

M216 HI-SPEED DIGITAL THERMOMETER

INSTRUCTION MANUAL



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OPERATING AND MAINTENANCE MANUAL

GLA M216 HI-SPEED DIGITAL RECHARGEABLE THERMOMETER

M216 THERMOMETER PACKAGE INCLUDES:

- ◆ GLA M216F or M216C Thermometer
- ◆ GLA M207R or M207S Probe
- ◆ GLA C316 or C316C Battery Charger
- ◆ GLA M216 Thermometer Instruction Manual

M216F OR M216C THERMOMETER

The standard GLA M216 Thermometer is a fast, accurate, and durable rechargeable thermometer available in either Fahrenheit (M216F) or Celsius (M216C) versions. All M216 Thermometers include the following:

- ON/OFF Switch
- Three Position Operating Switch
 - Battery Check Position
 - Operation Check Position
 - Temperature Position (either Fahrenheit or Celsius)
- LED Display
- Charging Connector
- Rechargeable NiCad Batteries

M216TC TRICKLE CHARGE THERMOMETER

The GLA M216TC Trickle Charge Thermometer allows the battery charger (C316 or C316C) to be connected to a wall outlet for continual charging. This maintains a full charge in the battery pack, (B601) and is most effective when the thermometer is mounted in a stationary position. The M216TC, available in either Fahrenheit or Celsius, includes the standard features of the M216 and adds:

- Trickle Charge Connector

M216H HOLD OPTION THERMOMETER

The GLA M216H Hold Option Thermometer will hold, on the display, the highest temperature recorded. When the probe is inserted to take a new temperature, the M216H resets and holds and displays the new high temperature. This is most effective in research applications, as it takes slightly longer to reach a stable temperature. The M216H, available in either Fahrenheit or Celsius, includes the standard features of the M216 and substitutes:

- Four Position Operating Switch
 - Battery Check Position
 - Operation Check Position
 - Temperature Position (either Fahrenheit or Celsius)
 - Temperature and Hold Option Position

GLA M216TC/H TRICKLE CHARGE WITH HOLD THERMOMETER

The GLA M216TC/H Trickle Charge with Hold Thermometer includes all the features of the M216, the M216TC, and the M216H in one unit. Available in either Fahrenheit or Celsius.

GLA M207 SERIES OF PROBES

The M207 Probes have been designed for accurate rectal temperating of bovine, equine, swine, sheep, and other 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
 - 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 Length Probe
 - Call for details

GLA C316 AND C316C BATTERY CHARGERS

- C316 Charger
 - US standard, 115VAC 60 cycle, wall plug-in
- C316C Charger (Adapters available)
 - International standard, 230VAC 50 cycle, wall plug-in

CONTROLS, INITIAL SETUP, AND USE

The M216 Thermometer is designed to be accurate, fast, durable, and easy to use. The following information will help you to understand and use your new M216 Thermometer.

CONTROLS

ON / OFF SWITCH

- Turns the M216 Thermometer on or off

FUNCTION SWITCH

- Position indicator switch that indicates the operating mode of the thermometer. The pointer switch indicates the following operations:

- RED POSITION
- YELLOW POSITION
- GREEN POSITION
- BLUE POSITION
- BATTERY CHECK POSITION
- OPERATIONS CHECK POSITION
- TEMPERATURE POSITION
- AUTOMATIC HOLD POSITION
(Optional position M216H only)

PROBE CONNECTOR

- The M207 Probe attaches to this connector.

CHARGER CONNECTOR

- The C316 or C316C Charger attaches to this connector.

TRICKLE CHARGE CONNECTOR

- The C316 or C316C Charger attaches to this optional connector for continual charging (M216TC only).

INITIAL SETUP AND USE

◆ Make sure the M216 Thermometer is fully charged. To do this, attach the C316 or C316C Charger to the charger post, plug into a wall socket, and then charge overnight (10-14 hours). Charging will be indicated by a lighted "minus" sign on the left side of the display. Unit must be turned OFF when charging.

