



M950 Thermometer Instructions

GLA Agricultural Electronics
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Connectors:

Probe Connector

Attach Probe to this connector
If NO probe attached – **Please Attach Probe** message will be displayed
If probe is attached – **Temperature** will be displayed
If probe is damaged – **Probe Error Please Try Another Probe** message will be displayed

Sealed USB Charging Port

Insert USB Plug into this connector (black twist sealed cap)
When charging, battery icon will be displayed, as well as lightning bolt icon, if the unit is on.
If the unit is off, the display will be blank
This also the USB Communication port

Push Buttons

Blue: Menu / Off **Yellow:** Light
Green: Mode/Scroll **Orange:** Save/Select

Menu / Off Button (Blue)

Turns unit **ON**
Touch again for settings mode
Touch Mode/Scroll Button (**Green**) to select settings
UNITS: Switch from F° to C° (use Save/Select Button) (**Orange**)
AUTO OFF: Auto Shut Off Time (use Save/Select button) (**Orange**)
 Options: 5 / 15 / 30 / 60 Minutes / Off
SAVED TEMPS: Last eight (8) temperatures saved
SELF TEST: (use Save/Select Button) (**Orange**)
 Batt: Actual Voltage and battery strength %
 Probe: ACTIVE (attached) / NONE (not attached)
 Charging? : YES / NO
 Inside Temperature: Diagnostic Feature
 Cal Number: Diagnostic Feature
 Self-Test: Passed: (Indicates M950 Working Properly)
ABOUT:
 GLA-AG.COM
 THERMOMETER MODEL M900
 VERSION (software version)
Turns unit **OFF** – Depress and Hold for four (4) seconds

Mode/ Scroll Button (Green)

Turns unit **ON**

Switches Screens during Menu Use (scrolls down)

Switches between “**Cont**” Temp (Continuous) / “**Peak**” Temp (Peak)

Light Button (Yellow)

Turns unit **ON**

Turns **On** Back Light

Turns **Off** Back Light

Save/Select Button (Orange)

Turns unit **ON**

Saves temperature into **SAVED TEMPS!**

In **MENU** Mode will select the action chosen

Temperature mode:

Cont – ambient or continuous temperature

Peak – the highest average temperature recorded

Saved Temperatures:

Will display the last eight (8) temperatures saved

Storing the ninth (9th) temperature will delete the oldest temperature

Battery Life:

Indicated by lightning bolt icon on temperature screen

Actual battery voltage and percent of charge displayed on Self-Test Screen

Installed Lithium Ion battery can only be replaced by GLA

Probes:

All GLA Probes are useable on the M950

Damaged Probe indicated by **Probe Error Please Try Another Probe** message

Attaches to stainless steel probe connector

C965 USB Wall Charger:

100-240V 50/60Hz 5.0V

Inserts into sealed USB Port

It is important to close and seal the cap on this connector to prevent dirt and water damage

M950 Software:

The M950 Thermometer includes a mini USB to USB cable only

The M950 communicates through the USB port, not through a RS-232 Port. This may require an ethernet extender under certain circumstances

A device driver must be installed for the M950 to store information

You will find the M950 device driver on the enclosed USB jump key

You may use any terminal emulation program you prefer

Operating the M950 as a USB output

M950 must be in the temperature mode to output temperature

Menu / Off Button (Blue)

Turns unit **ON**

Touch again for settings mode

Touch Mode/Scroll Button (**Green**) to select settings

UNITS: Switch from F° to C° (use Save/Select Button) (**Orange**)

M950 can be in "cont" or "peak"

M950 must be in "auto off" or it will turn off at the predetermined time

Menu / Off Button (Blue)

Turns unit **ON**

Touch again for settings mode

Touch Mode/Scroll Button (**Green**) to select settings

AUTO OFF: Auto Shut Off Time (use Save/Select button) (**Orange**)

Options: 5 / 15 / 30 / 60 Minutes / Off

Currently the M950 will store 590 lines of data before it is filled

If the memory is full, you must erase/reset the memory

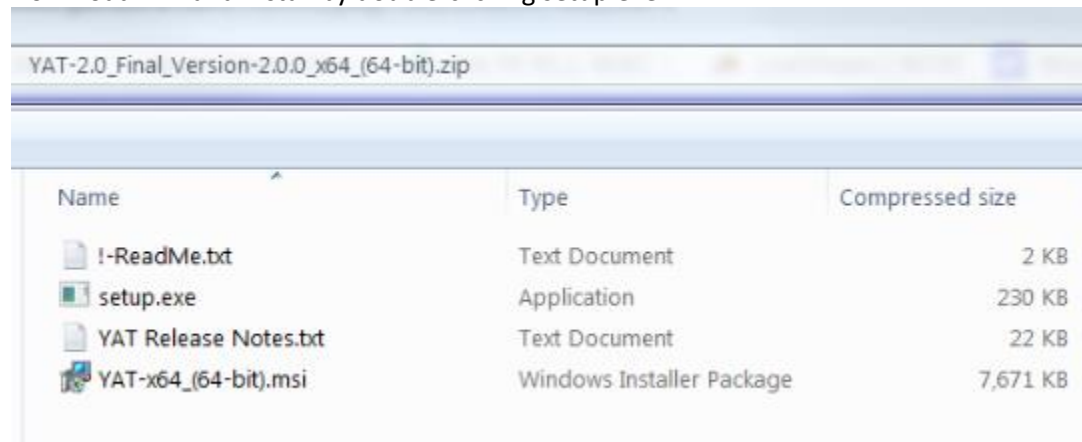
M950 Software:

