DICKSON

KT6

Temperature Chart Recorder

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Product Specifications

KT603

KT655

Temperature Ranges (user selectable):	0 to -100°F/C, 0 to -50°F /C, -50 to 50°F/C, 0 to 50°F/C, 50 to 100°F/C, 0 to 100°F/C, 0 to 250°F/C
Recorder Accuracy:	±.5% of chart range and ±1.8°F (1°C) Recorder only
Sensor Compatibility:	Standard K-Thermocouple (other temperature sensor types available on special order)
Ambient Operating Conditions:	+32 to +122˚F (0 to +50˚C) 0 to 95% RH (non-condensing)
Recording Time (user selectable):	24 hour and 7 day
Power:	120V 50/60Hz (240V 50/60Hz models available)
Power Cord:	6' (2m), cord with wall transformer
Power Status:	LED indicator
Battery Back-up:	One 9V alkaline battery
Battery Back-up Life:	Up to 24 hours
Probe:	4' Teflon coated K-Thermocouple beadwire probe with mini-connector
Calibration:	User: Adjustable zero point; Factory: zero and span
Chart Size:	6" (152mm) diameter
Alarm Contacts:	User selectable MAX/MIN set points (set in conjunction with alarm contacts)
Digital Display:	LCD 3.5 digit
Keypad Functions:	ON/OFF, pen home, time adjust, alarm set (available) and calibration
Digital Display Resolution:	0.1˚ resolution -9.9˚ to 199.9˚; 1˚ resolution above 200˚ and below -9.9˚
Response Time:	30 seconds at 63% of full scale
Mounting:	Surface or panel mount, DIN compatible
Enclosure Dimensions:	7.56" x 7.56" x 3.25" (192mm x 192mm x 83mm)
Panel Cut-out Dimensions:	6.9" x 6.9" (188mm x 188mm)
Depth Behind Panel:	2.0" (51mm)
Included With Recorder:	AC Adapter, Pen 9V Battery, Starter Pack of (C657) Charts and 4' Bead Wire Probe

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Operating Information

Pen:

Hysteresis (a property that occurs when tension is applied to an object) causes the pens to move in increments across the chart as the sensor readings change. However, the display readings are not affected by the property of hysteresis. For this reason the display provides smoother and faster readings than the pen. At any given time there may be a slight discrepancy in the positions of the pens and the readings on the display.

For visual spot checks the display is the most accurate but both are within the stated specifications of the unit (see "Specifications").

Pens (2 pen KT6):

The blue pen has a longer pen arm than the red pen. The pens are offset to allow the red pen to glide under the blue pen. The blue pen indicates the correct time and the red pen precedes it by 3/16 of an inch.

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 is built into the back of the recorder. **NOTE:** When the unit is in battery back-up mode, the recorder will update temperature readings at a much slower rate. The battery should be replaced once a year and after power failures of more than a few hours.

To Replace Battery:

1. Open the door of the recorder by depressing the door latch.
2. Press the "HOME" key
3. Lift the chart, if there is one present, to fully expose the battery compartment and press down on the tab to release battery compartment door.
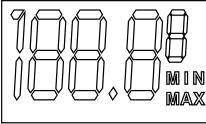4. Replace 9V battery

Alarm Relays

The SPST 24V 500mA relay contacts are normally open and will close on alarm conditions when the alarms are enabled. Relay contacts are always functional when the alarm is enabled. Dip Switch #8 has no effect on the relay. The relay will close only during minimum and maximum alarm conditions. 2 pen units have two sets of relay contacts which operate independently.

NOTE: For compliance to CE directives, do not remove the rubber cover from the alarm relay terminals when the terminals are not used.

