M750 SERIES
DIGITAL THERMOMETERS
INSTRUCTION MANUAL

M750

M700 SERIES PRODUCT DESCRIPTION

M700 THERMOMETER PACKAGE FEATURES
8 to 15 Second Temperature
Fahrenheit or Celsius Temperature Mode
Audible Peak Hold Temperature Beep (1)
Audible Low Battery Warning Beep (2)
Peak Hold Temperature Mode (indicated by **PH**)
Peak Hold Temperature Mode indicated by flashing decimal point
Continuous Temperature Mode (indicated by **CO**)
Calibration Check Position
Self re-setting fuse
Ambient light sensing display
Charging Indicator
Battery Voltage Indicator
Err1 Reading when probe is not attached or not reading properly
Err2 Reading when low battery is detected
Automatic shut-off after five minutes

M750 THERMOMETER PACKAGE FEATURES
Additional Features on the M750
Automatic shut-off after five minutes or determined by customer via software
RS232 Port Built into unit
RFID Reader Compatible thru RS232 Port
255 Temperature and ID storage locations
1023 Temperature and ID storage locations (December 2005)
Temperature, ID, time stored as space delimited ASCII file
9600 Baud rate
Information stored as:
       Tag ID #
       Date
       Time
       Temperature
Real Time Clock Feature
User determined features through software
       Audible Peak Hold Temperature beep enabled / disabled
       Manual ID Entry

Fahrenheit or Celsius
Automatic Shut-off time
Confirmation audio signal of RFID tag being read
Last four tag numbers displayed on LED Screen, full number stored in memory

M750 THERMOMETER PACKAGE INCLUDES
GLA M750 Thermometer
GLA M207R or M207S Probe
GLA C725 or C725C Battery Charger
Null Modem Serial Cable
GLA M750 Thermometer Series Instruction Manual / Quick Instruction Sheet

GLA M207 SERIES OF PROBES
The M207 Series of Probes has been designed for accurate rectal temperaturing of bovine, equine, swine, sheep, and small animals in an efficient manner. The M207 probe is available in either a right angle (M207R) or straight design (M207S). Sizes available include:
    M207R Right Angle Probe (42°)
        4.0" Right Angle Probe (10cm)
        3.0" Right Angle Probe (7.6cm)
     M207S Straight Probe
        4.0" Straight Probe (10cm)
        3.0" Straight Probe (7.6cm)
        1.5" Straight Probe (3.85cm)
    M207C Custom Probe
        Call for details

GLA C725 AND C725C BATTERY CHARGERS
C725 Charger
US standard, 115VAC 60 Hz, wall plug-in
C725C Charger (Adapters available)
International standard, 230VAC 50 Hz, wall plug-in

GLA M207 Probes and C725 Chargers can be purchased separately as needed

ACCESORIES

GLA H300 LEATHER HOLDER
    Leather holder, allows proper reading of LED Display in any position
    Leather strap allows it to be fitted to most belts / pipes / squeeze chutes

B601 BATTERY PACKS
    5 Cell NiCad Battery Pack

T-SHIRTS
    GLA M700 / 750 – the best in the end – just got better
    Call for available colors

OPERATING AND MAINTENANCE INSTRUCTIONS

M750 THERMOMETER
The M750 Series Thermometers are designed to be accurate, fast, durable, and easy to use. All M750 Thermometers can temperature in either Fahrenheit or Celsius. The following information will allow you to understand and use your new M750 Thermometer.

CONTROLS, INITIAL SETUP, AND USE

SWITCHES and CONNECTORS

ROTARY SWITCH FUNCTIONS – Four Positions (Control Knob)
   0 - **OFF**
   I – **CO** – Continuous Temperature Position (indicated by **CO**)
   II – **PH** – Peak Hold Temperature Position (indicated by **PH**)
   III - **F˚** (Fahrenheit) or **C˚** (Celsius) / Battery Voltage

Positions indicated by label on top of the M750 Bezel

0	I	II	III

PUSHBUTTON FUNCTIONS
   0 - Calibration Check (with probe not attached)
   I - Storage of Continuous Temperature into memory
   II - Storage of Peak Hold Temperature into memory
   III – Switches from **F˚** (Fahrenheit) or **C˚** (Celsius)

PROBE CONNECTOR
The M207 Probe attaches to this connector, the larger of the two connectors on the top of the unit.

If no probe is attached LED display will read **Err1** in Position **I** and **II**

CHARGER CONNECTOR
The C725 or C725C Charger attaches to this connector, the smaller of the two connectors on the top of the unit.