You can communicate with and download data from the M950 with a simple terminal program. If you already have a favorite terminal program (HyperTerminal, RealTerm, etc), feel free to use it. We recommend YAT 2.0 (Yet Another Terminal). It's a free program you can securely download via SourceForge:

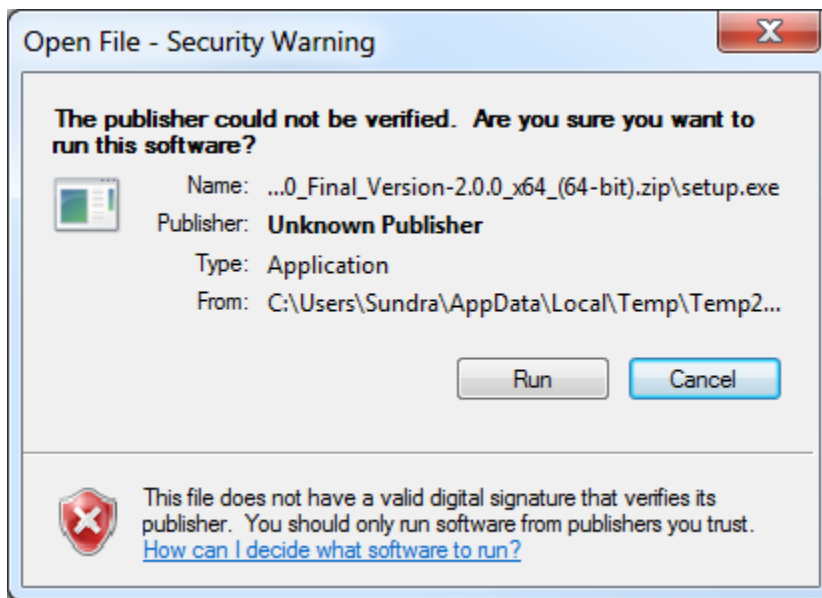
<https://sourceforge.net/projects/y-a-terminal/>

The following shows screenshots from a computer running Windows 7.

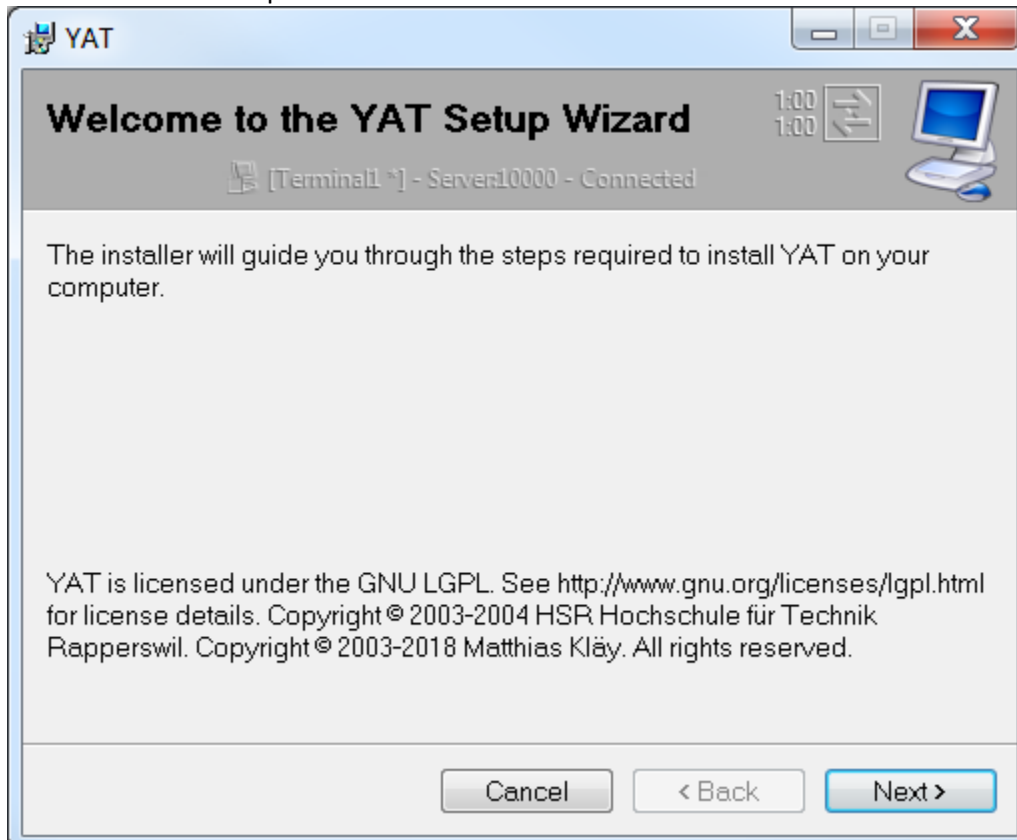
Download YAT and install by double-clicking setup.exe.



