DICKSON

KT801/802/803/804/855

Temperature Chart Recorder Operation

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KT855

Rev. 07/06

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Features:

We have taken 80 years of Instrumentation experience and used it to create a New Generation of Chart Recorders. Featuring our best chart resolution, a rugged and compact enclosure, flip up pen arm for easy chart and pen changes and 9V battery backup.

Available Features:

- Large digital display is viewable from 25 ft.
- User selectable recording times and temperature ranges
- Audio/Visual Alarms
- Temperature ranges from -50 to +2000°F
- User calibration
- Two K-Thermocouple Probes

Applications:

Perfect for Monitoring Temperatures in:

- Refrigerators, Freezers and Coolers
- Ovens and Smokers
- Autoclaves and Baths
- Clean Rooms, Chambers and Storage Rooms
- Critical Equipment Storage

- Air Ducts and Vents

Product Specifications

Temperature Range:	**KT801:** 0 to +100°F/C, -50 to +50°F/C, 0 to +250°F/C; **KT802/KT803/KT855:** 0 to +100°F/C, -50 to +50°F/C, 0 to +250°F/C, + 0 to +500°F/C; **KT804:** 0 to +1000°F/C, 0 to +2000°F, -20 to +20°F/C. +20 to +100°F/C, +50 to +150°F/C
Temperature Sensor:	**KT801/802/803/855:** Beadwire probe, Type K-thermocouple, 4' with mini connector; **KT804:** High temperature basic probe, 6" high temp. basic K-TC Probe with 4' Teflon coated cable; **Note:** Beadwire probe (KT801/02/03/55) included with unit has an operation range of -300 to +500°F. The high temp basic probe (KT804) included with the unit has an operation range of -300 to +2100°F.
Temperature Accuracy:	±1.8°F (±1°C)
IP Rating	IP20
Recording Time:	24 hour, 7 day, 31 day (31 Day available on models KT802/03/55)
Temperature/RH Average Response Time:	15 seconds full scale
Chart:	8" diameter (21.3cm)
Display Resolution:	0.1°F (0.1°C) up to 999.9; 1°F (1°C) ≥ 1000
Ambient Operating Conditions (body):	0 to 95% RH, +32 to +122°F (0 to +50°C) (non-condensing) Probe Only: -20 to +185°F (-20 to +50°C), 0 to 95% RH (non-condensing)
Power Supply:	120V AC adapter with 9 volt battery for back-up power
Average Battery Life:	1-day recording mode: 24 Hours; 7-day recording mode: 2 Days; 31-day recording mode: 1 Week **Note:** Response time is slower when using battery power source.
Calibration:	User calibration of zero
Alarms:	Audio/Visual - high and low alarms (KT803/04/55) (warning mechanism, no controller functions)
Mounting:	Freestanding or wall mounting (keyholes)
Dimensions:	9.2" x 9.2" x 3.1" (23.4cm x 23.4cm x 7.9cm)
Weight:	Approximately 4 lbs. (1.8kg) with batteries

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Charts (for current pricing go to www.dicksonweb.com or call 1-800-323-2448)

For Model	Temperature Range	24 Hour Chart	7 Day Chart	31 Day Chart
KT801	0 to +100°F/C	C410	C412	
KT801	-50 to +50°F/C	C411	C414	
KT801	0 to +250°F/C	C432	C439	
KT802/KT803/KT855	0 to +100°F/C	C410	C412	C409
KT802/KT803/KT855	-50 to +50°F/C	C411	C414	C406
KT802/KT803/KT855	0 to +250°F/C	C432	C439	C407
KT802/KT803/KT855	0 to +500°F/C	C428	C459	C408
KT804	0 to +1000°F/C	C441	C440	
KT804	0 to +2000°F	C443	C444	
KT804	-20 to +20°F/C	C445	C448	
KT804	+20 to +100°F/C	C446	C449	
KT804	+50 to +150°F/C	C447	C450	

Accessories (for current pricing go to www.dicksonweb.com or call 1-800-323-2448)

Description	Order Number
NIST Traceable Calibration 3-pt. (new unit)	N300
NIST Traceable Calibration 1-pt. (new unit)	N100
A2LA Accredited Calibration 3-pt. (new unit)	N400
Pens (6 red)	P222
Universal International AC Adapter	R065
4" Piercing Probe, 5' Coiled Cable, +1650˚F (+900˚C)	D605
5" Immersion Probe, 5' Coiled Cable, +1650˚F (+900˚C)	D608
6" High Temperature Basic Probe, +2100˚F 316 Stainless Steel	A203
10' Straight Extension Cable (for probe)	D617
100' Straight Extension Cable (for probe)	A202
1/8" Compression Fitting (for D164 & A203 probes)	D163

Calibration

Your instrument was carefully tested and calibrated before being shipped from the factory. For greatest accuracy, we recommend factory re-calibration every 6-12 months. Call customer service at (630) 543-3747. If you wish to do calibration yourself, follow these procedures.

