SYNOTRONICS

SYNOLOG-TDx
2 Channel Temperature Logger with Display

SYNOLOG-TD1x
1 Channel Temperature Logger with Display

SYNOLOG-HDx
3 Channel Temperature & Humidity Logger with Display

SYNOLOG-HD2x
2 Channel Temperature & Humidity Logger with Display

SYNOLOG STUDIO
For changing settings, downloading and analyzing data from the SynoLog devices.

User Guide

TABLE OF CONTENTS

SYNOLOG-TDx/TD1x/HDx/HD2x FEATURES

- Easy to Read Display
- High Accuracy, +/-0.5°C
- Precise, 0.0625°C resolution
- Internal Temperature Sensor
- Internal Accurate Humidity Sensor (for HDx and HD2x)
- External Temperature Probe (optional for TDx and HDx)
- User Preset Visual and Audible Alarms on External probe (with snooze mode)
- High Alarm LED
- Low Alarm LED
- Large Logging Memory
- Easy to Use Free Software
- Long battery life
- Memory Lasts over 100 years without power
- Memory can be filled over 50,000 times
- Battery Powered
- Tough Casing
- Environment Resistant
- Digital temperature sensor interface reduces interference and improves accuracy, no calibration required.
- Download data to PC easily and quickly
- Can update unit when new attachment products are released.

SYNOLOG- TDx/TD1x/HDx/HD2x FUNCTIONS

- Display Ambient Temperature
- Display External Probe Temperature (With External Probe with SynoLog-TDx and SynoLog-HDx)
- Display Humidity (Synolog-HDx & SynoLog-HD2x models)
- Display Time
- Record Over 16,000 Data Points
- High and Low Alarms on Ambient or External Probe Temperature
    - Audible (With Snooze)
    - Visual Indicators
    - Change Alarms
- Scheduled Log
- Enable/Disable Logging

SYNOLOG STUDIO FUNCTIONS

- Download Data from Synolog-TDx/TD1x/HDx/HD2x
    - Either erase or leave memory after download
    - Automatically graphs after download
- Change settings in Synolog-TDx/TD1x/HDx/TD2x
    - Celsius or Fahrenheit
    - High alarm temperature and enable/disable
    - Low alarm temperature and enable/disable
    - Data Save Interval
    - Snooze Time
    - Time
    - Date
    - Enable/Disable Logging
    - Change Scheduled Log Settings or enable/disable either
- Graph data
    - Automatically adjusts temperature scale to suit data
    - Zoom into particular data section
    - Enable/Disable Data sets including High/Low alarms
    - Print graph
    - Celsius or Fahrenheit
    - Open previous temperature files
- Table of data
    - Easily Identify Data Points Above or Below Pre-set Alarm Temperatures
- Save Data in Microsoft Excel Compatible Format
- Show Current Temperature/Humidity
- Show Serial Number and Product Mode
- Erase Memory
- Change Communication Port Settings
- Integrated Help

SYNOLOG STUDIO REQUIREMENTS

Features
Easy To Use
Change Synolog Settings
Download Data From Synolog
Analyze Data in Graph/Table
All Functions on Main Screen
Windows Operating System
Win 98, Win ME, Win2000, Win XP
Minimum CPU Requirements
Pentium, 1 Ghz
Minimum Hard Disk
10 MB
Interface Standard
RS-232 Serial or USB
Hardware Required
Spare 9 Pin RS-232 Port or Spare USB Port

INSTALLING THE SYNOUSB USB DOWNLOAD CABLE
(Skip this step if you have a Syno232 cable)

1. This step installs the SynoUSB cable on your computer, it creates a Virtual COM port which can be selected in SynoLog Studio once installed.

2. Plug in the USB cable into a free port and Windows will detect the USB Device and run the new hardware wizard to assist you in setting up the new USB Composite Device

3. Place the provided CD in the PC CD Drive and click next to continue

    a. Select Search for the best driver for your device and click next

    b. Select Specify a location and click Browse. Change the folder to your CD drive (ie: D:\ ) and click OK.

    c. Double check the directory that windows prompts. Click Next.

    d. Windows will detect the driver (USB2SER.inf) and shows the USB to Serial Cable. Click Next to continue until the installation is complete.

    e. Click next to continue and let windows copy the needed files to your hard disk. Click Finish while installation is complete.

    f. After installing, the System will generate an additional COM Port, USN to Serial Port (COM3) for the connection to the SynoLog Unit.