Attach the C725 or C725C Charger to the charger post and plug into a wall socket.

With the C725 Charger attached, and the unit is OFF, charging will be indicated by a rotating LED segment as well as the far right decimal point flashing. When the unit is fully charged the LED segment will stop rotating and the far right decimal point will remain lit. After a complete full charge, the unit will beep once and read **FULL** on the screen. The screen will then go blank leaving just the decimal point lit. The charging cycle will begin again when the M750 senses a significant drop in battery voltage. If the unit is ON, charging will be indicated by the far right decimal point being lit. Note: If the battery is very discharged, it may take up to one minute before the charging lights appear. Make sure the M750 Thermometer is fully charged before using it the first time. The M750 will charge while on, however it will charge at a faster rate if the M750 is turned off. .

INITIAL SETUP

FACTORY SETTINGS
Audible Signal when Peak Hold Temperature is reached
Automatic Shut-off after 5 minutes of inactivity

These defaults may be changed through software when the M750 is attached to computer, please see default information.

M207 PROBE NOT ATTACHED

Positions indicated by label on top of the M750 Bezel

0	I	II	III

Position I – OFF or Calibration check

With Control Knob in **OFF** position, depress and hold the Pushbutton Switch, the LED Display should read **100.0** indicating correct calibration. If your M750 does not read 100.0, please read FAQ pages for directions.

Turning the Control Knob back to this position, the LED display will read **OFF** or the screen will go blank and the unit will shut off.

Position I - Continuous Temperature (indicated by **CO**)
With the Control Knob in this position, the LED display will read **750** - **CO** - **Err1**. This indicates the Continuous temperature position and that there is no probe attached. Turning the Control Knob back to Position **0**, the LED display will read **OFF** or the screen will go blank and the unit will shut off

Position II – Peak Hold Temperature Position (indicated by **PH**)
With the Control Knob in this position the, the LED display will read **750** -**PH** - **Err1**. This indicates the Peak Hold Temperature position and that there is no probe attached. Turning the Control Knob back to Position **0**, the LED display will read **OFF** or the screen will go blank and the unit will shut off

Position III -Fahrenheit or Celsius – Battery voltage position
With the Control Knob in this position the LED display will read **750** -**Fx.xx** (Fahrenheit – voltage) or **Cx.xx** (Celsius – voltage). The actual battery voltage will be the number indicated after the **F** or **C** indicator. In this position, if you depress and hold the Pushbutton Switch for twenty (20) seconds, the LED display will read **F1.01** (Fahrenheit) and will then switch to Celsius mode; this will be confirmed by an audible beep. If the unit is in Celsius, depress and hold the Pushbutton Switch for twenty (20) seconds, the LED display will read **C1.01** (Celsius) and will then switch to Fahrenheit, this will be confirmed by an audible beep. Turning the Control Knob back to Position **0**, the LED display will read **OFF** or the screen will go blank and the unit will shut off. (F1.01 / C1.01are the current software revisions – and are subject to change).

M207 PROBE ATTACHED

Attach the M207 Probe. To attach the probe, screw the probe connector onto the mating receptacle connector. The probe should be attached FINGER TIGHT ONLY. Do not over tighten. The cord should be able to rotate freely on the connector.

Positions indicated by label on top of the M750 Bezel

0	I	II	III

Position 0 – OFF
The calibration check will **NOT** work with a M207 probe attached. The number displayed on the LED display is irrelevant and will be different with any individual probe – it does **NOT** indicate any sort of calibration number.

Position I - Continuous temperature (indicated by **CO**)
With the Control Knob in this position, the LED display will read **750 - CO** – **xxx.x** (Continuous temperature). In this position, the temperature will climb or drop based on the temperature the M207 probe is sensing. Inserting the probe into an animal will cause the temperature to climb; removing the probe will cause the temperature to drop. In this position the temperature may not stabilize. Turning the Control Knob back to Position **0**, the LED display will read **OFF** or the screen will go blank and the unit will shut off

Position II – Peak Hold Temperature Position
With the Control Knob in this position the LED display will read **750 - PH** - **xxx.x** (Continuous temperature). The M750 may beep when turned to this position if the unit is at a stable or "peak" temperature. Inserting the probe into an animal will cause the temperature to climb, and show a rapid flashing of the decimal point and when the Peak Hold Temperature is reached, the decimal point will stop flashing, followed by an audible beep. To reset the Peak Hold Temperature, turn the Control Knob to **CO (I)** position and then turn the Control Knob back to **PH** (**II**). Turning the Control Knob back to Position **0**, the LED display will read **OFF** or the screen will go blank and the unit will shut off.   When using the Peak Hold Temperature position, the temperature will stay displayed on the screen. When the probe is removed and a 2.0˚ temperature variation is detected and the probe is inserted into the next animal, the temperature will reset to Continuous temperature and then begin to climb to the new animal's temperature.