1. To activate calibration mode, turn the unit on and press and hold both the On/Off button and the Adjust-Up button (making sure to press the Adjust-Up button first so the unit will not turn off). The led will blink in amber rapidly for about five seconds, and then the led will turn off. Release the On/Off button and the Adjust-Up button, the led will then blink amber at which point only the pen being adjusted will show on the display.

2. To raise the unit of measurement, press the Adjust-Up button. To lower the unit of measurement, press the Adjust-Down button. Pen home switches between the red and blue pens on a two pen unit and stores the current adjustment value.

3. When calibration is complete, press the On/Off button. Calibration is stored in memory even after you turn the unit off. User calibration information will not be lost if AC power fails.

4. Note: After two hours, if no buttons are pressed, the unit will time out of user calibration and resume normal operation. The user calibration is stored separately from the factory calibration. If you wish to cancel out your user calibration, simply enter calibration mode and toggle through the steps without adjusting displayed readings. Exit by pressing the On/Off button. You have now restored factory calibration.

Your KT8 unit is calibrated at the factory with the probe provided with the unit. If you are going to use an extension cable (length 50', 15, 24 meters or greater) you will need to re-calibrate the KT8 (with the extension cable connected) to receive optimum accuracy. Likewise, if you switch back to using less than 50' of cable with a unit that you have calibrated for use with an extension cable that is 50' or greater, you will need to re-calibrate the unit for the shorter length.

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Calibration Services - New Units

N100 - NIST Traceable Calibration 1-Point: Includes documentation to one Dickson pre-selected point on new units only.

N300 - NIST Traceable Calibration 3-Point: Includes documentation of three Dickson pre-selected points (a high, medium, and low) on new units only.

N400 - Deluxe A2LA Accredited NIST Traceable Calibration 3-Point: ISO Guide 25/A2LA Documentation of 3 pre-selected points of as found data before and after calibration for Dickson temperature and/or humidity instrumentation on new units only.

N995 - NIST User Selected Temperature Points: Documentation of one customer specified point. Should be selected in addition to one of the above calibration options.

The Importance and Benefits of Regular Calibrations

Once you begin to use your precision Dickson instrumentation, regular calibrations are necessary to ensure accurate readings.

The following Calibration Services are available:

N150 - NIST Traceable Calibration 1-Point: Includes documentation to one Dickson pre-selected point after re-calibration.

N350 - NIST Traceable Calibration 3-Point: Includes documentation of three Dickson pre-selected points (a high, medium, and low) after re-calibration.

N450 - Deluxe A2LA Accredited NIST Traceable Calibration 3-Point: ISO Guide 25/A2LA Documentation of 3 pre-selected points of as found data before and after calibration for Dickson temperature and/or humidity instrumentation.

N995 - NIST User Selected Temperature Points: Documentation of one customer specified point. Should be selected in addition to one of the above calibration options.

Why should I recalibrate my instrumentation?
Over time dirt, dust and normal handling can throw your precision instrumentation out of calibration. Regular calibrations ensure that you receive the most accurate readings possible.

How often should I recalibrate my instrumentation?
Depending on the environment your instrument is used in and how often it is handled you will want to recalibrate your instrument every 6 to 12 months. Instruments in environments where there are extreme temperatures, wide temperature ranges, humidity or pressure variations, high condensation, dirt, dust and other debris will require calibration at least every 6 months. Instruments that are frequently moved or in locations with heavy machinery that cause vibrations should also be calibrated at least every 6 months.

Why should I return my instrument to Dickson for calibration?
Dickson calibrates your instrument at the factory using proprietary production/calibration software that guarantees proper calibration.

Our Capabilities
Dickson is the first manufacturer of humidity and temperature instrumentation to receive A2LA accreditation. We are also NIST Traceable; our procedures conform to MIS-STD-45662A, ANSI/NCSL 2540-1-1994, ISO/IEC Guide 25 and ISO10012. We are experts in the manufacture and calibration of humidity and temperature instruments.

Fast Service: Our turnaround time is 3 days or less so you receive not only expert service but fast service as well.