4. To check the COM port which has been selected, please follow the following instructions.

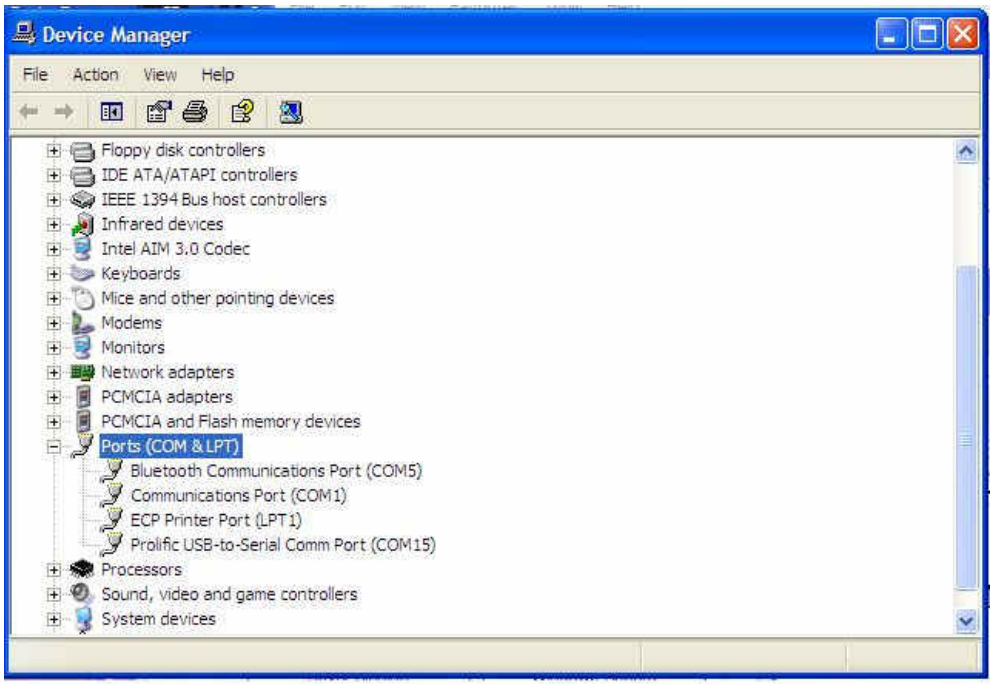
    a. In the start menu, click on Control Panel

    b. In Control Panel, select the System category.

    c. Click on the Hardware TAB in the System menu

    d. Click the Device manager button

    e. You will be able to see the the COMM port under the Ports (COM & LPT) item as Prolific USB-to-Serial Comm Port (COM3).



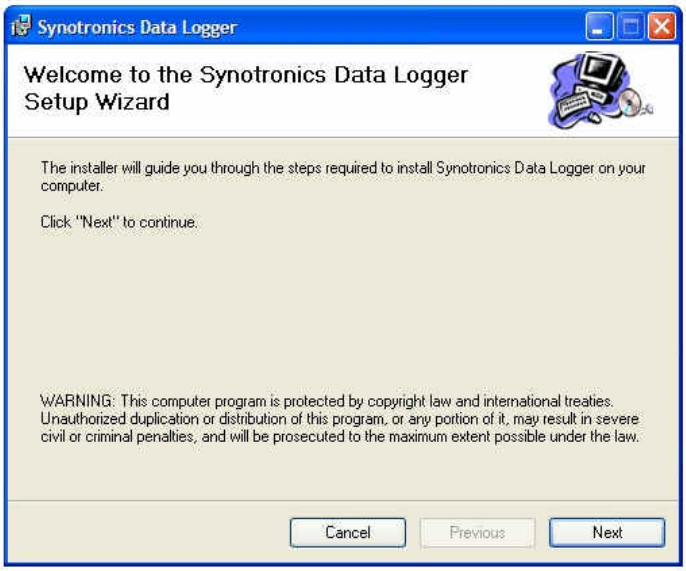
    f. The COM port differs depending on your computer and can be changed by double clicking on this item, selecting the Port Settings Tab and clicking on Advanced. The COM port can be changed here if required.