Position III - Fahrenheit or Celsius – Battery voltage position
With the Control Knob in this position the LED display will read **F** (Fahrenheit – voltage) or **C** (Celsius – voltage). The actual battery voltage will be the number indicated after the **F** or **C** indicator. In this position, if you depress and hold the Pushbutton Switch for twenty (20) seconds, the LED display will read **F1.01** (Fahrenheit) and will then switch to Celsius mode, followed by an audible beep. If unit is in Celsius, depress and hold the Pushbutton Switch for twenty (20) seconds, the LED display will read **C1.01** (Celsius) and will then switch to Fahrenheit, followed by an audible beep. Turning the Control Knob back to Position **0**, the LED display will read **OFF** or the screen will go blank and the unit will shut off

INTIAL USE

After charging, turn the unit ON. Turn the Control Knob to the **CO (I).** The display should read Continuous air temperature **(if no probe attached the display will read Err1).**

To take a temperature, insert the probe and the display reading will begin to climb. In approximately 8 to 15 seconds your reading will start to slow. Removing the probe will cause the temperature to begin declining.

To use the **Peak Hold Temperature** mode, turn the Control Knob to the **PH (II)**. Insert the probe, the decimal point will flash rapidly until the Peak Hold Temperature is measured, when the highest temperature is reached, the decimal point will stop flashing and an audible beep will be heard (if enabled). The temperature will remain on the screen five minutes. To reset the displayed temperature, turn the Control Knob to **CO (I).**

To check Battery Voltage, turn the Control Knob to the **BATT (III)**. The LED display will display your battery voltage. 7.0 is fully charged, below 5.8 indicates a low battery. A discharged battery will be indicated by **Err2** and audible beeps.

To switch the M750 from Fahrenheit to Celsius, turn the Control Knob to the **BATT (III)**, depress the PUSHBUTTON Switch the display will read **Fx.xx** for 20 seconds, the unit will beep and the display will now read **C1.00**.

To switch the M750 from Celsius to Fahrenheit, turn the Control Knob to the **BATT** (**III**), depress the PUSHBUTTON Switch the display will read **Cx.xx** for 20 seconds, the unit will beep and the display will now read **Fx.xx**.

M750 will shut off automatically after five minutes of inactivity. You must turn it back ON to take another temperature.

If the unit shuts-off due to inactivity while in the **CO (I)** turning the Control Knob to the **PH (II)** will turn the unit back on. Or you may turn the Control Knob to the OFF position and back to the **CO**

(I).

If the unit shuts-off due to inactivity while in the **PH (II)** turning the Control Knob to either the **BATT (III)** or **CO (I)** will turn the unit back on.

To recharge the battery pack, attach the charger connector onto the mating connector on the top left of the M750 Thermometer. Tighten FINGER TIGHT ONLY, to avoid breakage of the connector. Plug charger into wall outlet. Charging will be indicated by a rapidly flashing LED. If the battery pack fails to hold a charge after being adequately charged, the battery pack may need to be replaced. If you do not get any indication of the charging display, the charger may need to replaced.

You may use the M750 with the charger attached and plugged in at all times. Using M750 this way disables the Automatic Off feature. To turn the M750 OFF, turn the Control Knob to the OFF position.

Due to the microprocessor construction of the M750 Series of Thermometers, the M750 does a "self check" and "self calibration" each time the unit is turned on**. You may check calibration by depressing the Push Button Switch while in the OFF Position (M207 Probe must NOT be attached). In this position the unit should read 100.0 if calibrated properly.

BASIC CARE AND MAINTENANCE

Use your battery voltage reading to guide your recharge levels, 6.5 -6.9 volts indicates a full charge, 6.0 - 6.4 volts is normal, <6.0 volts is low, <5.5 is discharged. When recharging your M750 Series Thermometer, please be sure it is OFF; this will allow the M750 to charge faster. The M750 will charge if the unit is ON, but at a slower rate. If your batteries fail to hold a charge, it usually indicates a dead cell in the battery pack, which will need to replaced. Normally a battery pack will last 2 to 4 years before needing to be replaced.