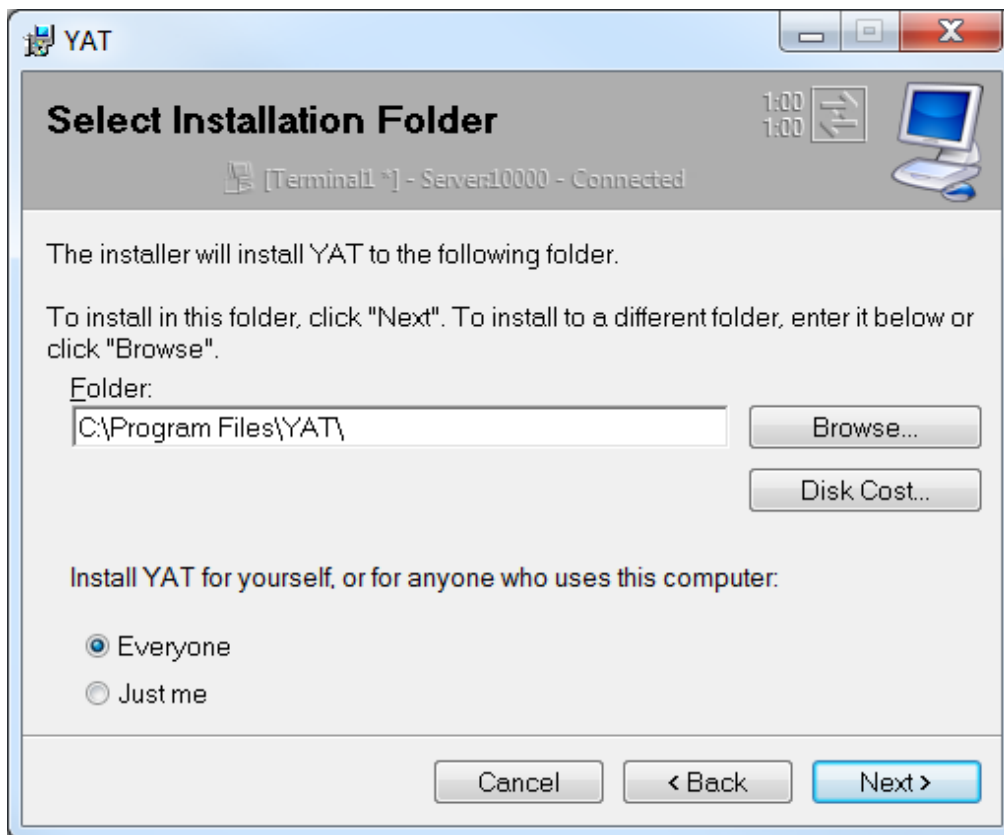
If you see a Security Warning saying the file does not have a digital signature, that's OK. Click "Run".



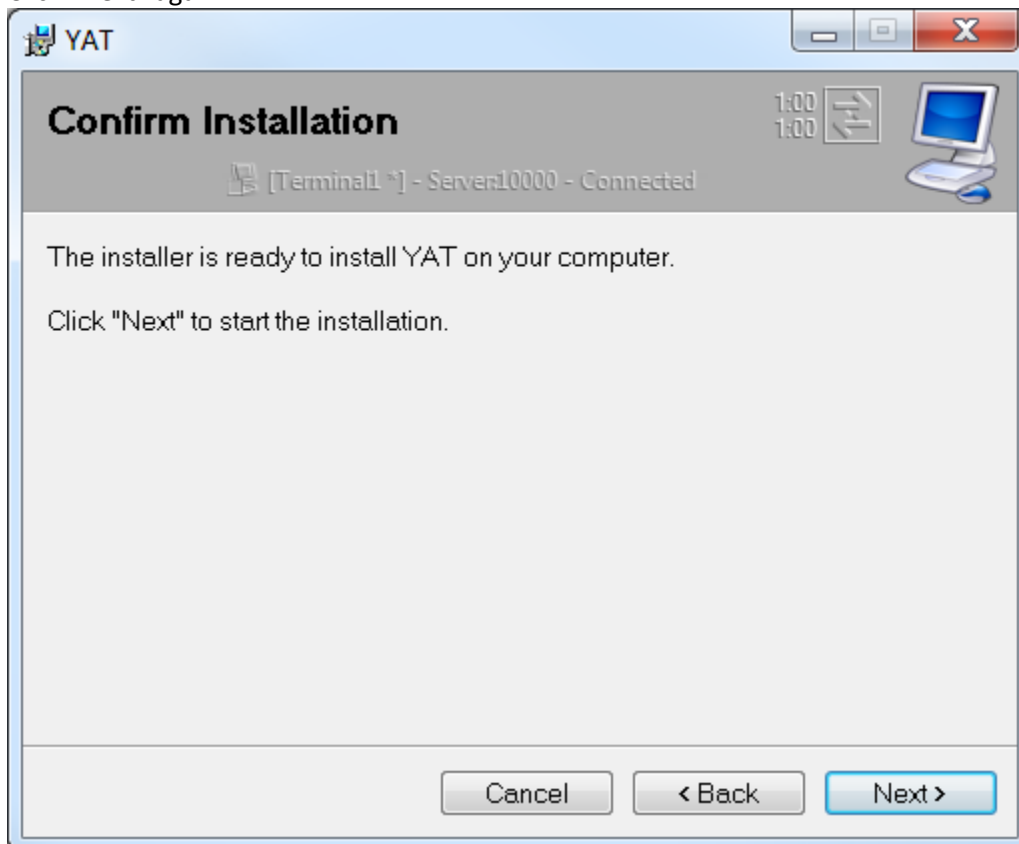
You should see a Setup Wizard. Click "Next".