5. Please note that when the USB cable is plugged into different USB ports and hubs the Virtual COM port number can change and needs to reselected.

LOADING SYNOLOG STUDIO SOFTWARE

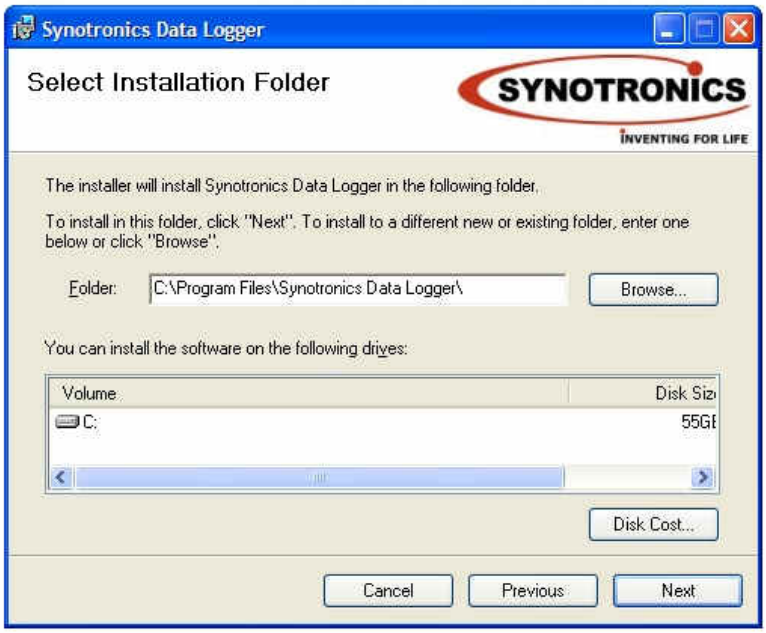
1. Place provided CD in Drive, choose run from the start menu, select the appropriate CD drive and the file Synotronics Data Logger.msi. OR please check the Synotronics website for the latest version http://www.synotronics.com.au/download.htm