When your battery pack does need replacing, you may send it to GLA and we will replace it for a nominal charge, or you may order a new battery pack directly from GLA, or from an authorized GLA distributor. When you order a battery pack directly from GLA, installation instructions will be included. **NOTE**: Soldering is required to replace the battery pack. **It is very important to follow the battery installation directions, very carefully, step by step.**

Treat your probe and cord assembly with care. Over-stretching the retractable cord will inevitably break the internal wires. If the probe tip is allowed to strike a hard surface such as concrete, the high impact pressure will often destroy the sensing element. DO NOT EXPOSE PROBES TO TEMPERATURES ABOVE 200° FAHRENHEIT (95° CELSIUS), AND DO NOT AUTOCLAVE OR HEAT STERILIZE YOUR PROBES. High temperatures such as these will damage the probe tip and require its replacement. If your probe, cord, or connector is damaged your LED display will indicate an **Err1**. You will only see **Err1** readings in Position **I** or **II**.

When using your M750 Series Thermometer outside, protect the unit from rain or extreme water exposure. The thermometer housing is splash-proof, but it is not designed to be continually exposed to high moisture situations or drenching.

Should your thermometer become wet inside, carefully remove the bottom four screws and bottom plate. Try not to damage the bottom gasket. Next remove the six window screws (note: they are different sizes than the bottom screws), gently push the window down, firmly grasp the bezel of the unit and slide it out of the box. Let any water in the unit drain out and allow the unit to dry overnight in a warm dry location. You may also use compressed air to dry the unit. Carefully reassemble your thermometer. It may continue to work properly if the water damage has not been too severe. If your thermometer does not work after these steps, please return your thermometer to GLA. **NO OTHER DISASSEMBLY SHOULD BE ATTEMPTED. DUE TO**

THE MICROPROCESSOR OPERATION, IT IS IMPORTANT THAT ANY FURTHER REPAIR BE DONE ONLY BY A QUALIFIED ELECTRONICS TECHNICIAN, PREFERABLY A GLA REPAIR TECHNICIAN.

Do not store your M750 Series Thermometer in vehicles or in outdoor sheds where temperatures may become very high. Ideally the thermometer should be stored in locations that do not exceed 115° Fahrenheit (45° Celsius).

Most GLA M750 Thermometers and M207 Probes can be repaired. If you feel that you have a damaged unit, please send it to the factory for repair.

With a minimum of care and maintenance, your M750 Series Thermometer should give you many years of service. We are always available to answer any questions you may have regarding our products.

REPAIR PRACTICES

GLA has been manufacturing animal health thermometers and probes since 1969. Most GLA Thermometers and Probes can be repaired when necessary. Battery chargers, since they are not manufactured by GLA, must be replaced when necessary.

When you send us a thermometer/probe repair, we request that you follow these guidelines:

> Include your thermometer, probe, and charger. This allows us to check the entire "package" and ensure that the repair is correct and complete.

> Include a note describing the problem you are experiencing, and in what situation the problem occurs, if you would like an estimate before any work is performed, please request that in your note.

> Include your complete name, shipping address, and telephone number with area code so that we may contact you with any questions. Repairs can be sent to GLA from any authorized GLA distributor, or directly to the GLA factory.

By following these guidelines, you will make it easier for us to repair your thermometer efficiently and correctly. If you would like an estimate on the cost of a repair, or if you wish to discuss any repair, please contact us toll free at **800 346-1182** or email at info@gla-ag.com**.** Our staff of repair technicians can advise you of the best steps to take.

FREQUENTLY ASKED QUESTIONS

It reads Err1 on my display:
Err1 display in Position **I** or Position **II** indicates that you either do not have a probe attached to your thermometer, or that you have a damaged or shorted probe. To correct this reading, either attach a M207 Probe or replace your damaged probe. It is often worth your time to remove your probe and look at the "prongs" on the probe connector itself. If the probe has been over tightened onto the thermometer, the prongs often do not make proper contact with the thermometer's probe connector. Gently spread the prongs out. This may solve the problem.

It reads Err2 on my display:
Err2 display indicates a low battery charge. This will be shown on your LED display, followed by a rapid beep. This will normally happen when your battery is discharged to 5.5 volts. To correct this, please charge your thermometer.

NO DISPLAY:
If there is no display, turn the rotary switch to Position **I**. If you still do not have a display, attach

the charger unit and plug it into a wall outlet. If the charging lights appear, allow it to charge fully. If the battery will not hold a charge and the charger appears to be working (indicated by the rotating LED segments), the battery is probably in need of replacement. See BATTERY REPLACEMENT. A very discharged battery may require up to one minute of charging before your charging lights will appear.