If you don't have a preference, allow it to install YAT in the default location (click "Next").

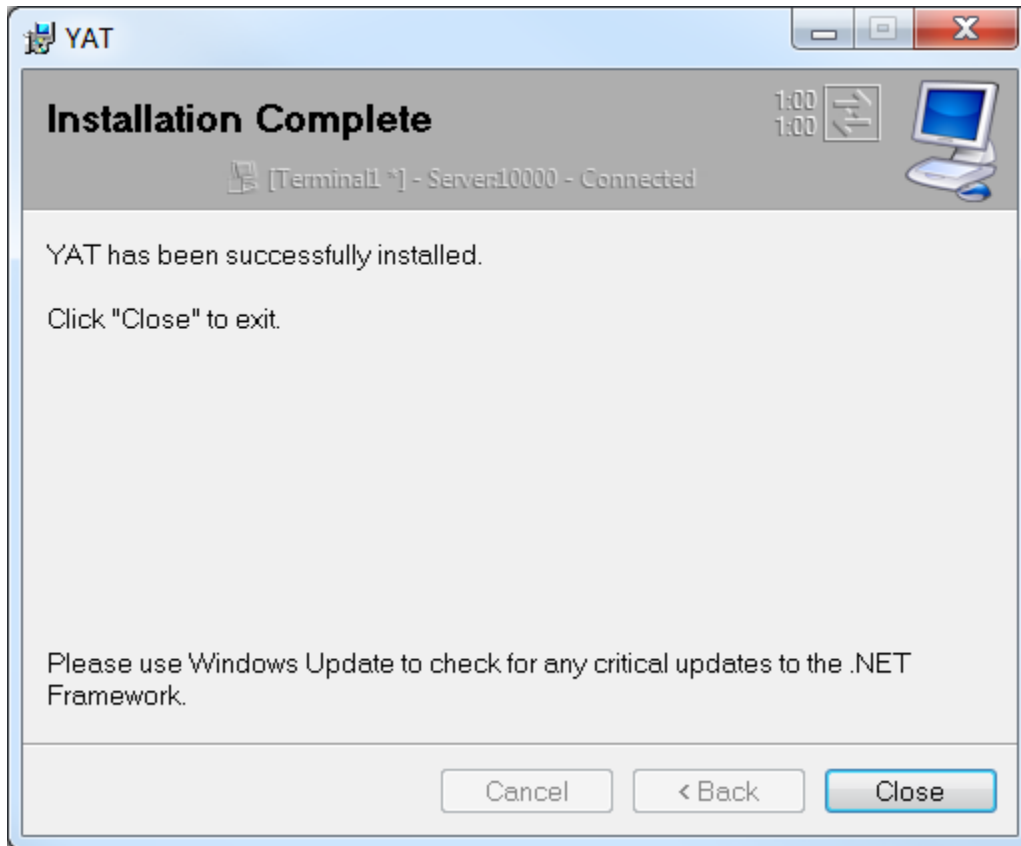


Click "Next" again.



There may be one more User Control screen asking if you want YAT to make changes to your computer. Click "Yes".

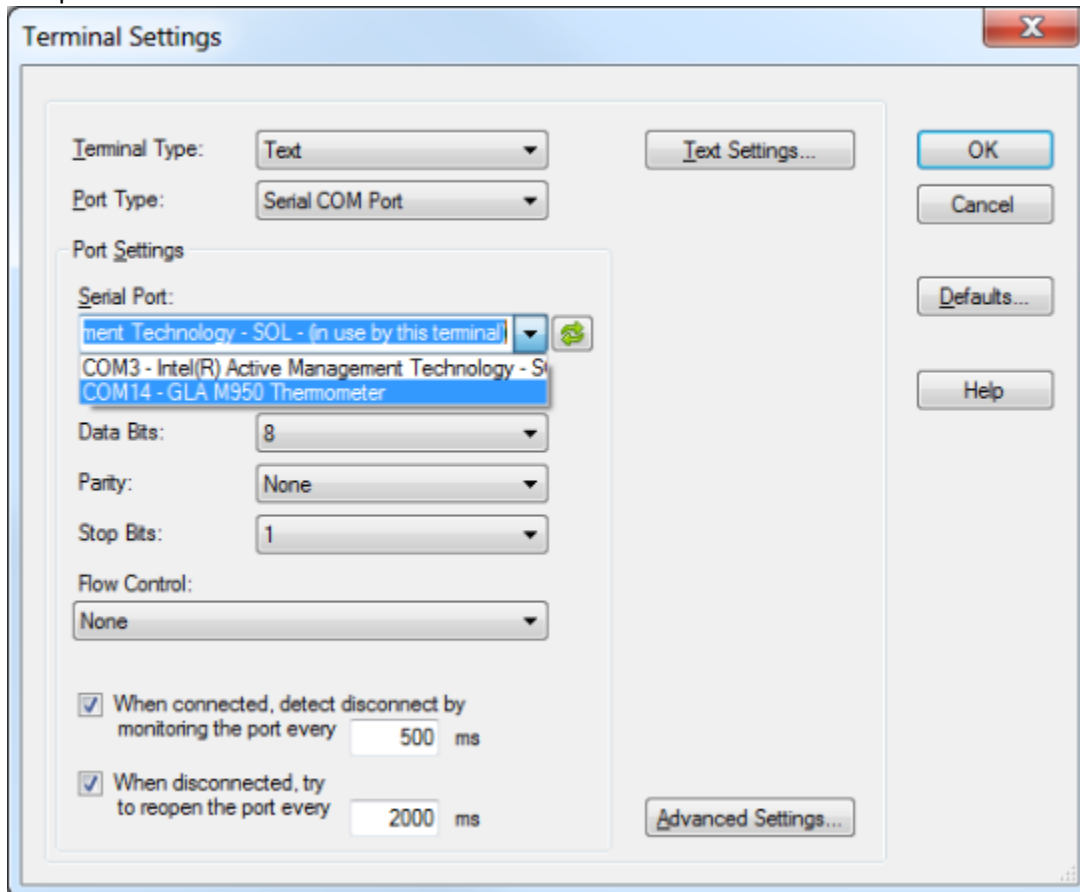
You should see this after a successful install. Click "Close".