After charging, turn the unit ON (ON/OFF Switch), and turn the FUNCTION Switch to the RED Position. The display should read between 30.0 and 34.5 on M216F Thermometers and 10.5 and 13.0 on M216C Thermometers. Note the reading and subtract 1.5 from that reading, this becomes your M216 RECHARGE POINT. You will need to recharge your M216 Thermometer when the reading is below that number.

For example, if your M216F reads 31.2 when it is fully charged overnight, subtract 1.5 from 31.2 to arrive at 29.7. When your M216F reads below 29.7, you need to recharge your M216 overnight (10-14 hours).

You should get in the habit of checking your battery reading at the beginning and end of each day. This may help extend the life of your battery. You may find it beneficial to write your recharge point on either your M216 or in your Instruction Manual.

◆ Check the OPERATIONS Position. Turn the FUNCTION Switch to the YELLOW Position. The display on the M216F should read between 99.9 and 100.1. The M216C should read between 39.9 and 40.1. These readings indicate the unit is calibrated and working properly. If you observe a reading outside of this range, it usually indicates a potential problem. See TROUBLE SHOOTING GUIDE.

◆ Attach the M207 Probe. To attach the probe, screw the probe cord connector onto the mating receptacle connector. The probe should be attached FINGER TIGHT ONLY. Do not force it on. The cord should be able to move freely at the swivel connector. . NOTE: The Temperature Position will show the same reading as the Battery Check Position (RED Position) when the probe is not connected.

◆ To take a temperature, turn the FUNCTION Switch to the GREEN Position and turn the unit ON. Insert the probe into the rectum of the animal and the display reading will begin to climb. In approximately 8 to 15 seconds your reading will start to slow. As you become experienced with your M216 Thermometer, you will

begin to recognize when the final temperature is almost reached, at least within a few tenths of a degree. If you are tempering several animals in succession, but there is a delay of more than three minutes between each tempering, you may want to turn off the thermometer to avoid unnecessary battery drain

- ◆ To recharge the battery pack, screw the charger connector onto the mating connector on the top left of the M216 Thermometer. Tighten FINGER TIGHT ONLY, to avoid breakage of the connector. Plug charger into wall outlet. If the unit is charging properly a "-" (minus) sign will light on the left side of the display window. Recharge overnight (10-14 hours). If the battery pack fails to hold a charge after being adequately charged, the battery pack or the charger may need to be replaced.

- ◆ Using the optional TRICKLE CHARGE feature (M216TC) requires that the unit be in a semi-stationary position. Connect charger to the charger post on the right side, this will allow a continual charge to be generated. NOTE: This is only for units with the optional charger post installed. Do not undertake this procedure with a standard M216F/M216C.

- ◆ Using the optional HOLD Feature (M216H only), requires the M216 to have a fourth position, a BLUE Position, as well as a fourth position on the FUNCTION Switch. If you **DO NOT** have a BLUE Position, **DO NOT** try to force the FUNCTION Switch into the fourth position. To use the HOLD Feature, turn the FUNCTION Switch to the BLUE Position, turn ON the M216H Thermometer, wait 60 to 120 seconds for the electronics to cycle. Insert the probe and wait for the climbing temperature to STOP. Removing the probe before the final temperature is reached will not allow the thermometer to "HOLD" the temperature. After the temperature climb has stopped, and you remove the probe the temperature will be held on the display until you insert it into the next animal, or it will fade after a several minutes.

BASIC CARE AND MAINTENANCE

- ◆ To extend the life of your batteries, do not overcharge the battery pack. Use your battery check reading to guide your recharge levels. When recharging your M216 Thermometer, please be sure it is OFF. If your batteries fail to hold a charge, it usually indicates a dead cell in the battery pack, which you will then need to replace. With proper care, your battery pack should last longer than the year warranted by the battery manufacturer. Normally it will last 2 to 4 years before needing to be replaced.

- ◆ When your battery pack (B601) does need replacing, you may order a new battery pack directly from GLA, from an authorized GLA distributor, or send it to GLA and we will replace it for a nominal charge. When you order a battery pack directly from GLA, installation instructions will be included. NOTE: Soldering is required to replace the battery pack.

- ◆ Treat your probe and cord assembly with care. Over-stretching the retractile 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.