If there is no display when you attach the charger, please check your charger. Does it appear to be melted or is it hot to the touch when plugged into the wall? If so, you will need to replace your charger.

What do the "BEEPS" mean?
If you are in the Peak Hold Temperature (**II**) as your temperature stabilizes, the decimal point will stop flashing and the thermometer will give you a single beep.

Several rapid beeps followed by an **Err2** reading on your display indicates a low battery.

When switching from one temperature scale to another, the switch will be confirmed by a single beep.

When you store a temperature into the M750 and depress the Pushbutton, there will be three beeps, to confirm the temperature was stored.

When you plug a RFID reader into your M750, the M750 will beep twice.

When you plug your null modem cable into a computer, the M750 will beep once to confirm the connection is made.

When reading a RFID tag, the M750 will beep twice to confirm the RFID tag was read and stored.

When storing a temperature with a RFID reader attached, the M750 will beep 3 times to confirm the temperature storage.

Can you explain the difference in C316 Chargers vs. C725 Chargers?
The C316 Charger is designed to work on the GLA M212 Series Thermometer and the M216 Series Thermometers. When a C316 charger is attached to either a M212 or M216 Thermometer you will see a (-) minus sign indicated on the left side of your LED Display. The C316 Charger will work on a M500HPDT Series Thermometer if necessary; however, it is not designed to power it properly. You may find that your battery does not take a full charge with a C316 when used on a M500HPDT Thermometer. If you attach a C725 to your M212 or M216 Thermometer, you will NOT see a (-) minus sign indicating a charge. The C725 Charger is designed to work ONLY on the M500HPDT and M750 Series of Thermometers. A C316 Charger will **NOT** work on the M750 Thermometer.

The M750 does not read 100.0 when I check calibration in Position 0.
If your probe is attached, the M750 will NOT read 100.0; the number on the display is irrelevant and means nothing. Another probe may give you a completely different reading. Remove your probe and check calibration again. If your probe is not attached and it reads -40.5 on your display – your calibration check position is damaged and can be repaired, please send your M750 in repair. If you have any other reading than 100.0 you have a damaged unit and you must return it to GLA for repair.

Will my M750 read below freezing?
Yes, the M750 Thermometer will read below freezing, however we cannot and do not guarantee the accuracy of the M750 outside of the temperature range of 80° -120° Fahrenheit / 30° – 50° Celsius.

Will my M750 read above boiling?
Yes, the M750 Thermometer will read above boiling, however we cannot and do not guarantee the accuracy of the M750 outside of the temperature range of 80° -120° Fahrenheit / 30° – 50° Celsius. However prolonged use above boiling will damage your probe.

When I turn my M750 off, the display will not always read OFF.
If you rapidly turn the M750 ON or OFF, your display may not read OFF. The M750 requires that a temperature is "sensed" by the probe before the unit may read OFF. As long as the screen is blank, your unit is OFF.

My M750 does not turn ON when I push the Pushbutton.
Unlike previous GLA Thermometers (M211 / M212 / M216 / M500 Series) the push button does not power the unit. The Control Knob is the power switch.

My display screen only shows a partial number, or is only partially lit.
This is normally caused by one of two problems. The unit may have gotten wet and there is a corrosion problem on the circuit board itself. Please see "Basic Care and Maintenance" instructions. Or the more common problem is that the M750 has been dropped hard and the LED's have come out of their retaining sockets. If this may be the case, loosen the six window screws; gently push down evenly on the window, pushing the LED's back into place. Re-tighten the window screws, being careful not to over tighten them, and this should solve your problem. If it does not, you will need to send your M750 to GLA for service.

My display shows FULL.
FULL is an indication of one of two things. If charging your M750 it indicates a fully charged battery. If **FULL** appears on your screen in either CO **(I)** or PH **(II)** mode, it indicates the memory is full in the thermometer and you must clear the memory of the M750 to continue to store additional information.

My M750 has reset the date to 01/01/1970 and the clock to 00.00.00.
This is usually caused by a completely dead battery or a software problem. You may reset your date and time via the menu options. If this occurs ID's and temperature should not be lost as they are stored in EPROM rather than the processing chip. Please check your log.

IF YOU ARE EXPERIENCING PROBLEMS NOT DISCUSSED HERE, OR YOU NEED FURTHER INFORMATION, PLEASE CALL US AT 800 346-1182 AND A TECHNICIAN WILL BE GLAD TO ANSWER YOUR QUESTIONS.