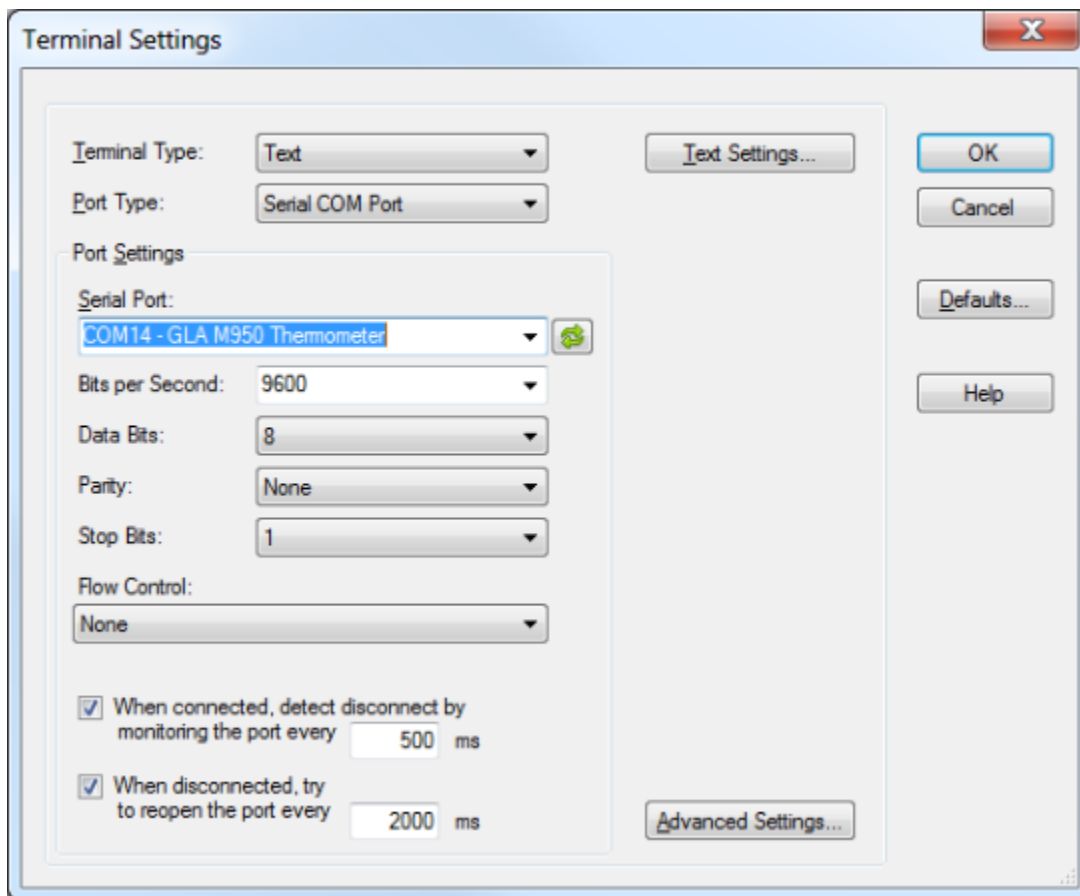
Navigate to the "YAT" folder under "Program Files" (or wherever you specified the install location if you changed it from the default). Right click "YAT.exe" and either create a shortcut on your desktop or pin it to your task bar. This will make it easier to access in the future.

Plug in your M950 thermometer. It should automatically wake up from sleep, if not, wake it up by pressing any button.