Display Symbols (optional)

Figure 4

C: Indicates ˚C

F: Indicates ˚F

0: Zero calibration mode

A: Alarms enabled or alarm set mode

MIN:
This symbol is displayed when you are setting a minimum alarm or during a minimum alarm condition (when alarms are enabled)

MAX:
This symbol is displayed when you are setting a maximum alarm or during a maximum alarm condition (MIN and MAX flash when the alarms are enabled and no alarm condition exists)

1: Channel One
2: Channel Two — **Two channel units only**

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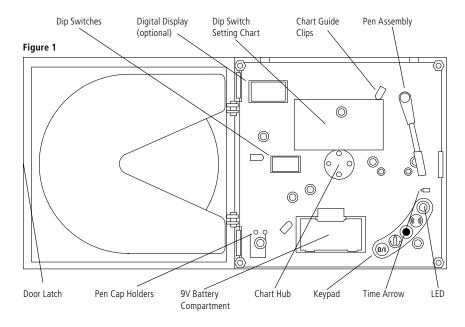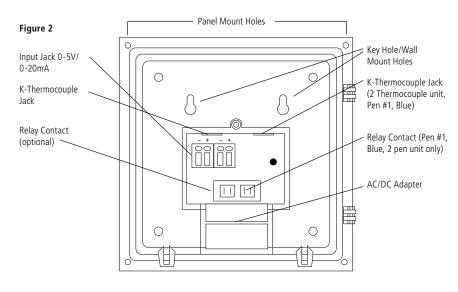Setup &
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Charts & Accessories

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

Range	24 Hour Chart	7 Day Chart
-50 to +50°F/C	C652	C650
0 to ±50°F/C	C654	C653
0 to ±100°F/C	C658	C657
0 to +250°F/C	C660	C659
0 to +500°F/C	C662	C661
50 to +100°F/C	C656	C655

Description	Order #
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 (single pen unit) (6 red)	P222
Pens (dual pen unit) (3 red/3 blue)	P266
Extended 2 year Warranty	E200

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Figure 1

Dip Switches   Digital Display (optional)   Dip Switch Setting Chart   Chart Guide Clips   Pen Assembly

Door Latch   Pen Cap Holders   9V Battery Compartment   Chart Hub   Keypad   Time Arrow   LED

Figure 2

Panel Mount Holes

Input Jack 0-5V/ 0-20mA

K-Thermocouple Jack

Relay Contact (optional)

Key Hole/Wall Mount Holes

K-Thermocouple Jack (2 Thermocouple unit, Pen #1, Blue)

Relay Contact (Pen #1, Blue, 2 pen unit only)

AC/DC Adapter

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Getting Started

Your KT6 recorder has been preset to operate using the most popular settings. To change the range, use dip switches (page 6). **NOTE:** Dip switches can only be changes when unit is off.

>**Recording Time:** 7 day
>**Range:** 0 to 100˚F

A pen(s) and a chart have already been installed for your convenience. All you need to do to start using your KT6 recorder with the settings listed above is follow these quick start instructions:

1. Plug in the AC adapter
2. Plug in thermocouple probe(s).

NOTE: Be sure to observe proper polarity when connecting wires from transmitter.

3. Remove the protective pen cap from red pen

and insert on Pen Cap Holder.
4. Press the "ON/OFF" key to turn instrument ON. (see "Keypad Operation")
5. The instrument will enter a 5 second warm-up phase, ending with the pen(s) moving to the appropriate temperature reading(s). Under warm-up mode the green LED flashes until ready. When ready, LED will stay solid green.
6. Set the appropriate time by pressing the "CHART ROTATION" key on the lower right of the dial plate. The chart will turn clockwise while the button is depressed. (**CAUTION: Do not manually try to turn the chart hub. Doing so may damage instrument**). Continue the rotation until the correct hour and day on the chart is referenced to the timing arrow. (See "Instrument Anatomy)

Installation

Before you install your KT6 recorder, read through this entire manual to find out about all the options that are available to you.

Your recorder has been shipped with the following items:

1. One starter box of 0-100 7 day charts
2. One 9V alkaline battery
3. One AC adapter
4. One operation manual
5. One or Two bead-wire K-Thermocouple probes

Place the KT6 on a flat, vibration-free surface. Be sure it is in a vertical position and level. For best performance and longevity, the location should be a clean environment, free from dust and corrosive fumes. Do not exceed temperature specifications.

Wall Mount: Keyhole slots are provided on the KT6 for wall mounting.

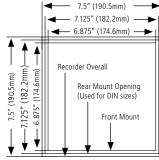**Panel Mount:** See the dimensional drawing for exact panel mount cut out dimensions.

Figure 2.5

Chart Installation

Use the following procedure to install or replace a chart in the recorder.

