



## Calibration Certificate

<b>Customer Name :</b>	Institute of Pharmacy, Nirma University			
<b>Address :</b>	Ahmedabad			
Certificate No. :	<b>KTS/041221/003</b>	Issued On :	04/12/2021	
Calibration Date :	04/12/2021	Suggested Due Date :	03/12/2022	
ULR No. :	CC267321000001003F	Calibration Done at :	KTS Lab - Vatva	
Discipline :	Thermal	Group :	Temperature	
Location of UUC :	--	Receipt Date :	03/12/2021	
Job Code :	KTS/T/1654	Job Date :	03/12/2021	
CRF No. :	KTS/1221/01	CRF Date :	03/12/2021	
<b>Detail about UUC :</b>	<b>Digital Thermometer Sensor</b>			
Make / Model :	Maxtech / --	Range / L.C. :	(-50 to 300) °C / 0.1 °C	
Sr. No. / ID No. :	-- / IPNU/DTS-01	Calibrated Range :	(-30 to 250) °C	
Sensor Type :	RTD (PT-100)	Type :	Digital	
Immersion Depth :	160 mm & 150 mm	Sensor Size :	4 mm (Φ), 100 mm (L)	
Condition on Receipt :	Satisfactory	Initial Error :	Nil	
Parameter has been calibrated :	Temperature in °C			
<b>Environmental Condition During Calibration</b>	Reference Standards:		DKD-R 5-1	
Temp. & Hum. :	(25 ± 3) °C & (50 ± 10) % RH	Calibration Methods:	KTS/CM/T/02	
<b>Results of Calibration of UUC are as below Table (External Sensor)</b>				
Set Point on Source in °C	Average reading on UUC in °C	Result Observed by Master In °C	Error in °C	Exp. Unc. at K=2
A	B	C	B - C	In ± °C
-30.00	-29.8	-30.12	0.32	0.16
0.00	0.1	0.05	0.05	0.13
50.00	50.2	50.08	0.12	0.18
150.00	150.3	150.11	0.19	0.61
250.00	250.4	250.14	0.26	0.61
<b>Master (ID No.: KTS/MST/178) Instruments Detail</b>				
Name of Master :	<b>Temperature Sensor with Indicator</b>			
Indi. Make / Model :	Yudian / AI-5500	Certificate No. :	KTS/130921/004	
Range :	(-40 to 250) °C	Uncertainty :	± (0.09 to 0.52) °C	
Validity :	12/09/2022	Traceability of :	Kesar Testing Services	
Well used : Field Metrology Well & Ultra Cool Field Metrology Well				

➤ **Notes:** For All Notes Kindly Refer Overleaf.

**Calibrated by:**

Krushi Shah

Calibration Engineer

Format # : KTS/F/59.T.02



Issue # & Date : 03 & 14/04/2020

**Approved by:**

Tejas Panchal

Technical Manager

Page # 1 of 1

approximately 95.45% Confidence Level.

2. Temperature Scale as per ITS-90.
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The reported UUC / measured Readings or master readings are written, it has the average of minimum 3 nos. reading.
7. This Certificate shall not be reproduced, except in full, unless written permission for the publication of and approved abstract has been obtained from the Chief Executive, Kesar Testing Services, Ahmedabad.
8. Laboratory Masters are traceable to National / International Standards.
9. Certificate issued for all instruments are for scientific purpose only (End User Only) and should not be used for Trade/Commercial use.
10. This Certificate is not used for any legal purposes and shall not be produced in court of law.
11. In case of any disputes the Decision of the Chief Executive of Kesar Testing Services, Ahmedabad shall be final & binding.
12. For Temp. Sensor with Indicator of any equipment calibration, may be used Different Temp. Bath as per their Range.
13. \* marked things / content are underlined for amendment done as on dated.
14. Any anomalies / discrepancies in this report should be brought to our notice within 15 days from the date of issue of this report.
15. Here, In Certificate Reported Uncertainty unit as per suggested by customer.
16. UUC – Unit Under Calibration, L.C. – Least Count, Rdg. – Reading, FSD – Full Scale Division, L-Length,  $\Phi$  - Diameter
17. Ch. – Channel, Rec. – Recording, # - No. , CRF – Calibration Request Form, NMT – Not More Than, Error = UUC - Master
18. For Mapping of Equipment / Room at any particular Temp. / Humidity set condition minimum 10 nos. Of readings of all Sensor / Channel / 9 nos. of Data Logger must require.
19. Accuracy & Exp. Unc. Always in  $\pm$  and in any particular unit / in % value.
20. For Pressure/Vacuum Gauges readings are taken as per standard (DKD-R : 6-1 & 6-2) required to take as per UUC Accuracy in upward & Downward direction ( $M1\uparrow$  = Upward Direction,  $M2\downarrow$  = Downward Direction) (And  $M1\&M2$  Total One Cycle) &  $M3\uparrow$  = Upward Direction.