Easy: We make it easy for you! No phone calls for Return Authorization Numbers are required. We remind you when your instrument is due for calibration. You simply send in the completed Calibration Order Form with your unit for calibration with freight prepaid to Dickson.

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Quick Start

Your KT8 recorder has been preset to operate using the most popular settings.

KT801/02/03/55
  Recording Time: 7 day
  Temperature Range: 0 to +100°F
KT804
  Recording Time: 7 day
  Temperature Range: 0 to +250°F

A pen and a chart have already been installed for your convenience. All you need to do is start using your KT8 recorder with the settings listed and follow these quick start instructions.

1. Plug in AC adapter
2. Plug in battery
3. There are two ways to adjust the chart to set the correct time:
   1. The chart time can also be set manually by inserting a coin into the groove in the chart hub and turning clockwise until the correct hour (and day if applicable) on the chart is referenced to the timing arrow.
   2. (This feature should be used for fine adjustments only) To adjust the chart time, turn the unit on and press and hold Adjust-Up and Adjust-Down buttons located on the back of the unit next to the dip switch. The green led will blink rapidly for about five seconds, then led will remain solid green. While in this state Adjust-Up button will move the chart forward (clockwise) and Adjust-Down button will move the chart backward (counter clockwise). Rotate the chart until the correct hour (and day if applicable) on the chart is referenced to the timing arrow. Once you have set your chart, press the Pen Home button to exit Chart Adjust Mode. The unit will take one minute to exit Chart Adjust Mode once Pen Home is pressed.
4. Remove the protective pen cap
5. Unit comes on when power is restored

Probe

A beadwire K-thermocouple probe is supplied with your unit. This probe may be used as a disposable attachment and re-ordered when needed.

Power Supply

We recommend using AC power with one 9V battery installed as a back-up power source. This ensures that your recording will not be interrupted when there is a power failure. The AC adapter plugs into the back of the recorder beneath the probe.

Pens

The pens move across the chart as sensor readings change. At any given time there may be a slight discrepancy in the position of the pen and the reading on the display due to hysteresis.

For visual spot checks the display is more accurate than the pen position but both are within the stated specifications of the unit (see "Specifications" on pg. 2).

Pen Installation

1. Press the "Pen Home" key to return pen to the home position.
2. Simply slide used pen cartridge off and slide new one on. Lower pen arm lifter.
3. Press the "Pen Home" key to return pen to chart position.

Pen Home Adjust

1. Pen adjust may be needed if the pen(s) and display do not match.

2. While the unit is on, press and hold both the Pen Home button and the On/Off button (making sure to press the Pen Home button first so the unit will not turn off). The led will blink rapidly between amber and green for about five seconds, the LED will then turn green, release the Pen Home and On/Off buttons. The led will flash amber and green for one second and the led will turn off.

3. One pen model: The red pen will move to the outer edge of the chart and is ready to be adjusted. Use the Adjust-Up and Adjust-Down buttons to move the pen to the maximum temperature line on the chart.

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Once the pen is set, the Pen Home button will move the pen to reaffirm the new pen position. Press the On/Off button to exit pen home adjust.

4. Two pen models: Both pens will move to the outer edge of the chart, and then the shorter red pen will move to the current position. Use the Adjust-Up and Adjust-Down buttons to move the pen to the maximum temperature line on the chart. Once the shorter red pen is set, the Pen Home button will move the shorter red pen to the outer edge of the chart and the longer blue pen will move to its current position. The Adjust-Up and Adjust-Down buttons will adjust the longer blue pen position. Once the pen is set, the Pen Home button will move the longer blue pen to the outer edge of the chart and the shorter red pen will move to its new position. Each time pen home is pressed the two pens will switch positions (moving the most recently adjusted position) until the On/Off button is pressed to exit pen adjust mode.

5. Note: Pressing the On/Off button will exit the adjustment and return the unit to normal operation. Each time the pen home or On/Off button is pressed, the adjustment currently in progress will be stored. The unit will take one minute to exit Pen Adjust Mode once the On/Off button is pressed.

Power Supply
This is not a battery powered unit. The battery is for backup only. This unit includes an AC adapter.

Chart Installation
1. Press the pen home key to make pens move to the outside of the chart and off of the chart paper.

2. Remove the recorded chart if present.

3. Place the new appropriate chart on the chart hub – being certain that the edge of the chart slides under the clip located at the outside of the chart. NOTE: The chart should lay flat on the dial face.