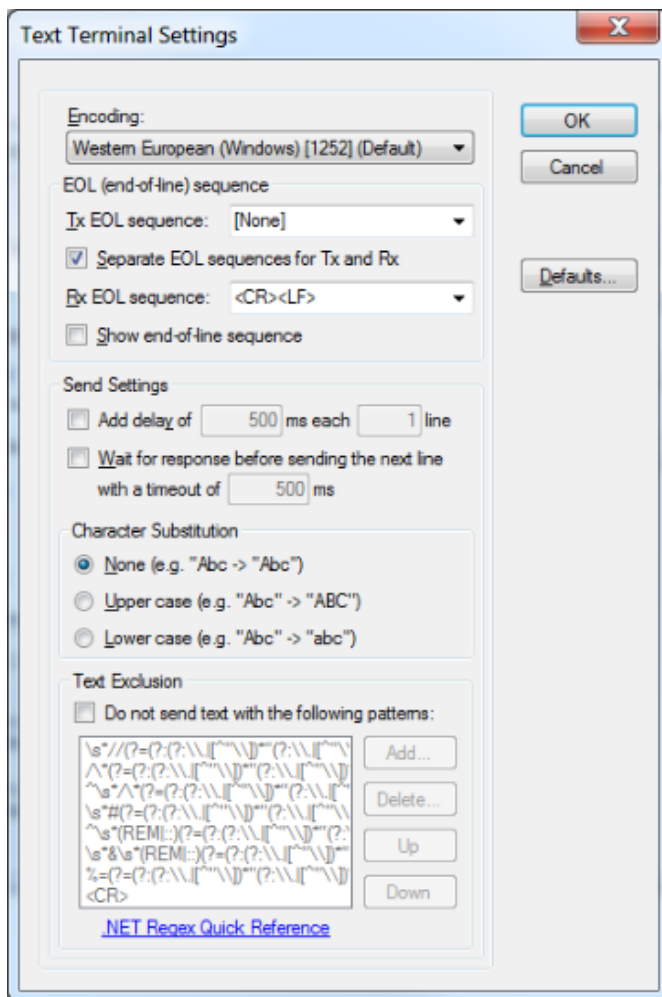
Click "Terminal" and choose "Settings". This screen will appear, and select the COM port that says "GLA M950 Thermometer" next to it. The number next to COM is not important, it will be different for each computer.



Set the Bits per Second (aka baud rate) to 9600, and make sure all other settings are the same as the image below:



Now click "Text Settings..." and this window will appear:

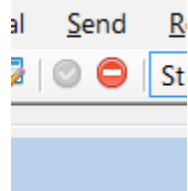


Make sure your "Encoding" settings are the same as above. You might have to change them from the default to the following:

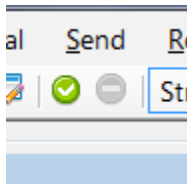
- Tx EOL sequence: None
- Separate EOL sequences for Tx and Rx: checked
- Rx EOL sequence: <CR><LF>
- Show end-of-line sequence: unchecked

Click "OK" twice to dismiss the windows.

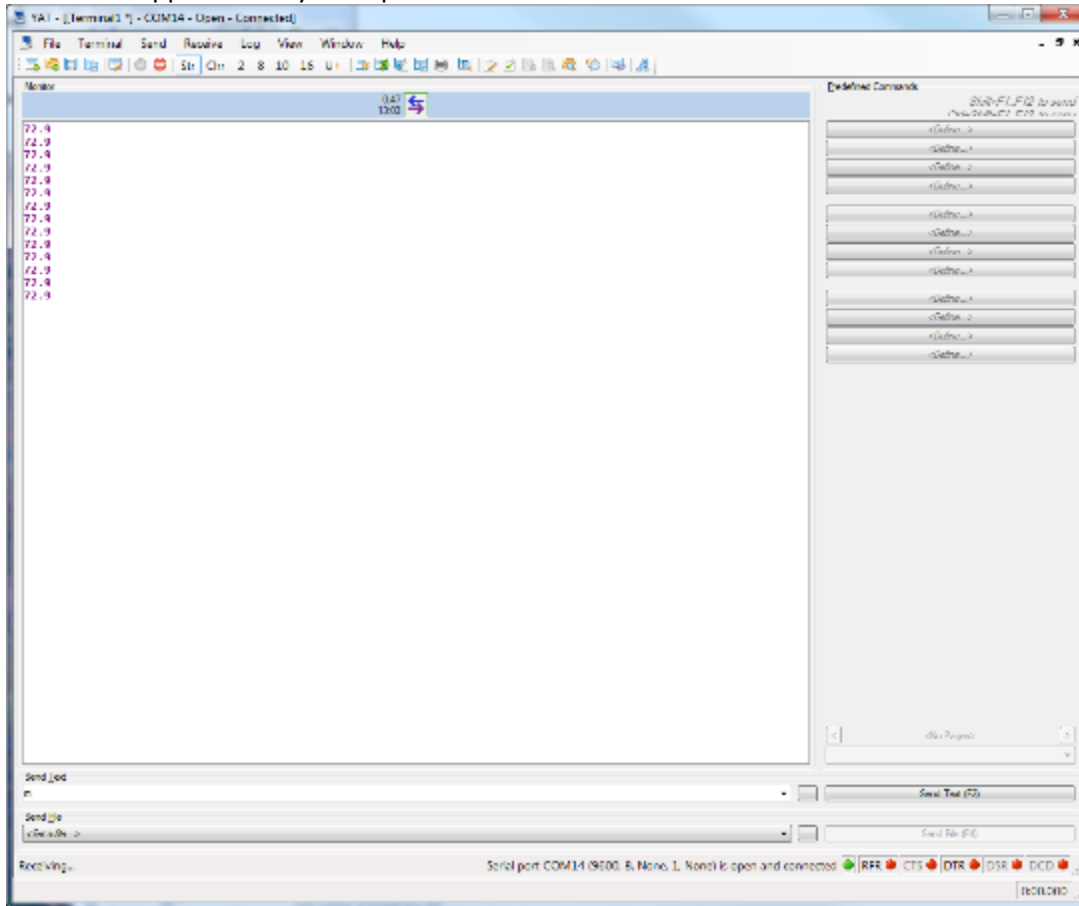
If you see a temperature appearing once per second in the Monitor window, congrats! You're connected. If not, your thermometer has probably gone to sleep. Let's re-start the session. Under "Send", you'll see two icons - a check and a minus.



