass Scale as per (JIS B 7184 : 2021) | upto 200 mm | 9.12 µm |
| 5 | Profile Projector Magnification | Using Glass Scale, Slip Gauge Blocks, Digital Caliper (JIS B 7184:2021) | 10 X to 50 X | 0.14% |

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| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|

**Mechanical Calibration (Site based)**

| | | | | |
|---|---|---|---|---|
| **Group : Mass (Balance or other weighing devices)** | | | | |
| 1 | Electronic Weighing Balance (Readability 1 mg & Coarser) | E2 Class Weight as per OIML R-76 :2006 | upto 220 g | 1 mg |
| 2 | Electronic Weighing Balance (Readability 100 mg & Coarser) | F1 Class Weight as per OIML R-76 :2006 | upto 3000 g | 0.07 g |
| 3 | Electronic Weighing Balance (Readability 0.001kg & Coarser) | F1 Class Weight as per OIML R-76 :2006 | upto 50 kg | 0.8 g |
| 4 | Electronic Weighing Balance (Readability 0.01kg & Coarser) | F1 Class Weight as per OIML R-76 :2006 | upto 500 kg | 10g |
| **Group : Pressure & Vacuum** | | | | |
| 1 | Digital/Dial (pressure gauge/Pressure Transmitter/Pressure Switch/Pressure Controller/PSV/PRV) | Digital Pressure Gauge, as per DKD R6-1:2014 | upto 2 bar | 0.01 bar |
| 2 | Digital/Dial (pressure gauge/Pressure Transmitter/Pressure Switch/Pressure Controller/PSV/PRV) | Digital Pressure Gauge, as per DKD R6-1:2014 | upto 70 bar | 0.11 bar |

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|---|---|---|---|---|

**Mechanical Calibration (Site based)**

| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|
| 3 | Digital/Dial (pressure gauge/Pressure Transmitter/Pressure Switch/Pressure Controller/PSV/PRV) | Digital Pressure Gauge, as per DKD R6-1:2014 | upto 700 bar | 0.15bar |
| 4 | Digital/Dial (Vacuum gauge/Vacuum Transmitter/Vacuum Switch/Vacuum Controller) | Digital Pressure Gauge, as per DKD R6-1:2014 | -0.9 to 0 bar | 0.01 bar |

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|---|---|---|---|---|

**Thermal Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| **Group :Relative Humidity** | | | | |
| 1 | Thermo-Hygrometer/ Relative Humidity Sensors/ Transmitter with/ without Indicator/ Controller/ Data Logger/ Recorder (@25°C ) | Relative Humidity & Temperature Sensor with Indicator, Relative Humidity & Temperature Chamber by comparison Method | 26 % RH to 95% RH | 1.46% RH |
| **Group : Temperature** | | | | |
| 1 | Thermo-Hygrometer/ Relative Temp Sensors/ Transmitter with/ without Indicator/ Controller/ Data Logger/ Recorder (@50%RH ) | Relative Humidity & Temperature Sensor with Indicator, Relative Humidity & Temperature Chamber by comparison Method | 10 to 50°C | 0.69°C |
| 2 | RTD/Thermocouple with indicator Temp. transmitter, recorder, data logger, Temp. gauge, Digital Thermometer | Using 4 wire Rtd with Indicator & Temp. bath by comparison method | -40 to 400°C | 0.68 °C |
| 3 | Thermocouple with indicator Temp. Transmitter, recorder, data logger, Temp. gauge, Digital Thermometer | Using S type TC with Indicator & Temp. bath by comparison method | 400 to 1182°C | 1.65°C |

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|---|---|---|---|---|

**Thermal Calibration (Laboratory based)**

| | | | | |
|---|---|---|---|---|
| 4 | Single Poisition(Temp. Indicator/controller with sensor of Deep Freezer /coldroom/Incubator/refrigerator/oven/water bath/chamber./thermal source) | Using 4 wire Rtd with Indicator by comparison method | -40 to 400°C | 0.15°C |
| 5 | Single Poisition(Temp. Indicator/controller with sensor of Dry Block Furnace/Muffle furnace/oven/chamber./thermal source) | Using S type TC with Indicator by comparison method | 400 to 1200°C | 1.65°C |
| **Group : Non-Contact Type (IR/Optical)** | | | | |
| 1 | Infrared (IR) Thermometer/ Thermal Imager Camera, Pyrometer Emissivity: 0.95 | Infrared Thermometer with Black Body by comparison method | 50 to 500°C | 2.5°C |

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|---|---|---|---|---|
| **Thermal Calibration (Site based)** | | | | |
| **Group : Relative humidity** | | | | |
| 1 | Relative Humidity Indicator/ Controller/ Logger/ Recorder with Sensor of Relative Humidity Chamber -Single Position Calibration (@25°C) | Relative Humidity & Temperature Sensor with Indicator by comparison method | 20% RH to 95% RH | 0.72 %RH |
| **Group : Temperature** | | | | |
| 1 | RTD/Thermocouple with indicator Temp. transmitter, recorder, data logger, Temp. gauge, Digital Thermometer | Using 4 wire Rtd with Indicator & Temp. bath by comparison method | -40 to 400°C | 0.61°C |
| 2 | Thermocouple with indicator Temp. transmitter, recorder, data logger, Temp. gauge, Digital Thermometer | Using S Type TC with Temp. Bath by comparison method | 400 to 1182°C | 1.65°C |

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|---|---|---|---|---|

**Thermal Calibration (Site based)**

| S.No. | Parameter | Calibration Method/ Procedure & Equipment used as Reference Standard | Range | Uncertainty in Measurement (±) * |
|---|---|---|---|---|
| 3 | Single Poisition(Temp. Indicator/controller with sensor of Deep Freezer /coldroom/Incubator/refrigerator/oven/water bath/chamber./thermal source) | Using 4 wire Rtd with Indicator & Temp. bath by comparison method | -40 to 400°C | 0.61°C |
| 4 | Single Poisition(Temp. Indicator/controller with sensor of Dry Block Furnace/Muffle furnace/oven/chamber./thermal source) | Using S type TC with Indicator as per by comparison method | 400 to 1182°C | 1.65°C |
| 5 | Relative Temp. Indicator/ Controller/ Logger/ Recorder with Sensor of Relative Chamber-Single Position Calibration (@50%RH) | Relative Humidity & Temperature Sensor with Indicator as per by comparison method | 10 to 50°C | 0.52°C |

*** Expanded uncertainty expressed in coverage probability of approximately 95% (coverage factor K=2)**

Himanshu

**Dealing Officer**