1. Open the door by pressing the door latch.
2. Press the "HOME" key to move the pen to the "Pen Lift" position. The pen is automatically raised off the chart.
3. Remove the old chart, place the appropriate new chart on the Chart Hub - being certain that the edge of the chart slides under the Chart Guide

Clips located at the outside of the chart.
4. Press the "HOME" key to move the pen onto the chart.
5. Set the time by pressing the "CHART ROTATION" key, which rotates the chart. The chart will continue to rotate until the key is released. Release the "CHART ROTATION" key when the appropriate time is indicated at the time indicator clip.
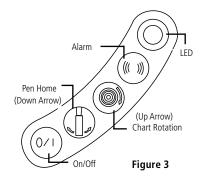
Pen Installation

A disposable fiber-tipped pen is installed in this recorder. When pen replacement becomes necessary, use the following procedure:
1. Press the "PEN HOME" key to return the pen to the Home position.
2. Gently lift the pen slightly and slide it off the Pen Arm.
3. Slide the new pen on the Pen Arm until the notch

in the pen is secure to the Pen Arm.
4. Remove the Pen Cap. Insert on the Pen Cap Holder.
5. Press the "PEN HOME" key to return the pen to recording position.

NOTE: To prolong pen life, replace Pen Cap when recorder is not in use. The Pen Cap can be stored on Pen Cap Holder located on the dial plate of the recorder.

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Figure 3

Labels: Alarm, LED, Pen Home (Down Arrow), (Up Arrow) Chart Rotation, On/Off

ON/OFF:
The "ON/OFF" key turns the unit on and off. Alarm and calibration settings are restored to the most recent values when the unit is turned on. If the unit is using AC power and power fails, the unit will switch to battery power without interrupting the recording capabilities. If power fails when the battery is not present, the pen will remain on the chart in recording position.

PEN HOME (also DOWN ARROW):
If the pen is located outside the chart, press the "HOME" key to move pen to recording position. Press the "HOME" key with the pen in recording position, and the pen will move to the outside of the chart and up the pen lift ramp (HOME).

The "PEN HOME" key is also used as a "DOWN ARROW" key to decrease values when setting alarms or calibration values.

CHART ROTATION (also UP ARROW):
The "CHART ROTATION" key sets the chart to the desired time setting. Press the "CHART ROTATION" key to rotate chart. Continue pressing until the chart reaches the desired time setting (the red pen aligns with the timing clip on the 1 thermocouple unit and the blue pen aligned with the timing clip on the 2 thermocouple unit). The chart rotation will reach full speed after a few seconds of holding down the key.
NOTE: Do not attempt to rotate the chart manually. The "CHART ROTATION" key is also used as an "UP ARROW" key to increase values when setting alarms or calibration values.

ALARM (optional):
The "ALARM" key turns the alarm on or off. When the alarm is on the display will flash the MIN & MAX indicators. Holding the "ALARM" key for 2 seconds will cause the unit to enter into the alarm set mode.

For a visual alarm the display will read MIN if a minimum alarm is activated or MAX if a maximum alarm is activated. The alarm condition will also trigger an audio alarm if the audio alarm is enabled (Dip Switch #8 is OFF). The alarm will sound until it is disabled or until the alarm condition no longer applies.

ALARM (2 pen KT6):
Holding the "ALARM" key for 2 seconds will cause the unit to enter into the alarm set mode for Pen 1. Pressing and holding the "ALARM" key a second time will put the unit in ALARM SET mode for Pen 2.

The "PEN HOME" and "CHART ROTATION" keys are used for setting alarms. The "PEN HOME" key decreases the alarm value and the "CHART ROTATION" key increases the alarm value.

1. To set the alarms press the "ALARM" key and hold for 2 seconds. The alarm minimum set point will be displayed with A and MIN will also be displayed.
2. Use the "HOME' key to decrease the minimum alarm setting and the "CHART ROTATION" key to increase the minimum alarm setting.
3. Press "ALARM" key a second time and the alarm maximum set point will be displayed along with A and MAX indicating that you can now set the maximum alarm. Use the same procedure as in step #2 for setting the maximum alarm setting. If your KT6 only has one pen go to step 6.
4. Press and hold the "ALARM" key for 2 seconds and the Pen 2 alarm minimum set point will be displayed along with A and MIN indicating that you can now set the minimum alarm. Use the same procedure as in Step #2 for setting the minimum alarm setting.
5. Press "ALARM" key a second time and Pen 2 maximum set point will be displayed along with A and MAX indicating that you can now set the maximum alarm. Use the same procedure as in Step #2 for setting the maximum alarm setting.
6. Press the "ALARM" key again to exit the alarm setting mode.
7. To activate the alarm, press the "ALARM" key.