If the minus is red like above, click it to disconnect. It should become grayed out and the check should become green and active.



Now wake up your thermometer by pressing any button. You should see a temperature appearing on the screen approximately once per second.



If you have problems connecting, here are some troubleshooting steps:

Try unplugging and replugging the M950 from the USB port. If that doesn't work, follow the following sequence:

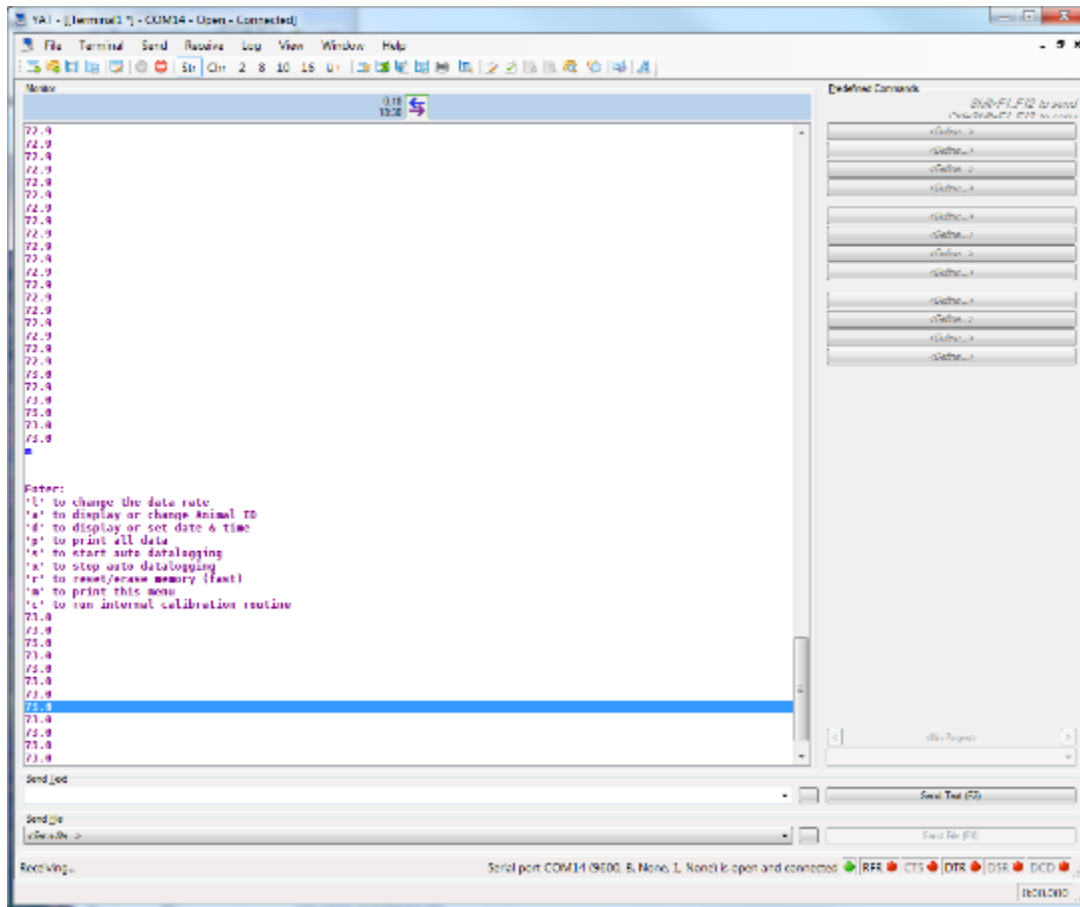
- Make sure you have the correct COM port selected under "Settings"
- Unplug the thermometer from your USB port.
- Make sure your terminal is currently disconnected (you should see a green check, the minus should be gray).
- Make sure your thermometer is awake.
- Plug your thermometer into the USB port.
- Click the green check.

If the M950 has gone to sleep, make sure you are disconnected before waking it back up. Then re-establish the terminal connection.

Menu Commands:

To access the menu commands for the M950, click inside the "Send Text" box at the bottom of the window, type "m" and hit enter.

You should see a printout of menu commands. The temperature will continue to update, and the window will automatically scroll. To stop the scrolling, click anywhere in the Monitor Window.



The menu commands are:

- 'l' to change the data rate
- 'a' to display or change Animal ID
- 'd' to display or set date & time
- 'p' to print all data
- 's' to start auto datalogging
- 'x' to stop auto datalogging
- 'r' to reset/erase memory (fast)
- 'm' to print this menu
- 'c' to run internal calibration routine

Data Rate:

This changes the rate at which temperature comes out of the serial port. Upon entering "l" you'll see:

Enter number of seconds between readings. (Enter 0 for 0.5s)

How to use:

- The default setting is 1 (once per second).

- Twice per second is the fastest rate, enter 0.
- Otherwise, enter the number of seconds that should elapse between readings. Ex: if you want one reading every minute, type 60.
- The longest time you can enter is 255, which is once every 4 mins 15 seconds.