GLA RFID and Computer Interface Instructions

The M750 Thermometer includes a serial interface allowing a RFID reader or a connection to an external computer. The M750 can log up to 253 sets of data or (1023 sets of data December 2005). Each set of data includes date, time, RFID, and temperature. This data is quickly acquired in the field and then can be loaded into a computer at later point in time. Prior to the M750 a user would have to write down any identifying information and the temperature data on each animal. This data would then be manually entered into the computer.

RFID

Process to automatically identify animals by RFID:

> - Turn the M750 to **CO (I)** or **PH (II)**
> - Plug the RFID reader into the connector on the bottom of the M750. The M750 will

beep twice to indicate that it has recognized the RFID reader.
- Read the tag, pressing the button on the RFID reader until it beeps, the M750 will then beep twice to indicate the tag data is stored. The last four digits of the tag will be displayed on the LED screen.
- Take the temperature of the animal, when the temperature is reached, press the Push Button to store the temperature. The M750 will then beep three times to indicate storage of the data.

If your display shows FULL when the Pushbutton is pressed, the logging memory is full. You will need to clear the information out of the M750 by storing it on your computer.

COMPUTER INTERFACE

The M750 includes a serial (EIA232) computer interface. Use the supplied null modem cable to connect the M750 to a serial port on your computer.

You may use a terminal emulation program like HyperTerminal or Tera Term to communicate with the M750. Set the program to run at 9600bps at 8N1 with ANSI emulation.

When the computer is first connected to the M750, the M750 should be ON; the M750 will beep once to indicate it recognizes a terminal is connected. The menu should appear on your computer screen, you may need to hit the space bar to bring the menu up, otherwise you may see the current temperature only.   Hitting the space bar will refesh the menu. The menu will indicate the current settings and procedures to change these settings. The screen display is as follows:

GLA Agricultural Electronics
4120 Horizon Lane Suite F
San Luis Obispo CA 93401-7500
Phone: 800.346.1182 / 805.541.3758
Fax: 805.541.2695
www.gla-ag.com / info@gla-ag.com

M750 Digital Thermometer
Firmware Version X.XX

Date: MM/DD/YYYY   Time: HHMMSS
Temperature Scale: Fahrenheit (Celsius)
Beep: Enabled (Disabled)
Peak Hold beeps after stable 3 seconds (default)
Display blanks after 5 minutes of inactivity (0=no blanking) (default)
Battery Voltage: X.XXV
Charger Present: Yes (No)
Charging: Yes (No)

A – Display Log
B – Print Log
C – Clear Log
D – Set Date
E – Set Time
F – Select Fahrenheit
G – Select Celsius
H – Enable Beep
I – Disable Beep

J – Change Peak Hold Stability Beep Delay
K – Change Inactivity Display Blank Delay
S – Set Animal ID

XX.X = Current Temperature

Display Log: (A)
      - This displays the logged readings on the screen. You can use a copy and paste feature to insert these values into another application. You can also tell the terminal emulator to capture the text from the M750 and send it to a file. Enable text capture prior to selecting display log, and then disable it once it is on the screen. This data can then be used in other applications.

AnimalIdNum	Date	Time	Temp
	YYYYMMDD	HHMMSS	XXX.X
	YYYYMMDD	HHMMSS	XXX.X
	YYYYMMDD	HHMMMSS	XXX.X

Print Log: (B)
      - This will send the logged data to a printer. It uses ANSI escape sequences printer on and off. Hyper Terminal is unreliable in handling printer commands. Tera Term handles these properly. You can also define a printer as a text file (generic text file in Microsoft Windows). When you select Print log, Windows presents a dialog box where you can select which printer you wish to use. If you select the text file printer, you can send the log data to this file for use in another application. Note the data is space delimited and the first line holds the field names. The data should be easily imported into common spreadsheet programs.

Clear Log: (C)
      - This will allow you to clear the ID's and Temperatures stored in the memory. If you reach 253 stored ID's your LED will read **FULL**.

Set Date: (D)
      - The date is set according to the clock in the M750. Date is set in YYYY/MM/DD format. If the battery becomes completely discharged, the date and time will need to be reset.

Set Time: (E)
      - The time is set according to the clock in the M750. Time is set in a 24 hour (HHMMSS) format. If the battery becomes completely discharged, the date and time will need to be reset.

Select Fahrenheit: (F)
      - The current setting of the M750 is shown. The menu option will allow you to change from Fahrenheit to Celsius or vice versa.