===End of Certificate===





## Calibration Certificate

<b>Customer Name :</b>	Institute of Pharmacy, Nirma University			
<b>Address :</b>	Ahmedabad			
Certificate No. :	<b>KTS/041221/004</b>	Issued On :	04/12/2021	
Calibration Date :	04/12/2021	Suggested Due Date :	03/12/2022	
ULR No. :	CC267321000001004F	Calibration Done at :	KTS Lab - Vatva	
Discipline :	Thermal	Group :	Temperature	
Location of UUC :	--	Receipt Date :	03/12/2021	
Job Code :	KTS/T/1655	Job Date :	03/12/2021	
CRF No. :	KTS/1221/01	CRF Date :	03/12/2021	
<b>Detail about UUC :</b>	<b>Digital Thermometer Sensor</b>			
Make / Model :	Maxtech / --	Range / L.C. :	(-50 to 300) °C / 0.1 °C	
Sr. No. / ID No. :	-- / IPNU/DTS-02	Calibrated Range :	(-30 to 250) °C	
Sensor Type :	RTD (PT-100)	Type :	Digital	
Immersion Depth :	160 mm & 150 mm	Sensor Size :	4 mm (Φ), 100 mm (L)	
Condition on Receipt :	Satisfactory	Initial Error :	Nil	
Parameter has been calibrated :	Temperature in °C			
<b>Environmental Condition During Calibration</b>	Reference Standards:		DKD-R 5-1	
Temp. & Hum. :	(25 ± 3) °C & (50 ± 10) % RH	Calibration Methods:	KTS/CM/T/02	
<b>Results of Calibration of UUC are as below Table (External Sensor)</b>				
Set Point on Source in °C	Average reading on UUC in °C	Result Observed by Master In °C	Error in °C	Exp. Unc. at K=2
A	B	C	B - C	In ± °C
-30.00	-29.9	-30.12	0.22	0.16
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250.00	250.4	250.14	0.26	0.61
<b>Master (ID No.: KTS/MST/178) Instruments Detail</b>				
Name of Master :	<b>Temperature Sensor with Indicator</b>			
Indi. Make / Model :	Yudian / AI-5500	Certificate No. :	KTS/130921/004	
Range :	(-40 to 250) °C	Uncertainty :	± (0.09 to 0.52) °C	
Validity :	12/09/2022	Traceability of :	Kesar Testing Services	
Well used : Field Metrology Well & Ultra Cool Field Metrology Well				

➤ **Notes:** For All Notes Kindly Refer Overleaf.

**Calibrated by:**

*Krushi Shah*

Krushi Shah

Calibration Engineer

Format # : KTS/F/59.T.02



Issue # & Date : 03 & 14/04/2020

**Approved by:**

*T. Panchal*

Tejas Panchal

Technical Manager

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approximately 95.45% Confidence Level.