Battery Operation
On/Off
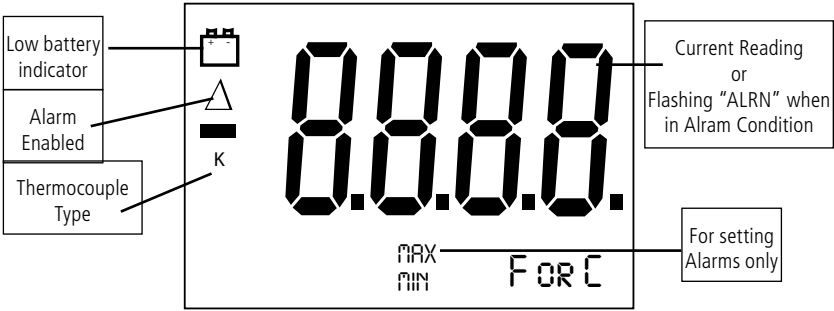When you press the "ON/OFF" button the pens will go home and the unit will shut off.

Alarm
1. To set the alarm, turn the unit on and press and hold the Alarm button. The LED will blink red rapidly for about five seconds, and then the led will go solid green. Release the Alarm button and the led will go off. At this point the display will show the following: ON with a delta symbol, or OFF without a delta symbol.

2. Pressing either the Adjust-Up or Adjust-Down buttons, located on the back of the unit next to the dip switch, will toggle the alarm on or off.

3. Pressing Pen Home will scroll to the next alarm option. The options are as follows:
    1. alarm on or off
    2. pen 1 alarm min
    3. pen 1 alarm max
    (if two pen unit the following states also exist)
    4. pen 2 alarm min
    5. pen 2 alarm max

4. In order to set pen alarm minimums and maximums, pressing the Adjust-Up will increase the alarm value, and pressing the Adjust-Down will decrease the alarm value. There is acceleration if the Adjust-Up button is held down. Repetitively pressing the pen home button will scroll through the five options until the alarm button is pressed to exit from alarm adjust. Each press of the Pen Home or Alarm button will store the new settings. The unit will take one minute to exit Alarm Set Mode once the Alarm button is pressed.

5. If the alarm is triggered, ALRN will show on the display, the led will show as solid red and the alarm will sound. Press the Alarm button to silence Audible Alarm.

Pen Home
Press the "PEN HOME" key while the unit is operating and the pens move to the outside of the chart. Press the "PEN HOME" key again and the pens will return to current reading points on the chart.

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Display Symbols

- Low battery indicator
- Alarm Enabled
- Thermocouple Type
- Current Reading or Flashing "ALRN" when in Alram Condition
- For setting Alarms only

Dip Switch Set-up

To set-up the KT8 for your specific application, you might need to change some of the Dip Switches.

DICKSON KT8 Dip Switch Settings: Up = On; Down = Off							
Switches 1 - 6	For Model	1	2	3	4	5	6
7 Day	All Models	D	D				
24 Hour	All Models	D	U				
31 Day	KT802/03/55	U	U				
Fahrenheit	All Models			D			
Celsius	All Models			U			
-50° to 50°F/C	All Models				D	D	U
0° to 100°F/C	All Models				D	D	D
0° to 250°F/C	All Models				D	U	U
0° to 500°F/C	KT802/03/55				U	D	D

Remember to install the correct chart to match corresponding switch setting

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DICKSON KT804 Dip Switch Settings: Up = On; Down = Off							
Switches 1 - 6	For Model	1	2	3	4	5	6
7 Day	KT804	D	D				
24 Hour	KT804	D	U				
31 Day	KT804	U	U				
Fahrenheit	KT804			D			
Celsius	KT804			U			
0° to 1000°F/C	KT804				D	D	D
0° to 2000°F	KT804				D	D	U
-20° to +20°F/C	KT804				D	U	D
+20° to 100°F/C	KT804				D	U	U
+50° to 150°F/C	KT804				U	D	D

Remember to install the correct chart to match corresponding switch setting

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Recording Time

The KT8 has three different recording time options: 24 hour, 7 day, and 31 day (31 Day available on models KT802/03/55) . Dip Switch #1 and #2 control the recording time.

24 hour	#1 down #2 up
7 day	#1 down #2 down
31 day	#1 up #2 up

NOTE: Remember to install correct chart to match corresponding switch setting.

°F/C

You can record in °F or °C with the KT8 by using dip switch #3.