LED:
The LED will be green whenever the unit is activated. The LED will flash green during initialization and warm-up. The LED showing red indicates the unit is in calibration mode. The LED will also flash when the unit is on if the AC power has failed at any time since the unit has exited the warm-up period.

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Dip Switch Setup

To set up the KT6 for your specific application, you might need to change some of the Dip Switches. The switches are located under the chart in the lower half of the dial plate. A pointed object can be used to change the settings. Remember to install the correct chart to match corresponding dip switch setting.

Slide toggle to this side for ON

All switches are shown in OFF position.

Slide toggle to this side for OFF

KT6 has two different recording time options

1 day	#3 ON
7 day	#3 OFF

°F/°C

°C	#4 ON
°F	#4 OFF

Temperature Range

0 to 100°	#5 OFF
	#6 OFF
	#7 OFF
0 to 50°	#5 ON
	#6 OFF
	#7 OFF
50 to 100°	#5 OFF
	#6 ON

	#7 OFF
0 to 250°	#5 ON
	#6 ON
	#7 OFF
0 to 500°F (only °F)	#5 OFF
	#6 OFF
	#7 ON
-50 to 50	#5 ON
	#6 OFF
	#7 ON
0 to -50	#5 OFF
	#6 ON
	#7 ON
0 to -100	#5 ON
	#6 ON
	#7 ON

ALARM SPEAKER:
The alarm speaker may be activated or deactivated with the use of Dip Switch #8

Deactivated	#8 ON
Activated	#8 OFF

The Alarm Speaker will sound during minimum, maximum or probe missing alarm conditions.

NOTE: dip switch settings are only updated when the unit is turned on.

Calibration

Your instrument was carefully tested and calibrated before being shipped from the factory. Additional calibration is not required. However, should calibration be desired in the future, we recommend that it be at our lab. Call Customer Service at (630) 543-3747. If you wish to calibrate yourself, follow these procedures:

1. To activate the calibration mode, turn the unit OFF. Now press the "ON/OFF" key and the "ALARM" key at the same time. The unit is in the "User Calibration" mode when the red LED is ON. The display will show a "C" during the warm up period and then will flash between 0 and F or 0 and C (depending on measurement selected). Match the reading of the recorder to the reading of the reference standard.

2. To raise the unit of measurement, press the "CHART ROTATION (UP ARROW)" key. To lower the unit of measurement, press the "HOME (DOWN ARROW)" key. To ensure that you have matched the standard, allow the pens to stabilize for at least 30 seconds before exiting calibration mode. If your KT6 only has one pen, skip to Step 4.

3. Press the "ALARM" button for 2 seconds to switch from Pen 1 to Pen 2. Repeat step 2 for Pen 2 temperature calibration.

4. When calibration is complete, simply press the "ON/OFF" key to save the calibration settings. Calibration is stored in memory even after you turn the unit OFF. User Calibration information will not be lost if AC Power fails.

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Troubleshooting

Symptom	Cause	Check/Remedy
Pen trace too fine or absent	Tip too sharp, cartridge	Sand tip, moisten or replace pen.
Readings of pen and display do not match	Wrong chart, pen not on properly, line thickness	Check Dip Switch #4, 5, 6. Push pen completely onto pen arm. Check to see that proper chart is installed
UND	Below range of recorder	Check temperature range.
Out of calibration **or** Questionable accuracy	Harsh environments, stressful conditions, or time.	See Calibration Procedure on page 8 **or** Return for factory re-calibration
OVR	Above range of recorder	Check temperature range
PRB	Sensor missing	Connect transducer to back of the recorder (see diagram on 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).

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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	UPSGround
$0-100	$15	$31	$9
$101-400	$19	$39	$14
$401-700	$26	$53	$17
$701-1,000	$35	$56	$24
$1,001-1,500	$52	$72	$36
$1,501-2,000	$69	$91	$43

$2,001-over Please call Dickson Customer Service

All shipments UPS 2nd day unless otherwise requested.

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