Animal ID:

You can enter an animal ID manually. Upon entering "a" you'll see:

Current Animal ID is: Bessie

Would you like to enter a new Animal ID? (y/n)

How to use:

Bessie is the default Animal ID

- Enter "n" to keep the current Animal ID.
- Enter "y" to reset the Animal ID.
- You can enter any name or number or combination up to 16 digits

Display or Set Date and Time:

The time and date should be set when you receive your thermometer, and it should continue to update the correct date and time even if the thermometer is asleep or runs out of battery charge. If the thermometer was reset via a long press on the backlight button, or if it sat with a dead battery for a few months before recharging, it may reset to 1/1/2018.

When "d" is entered, you'll see:

Current date and time are: 1/1/18 12:1:43

Set date and time? (y/n)

How to use:

- Entering "n" will keep the current date and time.
- Enter "y" to reset the date and time. Follow the instructions to enter the year, month, day, and the hours, minutes, seconds.

Print all Data:

The M950 thermometer will save a row of data every time you press the "Save" button. The most recent 8 temperatures can be recalled on the thermometer's screen, but all temps you've saved plus more data about the thermometer are available through the serial port.

Upon entering "p" you'll see something like:

```

Printing Saved Data...
Initial variables:
Address Value
0 131 J
1 0 <NUL>
2 1 <SOH>
3 200 D
4 70 F
5 0 <NUL>
6 0 <NUL>
7 255 y
8 207 I
9 255 y
10 255 y
11 255 y
12 255 y
13 255 y
14 255 y
15 255 y
16 66 B
17 101 e
18 115 s
19 115 s
20 105 i
21 101 e
22 0 <NUL>
23 255 y
24 255 y
25 255 y
26 255 y
27 255 y
28 255 y
29 255 y
30 255 y
31 255 y

Data Entries:
Animal Date Time DispTmp CurrTmp PeakTmp ProcTmp CellV ProcV BattPct RunTime
Bessie 06/10/18 12:09:56 71.20 21.76 21.76 89.07 4.25 3.00 100.00 0.41
Bessie 06/10/18 12:10:02 72.30 22.41 22.41 88.71 4.25 3.00 100.00 8.51
Bessie 06/10/18 12:10:05 73.00 23.23 23.23 88.71 4.25 3.00 100.00 8.56
Bessie 06/10/18 12:10:13 73.50 23.04 23.51 88.71 4.25 3.00 100.00 9.18
Bessie 06/10/18 12:10:44 73.50 23.04 23.51 88.71 4.25 3.00 100.00 9.20
Bessie 06/10/18 12:10:45 73.50 23.03 23.51 88.71 4.25 3.00 100.00 9.22
Bessie 06/10/18 12:10:46 73.00 23.03 23.51 89.26 4.25 3.01 100.00 9.23
Bessie 06/10/18 12:11:46 73.00 22.78 23.51 89.62 4.25 3.00 100.00 10.23

```

The initial variables are for debugging and tech support. Under "Data Entries" one line of data was saved every time you pressed the "Save" button.

How to Use:

- Animal ID, Date, and Time are the first entries.
- DispTmp is the temperature that was displayed on the thermometer when you pressed "Save". It will be either in C or F depending upon your M950 setting.
- CurrTmp is the same temperature in C.
- PeakTmp is the last peak temperature in C.
- ProcTmp is the temperature of the microprocessor inside of the box in F.
- CellV is the internal battery voltage.
- ProcV is the processor's voltage supply.
- BattPct is the approximate % of battery capacity left.
- RunTime is how long the thermometer has been running since the last hard reset, in minutes. This normally will continue to increase.

Datalogging:

You can set up automatic datalogging if you'd like. In this mode, the M950 will save data at the data rate specified under "Data Rate". Ex: if the data rate is once per second, it will automatically save a line of data every second.

How to Use:

- Enter "s" to start datalogging. A "Started logging data...." message will print.

- Enter 'x' to stop datalogging. A "Stopped logging data...." message will print and you should see "SAVED!" displayed on the M950. It will be persistent if the data rate is faster than once every 3 seconds.
- If datalogging is enabled, it will pause when the unit is asleep, and restart automatically on wake-up.
- Note that if you leave datalogging on for a long time, the memory may get full and start to overwrite.
- The M950 can save approximately 590 lines of data.

Internal Calibration Routine:

Do not do this unless instructed to do so by tech support.

Care and Maintenance:

M950 Thermometers are splash and dust resistant to IP65 standards

M950 Thermometers are not **water proof**

M950 Thermometers should be stored in locations that do not exceed 115 F° / 45 C°

Please do not leave the LCD Display in extreme heat for long periods of time as this may damage the LCD

Repairs:

M950 Thermometers / M207 Probes can be repaired in most instances

Please send: M950 Thermometer/ M207 Probe/ C965 Charger to:

GLA Agricultural Electronics
3563 Sueldo Street Suite D
San Luis Obispo CA 93401-7331

Please include:

Your name
Bill to / ship to address
Contact telephone number
Description of symptom

Frequently Asked Questions:

Please visit our website: www.gla-ag.com

Instructions in Spanish / French / Chinese:

Please visit our website: www.gla-ag.com

GLA:

Made by hand, in small batches, in San Luis Obispo CA, USA since 1969