°F	#3 down
°C	#3 up

Temperature Range
KT801/02/03/55 dip switches for ranges

0 to +100°F/C	#4 down #5 down #6 down
-50 to +50°F/C	#4 down #5 down #6 up
0 to +250°F/C	#4 down #5 up #6 up
0 to +500°F/C	#4 up #5 down #6 down

KT804 dip switches for ranges

-20 to +20°F/C	#4 down #5 up #6 down
+20 to +100°F/C	#4 down #5 up #6 up
+50 to +150°F/C	#4 up #5 down #6 down
0 to +1000°F/C	#4 down #5 down #6 down
0 to +2000°F (°F only)	#4 down #5 down #6 up

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Troubleshooting

Symptom	Cause	Check/Remedy
Instrument not responding to key press		• Slower, firmer key presses
Instrument turns off		• Check AC adapter connection
Pen trace too fine or absent	Tip too short, cartridge dried out	• Pen may need to be replaced • Remove pen cap
Temperature Pen & Display do not match		• Check dip switch setting & proper chart • Need for pen adjustment, see page 4, "Pen Adjust"
PROB displayed	Probe not plugged into recorder	• Plug "K-thermocouple" into back of recorder (see diagram, page 3)

Warranty

Dickson warrants that the products it sells will be free from defects in material and workmanship under normal use and service for a period of twelve months after delivery. In the event of a claim under this warranty, the product or part must be returned to the factory for repair or replacement (shipping pre-paid) with a Return Authorization Number (see Return Information above). It will be repaired at Dickson's option without charge. This warranty DOES NOT cover routine calibration, pen, chart and battery replacement. The foregoing warranty and remedy are exclusive and in lieu of all other warranties either expressed or implied. Dickson shall not be liable for consequential or incidental damages resulting from failure or malfunction of its products. Dickson makes no warranty for products not manufactured by it or for any products modified by buyer, or subject to misuse or neglect.

Factory Service & Returns

Contact the factory (630-543-3747) for a Return Authorization (RA) Number before returning any instrument. The model number, serial number and a purchase order number will be requested before an RA number is issued.

• Carefully repack the instrument, label the outside of the box with the RA# and return the instrument (freight pre-paid) to Dickson.
• All instruments that do not have the RA# clearly marked on the outside of the box will be refused. When returning instruments for credit, please include all accessories in shipment.
• Calibration/Freight charges are non-refundable.

NOTE: Dickson shall not be liable for consequential or incidental damages resulting from failure or malfunction of its products.

Customer Satisfaction
Dickson takes pride in providing you, the customer, with the highest quality instrumentation. We welcome the opportunity to help you in any way possible. Whether it be a question or a new idea in documentation, the Dickson Company would like to hear your response. Please call our Customer Service Department at 1-800-323-2448 or (630) 543-3747 (in Illinois).

Software Return Policy
IMPORTANT-Read your Software License Agreement carefully before installing software. DIckson will accept returns for replacement of defective disks and CDs only.

DICKSON
930 South Westwood Avenue
Addison, Illinois 60101
Phone: (630) 543-3747 • E-mail: DicksonCSR@dicksonweb.com

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Fax to: 1-800-676-0498 **Mail to: Dickson, 930 S. Westwood Ave, Addison, IL 60101**

Step 1 - Bill To:

Name _____

Company _____

Address _____

City _____

State _____ Zip _____

Phone (_____) _____ – _____

Email _____

Step 2 - Ship To (if different than above)

Name _____

Company _____

Address _____

City _____

State _____ Zip _____

Phone (_____) _____ – _____

Email _____

Step 3 - Ordering Information

Order #	Quantity	Price/Unit	Total
		$ /each	$
		$ /each	$
		$ /each	$
		$ /each	$
		Subtotal:	$
	In Illinois, add 7.5% sales tax ▶	Tax:	$
		Freight:	$
	All Prices in U.S. Dollars ▶	**Total:**	$

Step 4 - Payment Method

☐ Check: Check # _____

☐ Money Order

☐ Credit Card: ☐ AMERICAN EXPRESS ☐ MasterCard ☐ VISA

Credit Card Number: Expires: (mm/yy)

☐☐☐☐–☐☐☐☐–☐☐☐☐–☐☐☐☐   ☐☐ / ☐☐

_____
Signature

☐ Purchase Order: P.O.# _____ (Net 15 days for established customers)

Customer #: _____

U.S.A. Freight Charges

Total Order	UPS 2nd Day	UPS Next	UPS Ground
$0-100	$17	$35	$11
$101-400	$21	$44	$16
$401-700	$29	$59	$19
$701-1,000	$38	$62	$27
$1,001-1,500	$57	$79	$40
$1,501-2,000	$75	$99	$47

$2,001-over Please call Dickson Customer Service

All shipments UPS 2nd day unless otherwise requested. Prices subject to change without notice.

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