2. Click OK to continue installation

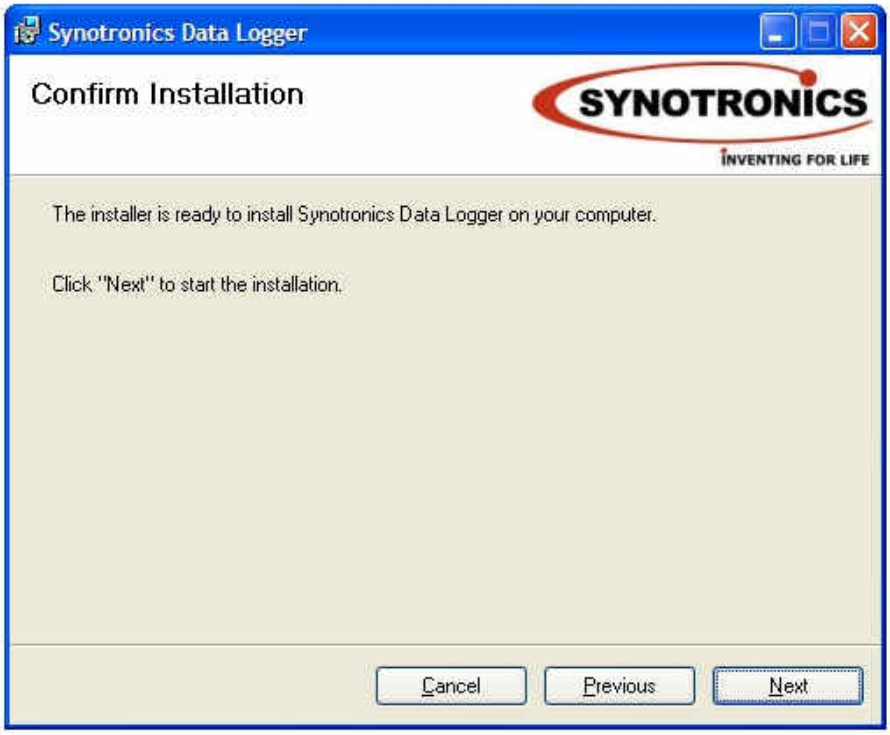


3. Read the End-User Agreement and click on the "I Agree" button, then click next.

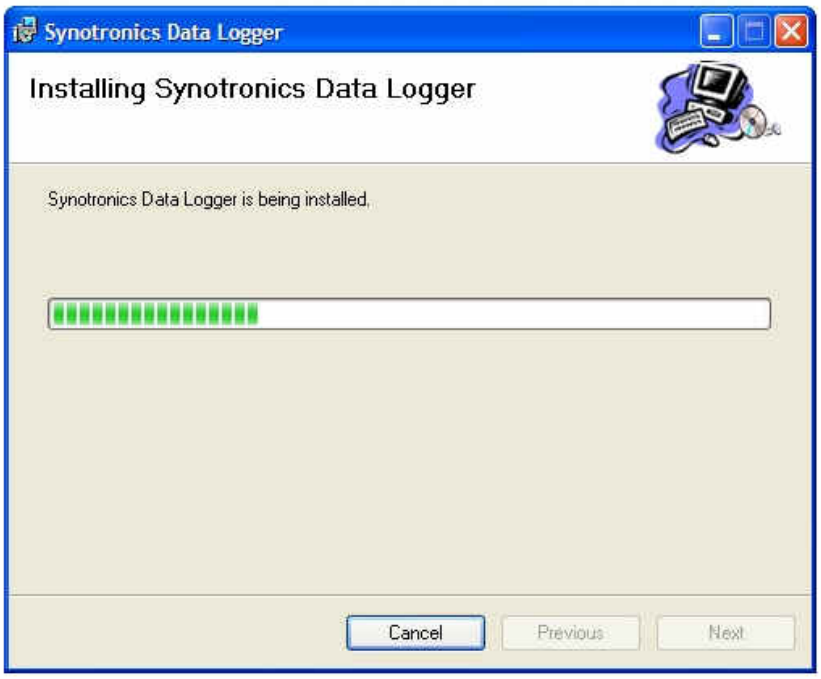
4. If the Synotronics Data Logger directory is suitable to have on your hard drive then click Continue, otherwise change the directory and click Continue.



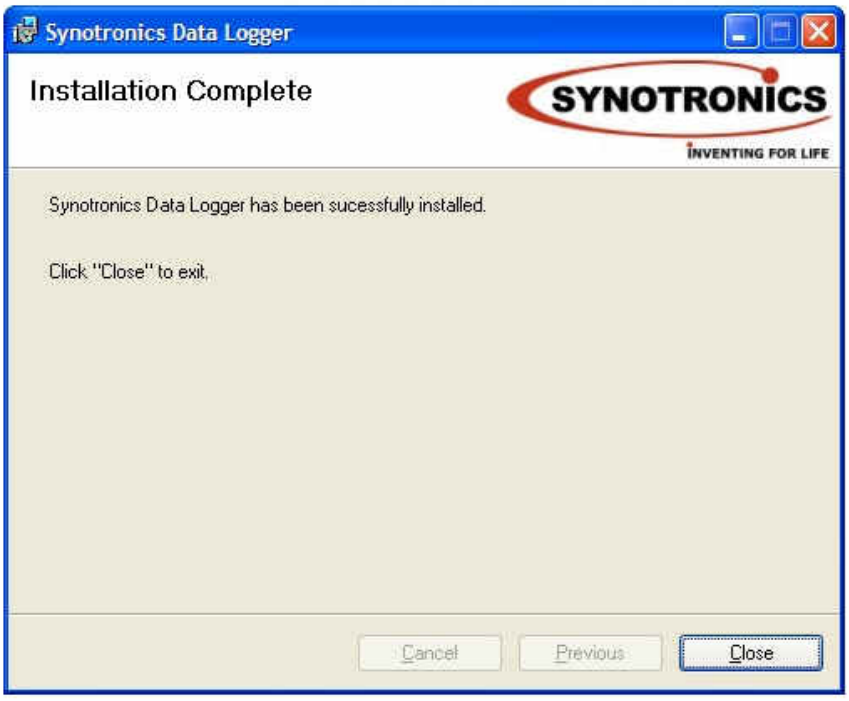
5. Click next to continue.