Select Celsius: (G)
      - The current setting of the M750 is shown. The menu option will allow you to change from Fahrenheit to Celsius or vice versa.

Enable Beep: (H)
      - The beep feature of the M750 can be turned on or off with the menu options. We do suggest that you keep the beep enabled when using the M750 since it indicates the storage of information.

Disable Beep: (I)
      - The beep feature of the M750 can be turned on or off with the menu options. We do suggest that you keep the beep enabled when using the M750 since it indicates the storage of information.

Change Peak Hold Stability Beep Delay: (J)
- The Peak Hold mode beeps when the temperature indication stops increasing for a specified numbers of seconds. The menu allows the setting to be between 2 and 9 seconds. While the temperature is increasing in the Peak Hold mode, the decimal point flashes. It stops flashing when the temperature has reached its maximum.

Change Inactivity Display Blank Delay: (K)
- The M750 will turn OFF after a determined amount of inactivity time. The factory default is five minutes. You may change this from 00 to 99 minutes. 00 disables automatic shut-off if required for your application.

Set Animal ID: (S)
- The animal ID is normally entered into the M750 with an attached RFID reader. However, it can be entered manually with an attached computer. When Set Animal ID is selected, you are presented with a screen where you can key in an animal identification of up to 22 characters. The enter key should be pressed after the last digit (unless all 22 character positions were used). The M750 will beep twice indicating it has accepted the ID. This ID will be logged the next time a temperature is stored, by depressing the Push Button. Logging is indicated by three beeps. The M750 will also display the last four digits of the animal ID on the LED Screen if using a RFID Reader. If the animal ID is entered manually, the last four digits do not appear on the LED Screen. To escape the Set Animal ID screen, press the escape key.

Setting up Hyper Terminal

For those using Hyper Terminal, the terminal emulation program that is included with Microsoft Windows®, the following step-by-step instructions are provided.

1) Double click on the Hyper Terminal icon or choose it from the program menu.
2) Enter GLA in the New Connection dialog box and click **OK**
3) Select the appropriate communications port in the Connect To dialog box. In most cases, this will be "Direct to com1".
4) In the COM1 Properties dialog box, set Bits Per Second to **9600**. Set Data Bits to **8**, Set Parity to **None**. Set Stop Bits to **1**. Set Flow Control to **Xon/Xoff**. Click **Apply** and then **OK.**
5) Under the File menu, select Properties, click the Settings tab, and then select ANSIAS the terminal emulation.
6) In the File Menu, click Save to save these settings for your next use.
7) Next time you open Hyper Terminal, you can hit cancel when the New Connection dialog box opens. In the File Menu, select Open, then GLA.ht. In addition, you can create a shortcut on the desktop to GLA.ht to open Hyper Terminal and connect the M750 from the desktop.

Other Options

We actually *strongly* suggest that you use another good terminal emulation program - Tera Term. You can download a free copy from:

- http://hp.vector.co.jp/authors/VA002416/teraterm.html

Setting up Tera Term 2.3

Install
1) Download Tera Term 2.3 from http://hp.vector.co.jp/authors/VA002416/teraterm.html. The zip file is "tterm23".
2) Extract (unzip) to the sub directory of your choice.

3) From "tterm23" folder click "set-up" icon.
4) Select "Language"
5) Select "Continue"
6) Note about older version of Tera Term. Select "Continue" if not using an older version
7) Tera Term Destination Path. Select "Continue" to install in your default path (recommended).
8) Install is now complete. Close window, select "OK".

Set-Up
1) Go to "Ttermpro" folder (My Computer – Local Disk – Program Files – Ttermpro)
2) Select "Ttermpro" (Right click to "create shortcut" that can than be cut and pasted to desktop, Start Menu, etc…)
3) "Tera Term: New Connection" – Select "Serial" – Select "Com Port 1" (Com1) for serial cable (RS232) connection, the select "OK". Please note: Com1 is standard for serial connection, but maybe different in some computers.
4) Go to "Setup" menu and select "Serial Port"
5) "Tera Term : Serial Port Set Up" -   **Port** – **Com1** / **Baud Rate** – **9600** / **Data** – **8 Bit** / **Parity** – **None** / **Stop** – **1 Bit** / **Flow Control** – **Xon/Xoff** / **Transmit Delay** – **0.0**
6) Go to "Setup" – "save Setup" – File name "TeraTerm" – "Save".
7) Your settings are now saved.
8) Connect the supplied null modem serial cable (or a standard serial cable with a null modem adaptor) to the computer.
9) Turn on the M750 (any position).
10) Connect the other end of the cable to the M750 connector.
11) The M750 will beep once to confirm the connection.
12) The menu will appear (Note: you may have to "hit" the space bar for the menu to appear).
13) You are now up and running communication between the computer and the M750