- ◆ When using your M216 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. If you have this type of situation, please contact the factory for specific modifications.
Should your thermometer become wet inside (possibly indicated by erratic readings: see TROUBLE SHOOTING GUIDE), carefully remove the bottom four screws and black bottom plate, (trying not to damage the bottom gasket). Let any water in the unit drain out and allow the unit to dry overnight in a warm dry location. NO OTHER DISASSEMBLY SHOULD BE ATTEMPTED.

- ◆ Do not store your M216 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 M216 Thermometers, M206 and M207 Probes can be repaired when necessary. 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 M216 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 for 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.
- Include your complete name, 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**. Our staff of repair technicians can usually advise you of the best steps to take.

TROUBLE -SHOOTING GUIDE

NO DISPLAY:

If there is no display, attach the charger unit and plug it into a wall outlet. If the display appears, turn the unit off and allow it to charge fully. If the battery will not hold a charge and the charger appears to be working (indicated by "-" charger light), the battery is probably in need of replacement. See BATTERY REPLACEMENT.

If there is still no display when you attach the charger, the fuse may have been blown. This will require the M216 Thermometer to be sent in for repair to determine the cause of the short. If there is no indication of charging (no charger light "-"), the charger will need to be replaced.

ERRATIC READINGS:

Erratic readings in GREEN Position, only, with Probe attached, normally indicates a probe problem. Indicated by a running or jumpy temperature display, **OF.L** on the display, or BATTERY CHECK READING displayed.

Erratic readings, in all Positions, RED - YELLOW - GREEN, normally indicates moisture has been in the unit, or remains inside of the unit. This is indicated by display numbers changing radically or running, in all Positions, RED - YELLOW - GREEN. To check for moisture, remove the four bottom screws, carefully remove the bottom plate, trying not to damage the gasket. If wet, allow the unit to dry overnight in a warm dry place, with the bottom plate off. When replacing the bottom plate, be careful not to pinch the battery wires between the circuit board and the bottom plate. CAUTION: This is the only disassembly that should be attempted.

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.

BATTERY REPLACEMENT

M216 Thermometers operate on a five-cell NiCad battery pack. We recommend that you send your M216 Thermometer in for battery replacement and general maintenance. You may, however, purchase B601 Battery packs from GLA or your local distributor. Installation instructions are available.

GUARANTEE AND WARRANTY

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 of probe assembly), GLA will make the necessary adjustments and repairs. Under no circumstances shall GLA be liable to any user for any damages, expenses, lost profits, lost savings, or any other damages arising out of use or misuse of a GLA product.

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

M216 Thermometers	- 2 years from date of purchase
M206 Probes	- 2 years from date of purchase
M207 Probes	- 2 years from date of purchase
B601 Battery Packs	- 1 year from date of purchase
C316/C Chargers	- 90 days from date of purchase.

WARNING AND LIABILITY LIMIT

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 M216 Thermometer

contains 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 M216 Thermometer. Please take a moment to fill out the form and return it to us.

AVAILABLE ACCESSORIES

M207R -	Standard right angle probe 4.0 inch / 10cm.
M207S -	Standard straight probe 4.0 inch / 10cm.
M207R -	Right angle probe 3.0 inch / 7.6cm.
M207S -	Straight probe 3.0 inch / 7.6cm.
M207S -	Straight probe 1.5 inch / 3.85cm.
M207C -	Custom length probes are available
C316 -	Charger unit - 115VAC US standard
C316C -	Charger unit - 230VAC International standard
B601 -	Battery pack - 5 cell NiCad
H300 -	Leather belt holder for GLA Thermometers
H400 -	Tanera belt holder for GLA Thermometers
S200 -	Nylon shoulder strap for GLA Thermometers

RECTAL TEMPERATURES OF SELECTED ANIMALS

ANIMAL	FAHRENHEIT	CELSIUS
Horse*	100.5°	38.0°
Beef Cattle	101.0°	38.5°
Dairy Cattle	101.5°	38.5°
Sheep**	103.0°	39.0°
Swine	102.5°	39.0°
Dog	102.0°	39.0°
Cat	101.5°	38.5°
Goat	102.0°	39.0°

* Body temperature is higher in young animals and lower in older animals

** Sheep with fleeces (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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