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====End of Certificate====



## Calibration Certificate

<b>Customer Name :</b>	Institute of Pharmacy, Nirma University							
<b>Address :</b>	Ahmedabad							
Certificate No. :	<b>KTS/041221/001</b>	Issued On :	04/12/2021					
Calibration Date :	04/12/2021	Suggested Due Date :	03/12/2022					
ULR No. :	CC267321000001001F	Calibration Done at :	KTS Lab - Vatva					
Discipline :	Thermal	Group :	Specific Heat & Humidity					
Location of UUC :	--	Receipt Date :	03/12/2021					
Job Code :	KTS/T/1652	Job Date :	04/12/2021					
CRF No. :	KTS/1221/01	CRF Date :	04/12/2021					
<b>Detail about UUC :</b>	<b>Thermo-Hygrometer</b>							
Make / Model :	HTC / HTC-2	Range :	(-10 to 50)°C & (0 to 100)%RH					
Calibrated Range :	(10 to 50)°C & (25 to 95)%RH	L.C. :	0.1 °C & 1 %RH					
Type :	Digital	Sr. No. / ID No. :	<b>IPNU/THM-01</b>					
Condition on Receipt :	Good	Accuracy / Class :	--					
Parameter has been calibrated :	Temperature in °C & Humidity in %RH							
<b>Environmental Condition During Calibration</b>	Reference Standards: As Per Comparison Method							
Temp. & Hum. :	(25 ± 3) °C & (50 ± 10) % RH	Calibration Methods:	KTS/CM/T/03					
<b>Results of Calibration are as below Table</b>								
Sr. No.	Temperature (°C) @ 50% RH			Relative Humidity (%RH) @ 25°C			Exp. Unc at K=2	
	Master	UUC	Error	Master	UUC	Error	In ± °C	In ± % RH
1	10.21	10.1	-0.11	25.25	25	-0.25	0.74	2.02
2	25.12	25.2	0.08	50.29	51	0.71	0.71	2.84
4	50.17	50.3	0.13	95.41	96	0.59	0.60	2.89
<b>Master (ID No. KTS/MST/241 &amp; 241-01) Instruments Detail</b>								
Name of Master :	Digital Thermo-Hygrometer			Certificate No. :	KTS/110921/013			
Make / Model :	Rotronic / HP32 & HC2A-S3			Uncertainty :	± [(0.48 to 0.56)°C & (1.40 to 2.02)%RH]			
Range :	(-10 to 60) °C & (0 to 100)%RH			Traceability of :	Kesar Testing Services			
Validity:	10/09/2022							
Source used :	Humidity Chamber							

➤ **Notes:** For All Notes Kindly Refer Overleaf.

**Calibrated by:**

Krushi Shah  
Calibration Engineer  
Format # : KTS/F/59.T.04



Format Issue # & Date : 03 & 14/04/2020

**Authorized Signatory**

Tejas Panchal  
Technical Manager  
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## Calibration Certificate

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Certificate No. :	<b>KTS/041221/002</b>	Issued On :	04/12/2021					
Calibration Date :	04/12/2021	Suggested Due Date :	03/12/2022					
ULR No. :	CC267321000001002F	Calibration Done at :	KTS Lab - Vatva					
Discipline :	Thermal	Group :	Specific Heat & Humidity					
Location of UUC :	--	Receipt Date :	03/12/2021					
Job Code :	KTS/T/1653	Job Date :	04/12/2021					
CRF No. :	KTS/1221/01	CRF Date :	04/12/2021					
<b>Detail about UUC :</b>	<b>Digital Thermo-Hygrometer</b>							
Make / Model :	HTC / HTC-2	Range :	(-10 to 50)°C & (0 to 100)%RH					
Calibrated Range :	(10 to 50)°C & (25 to 95)%RH	L.C. :	0.1 °C & 1 %RH					
Type :	Digital	Sr. No. / ID No. :	<b>IPNU/THM-02</b>					
Condition on Receipt :	Good	Accuracy / Class :	--					
Parameter has been calibrated :	Temperature in °C & Humidity in %RH							
<b>Environmental Condition During Calibration</b>	Reference Standards: As Per Comparison Method							
Temp. & Hum. :	(25 ± 3) °C & (50 ± 10) % RH	Calibration Methods:	KTS/CM/T/03					
<b>Results of Calibration are as below Table</b>								
Sr. No.	Temperature (°C) @ 50% RH			Relative Humidity (%RH) @ 25°C			Exp. Unc at K=2	
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Validity:	10/09/2022							
Source used :	Humidity Chamber							

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**Calibrated by:**

Krushi Shah

Calibration Engineer

Format # : KTS/F/59.T.04



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**Authorized Signatory**

Tejas Panchal

Technical Manager

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===End of Certificate===