BATTERY REPLACEMENT

All M750 Series Thermometers operate on a five-cell NiCad battery pack.   We recommend that you send your M750 Series Thermometer in battery replacement and general maintenance. You may, however, purchase B601 Battery packs from GLA or your local distributor. Installation instructions are available. **NOTE**: **Soldering is required to replace the battery pack,   it is very important to follow the battery installation directions, very carefully, step by step. NO OTHER DISASSEMBLY SHOULD BE ATTEMPTED. DUE TO THE MICROPROCESSOR OPERATION, IT IS IMPORTANT THAT ANY FURTHER REPAIR BE DONE ONLY BY A QUALIFIED ELECTRONICS TECHNICIAN, PREFERABLY A GLA REPAIR TECHNICIAN.**

GUARANTEE, WARRANTY, AND LIABILITY LIMIT

All GLA products are warranted against defects in materials and workmanship for two years from date of purchase. If, during the warranty period, the product is defective in material and/or workmanship (excluding battery pack deterioration, non-factory repairs, battery charger deterioration, moisture damage, or abuse), GLA will make the necessary adjustments and repairs. Other than expressly stated herein, GLA Agricultural Electronics makes no warranties, expressed or implied, with regard to the M750 Series of Thermometers and M207 Series of

Probes, including any warranty of merchantability of fitness for a particular purpose, and no claim of any kind against GLA Agricultural Electronics arising out of the use of the M750 Series of Thermometers shall be for more than the price paid to GLA Agricultural Electronics for the price of the GLA Thermometer. GLA shall not be liable for any special, incidental, or consequential damages, whether arising in contract or tort, resulting from the use of a GLA Thermometer.

The warranty period for GLA products (excluding negligence), is as follows:

M750 Series Thermometers-	2 years from date of purchase
M207 Probes-	1 year from date of purchase
B601 Battery Packs-	90 Days from date of purchase
C725/725C Chargers-	30 days from date of purchase.

The use or purchase of GLA Agricultural Electronics products to the general public is restricted. GLA products are intended for professional users only, including, but not limited to, animal health or livestock suppliers, veterinarians, physicians, or other professionals and qualified users. GLA products are surrendered by GLA with the understanding that it assumes no responsibility for resale or safe and knowledgeable handling. Neither GLA, its owners, nor its employees shall be held liable in any way for any personal or property damages resulting from, or relating, to the use of GLA products. Diagnostic errors resulting from malfunctioning GLA products remain the responsibility of the user.

For users in the state of California, the passage of Proposition 65 requires that we advise you that the GLA M750 Series of Thermometers contain a standard rechargeable NiCad battery pack which, if not handled properly, could conceivably be considered toxic. Should it have to be replaced, please take precautions not to expose it to heat or flames, and not to let it come in contact with food or drink. Please use reasonable care in handling the battery pack.

GLA's liability is limited to replacement or the repair of the GLA products purchased, or to the refund on undamaged items returned within 15 days. Returned items may be subject to a re-stocking fee.

WARRANTY FORMS

Returning your warranty form allows us to serve you better and ensures validation of your warranty. It also allows us to contact you with any changes or updated information about your new GLA M750 Thermometer. Please, take a moment to fill out the form and return it to us.

WHY TEMPERATURE YOUR ANIMALS?

- To monitor herd health and identify health problems early.
- To be able to correctly sort animals into the hospital pen.
- To know when to administer pharmaceutical products.
- To know when to stop administrating pharmaceutical products.

RECTAL TEMPERATURES OF SELECTED ANIMALS

ANIMAL	FAHRENHEIT	CELSIUS
Horse*	100.5°	38.0°
Beef Cattle	101.0°	38.3°
Dairy Cattle	101.5°	38.6°
Sheep**	103.0°	39.4°
Swine	102.5°	39.2°
Dog	102.0°	38.9°

Cat	101.5°	38.6°
Goat	102.0°	38.9°

* Body temperature is higher in young animals and lower in older   animals
** Sheep with fleece (s) have a higher body temperature

The temperatures listed above are average rectal temperatures under ideal conditions. Outside temperature, time of day, age of animal, infection, ovulation, estrus, or pregnancy may affect actual temperature.

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