6. The following box will then be displayed showing the loading of the software.



7. The following box will then be displayed indicating a successful loading of the software. The program should now be in your start menu and ready to go.



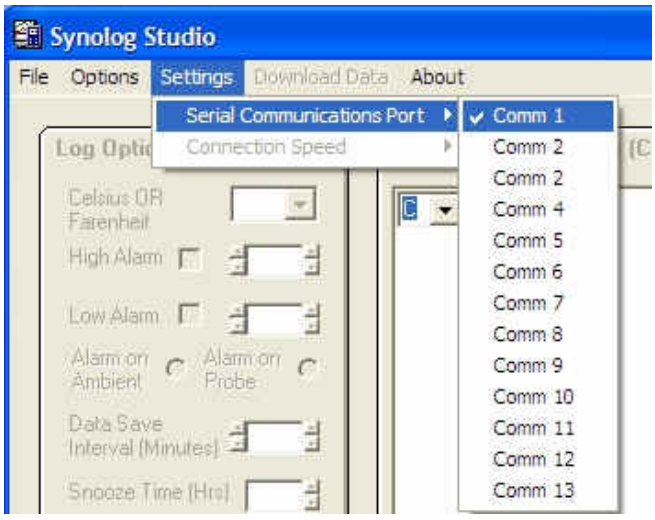
CONNECTING SYNOLOG- TDx/TD1x/HDx/HD2x TO PERSONAL COMPUTER

1. Plug the Syno232 RS-232 9 Pin D connector into a spare RS-232 slot on the PC or the SynoUSB cable into the spare USB Port.

2. Plug the other end of the cable into the Synolog-TD/HD connector on the base of the unit.

3. Open Synolog Studio

4. Select the appropriate RS-232 Comm Port in the Settings->Comm Port Menu



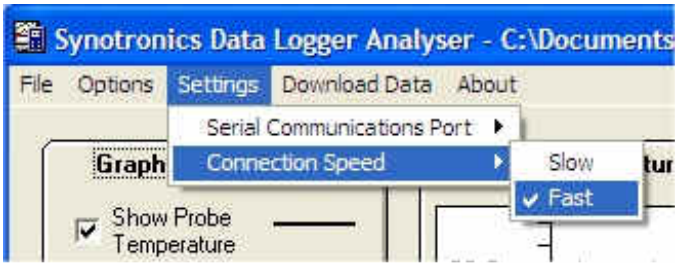
5. The Log Options should now become enabled, if not press the down button on the Synolog-TDx/TD1x/HDx/HD2x, this should establish the connection between the unit and the software.

6. You can now change settings and download data etc whilst this is connected. (For longer lasting battery power it is recommended not to leave the Synolog-TDx/TD1x/HDx/TD2x plugged into the Syno232 cable when not required)

CHANGING THE CONNECTION SPEED TO THE SYNOLOG

The connection speed from the PC can be changed between slow and fast. If you have problems downloading, it is recommended to use the slow speed otherwise the fast speed is the best option.

To change the setting, first connect the SynoLog to the PC as per previous instructions. Once connected select in the top menu, Settings->Connection Speed and then Slow or Fast.



The setting will then change in the SynoLog which will be detected by the SynoLog Studio software

RESETTING THE CONNECTION SPEED MANUALLY

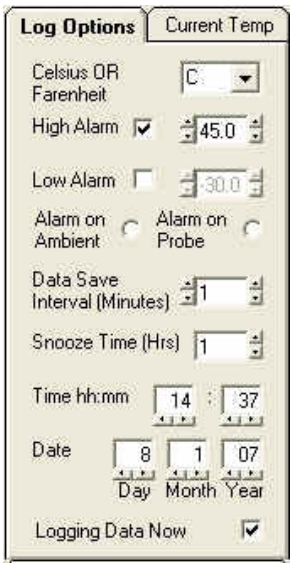
If you have set the SynoLog unit for Fast connection speed and your computer can not connect to the SynoLog unit you can reset the speed to slow. This is done by pressing on the Synolog unit the 'up button', holding it and pressing the 'down button' until the screen goes blank briefly and release the buttons.

CHANGING SYNOLOG SETTINGS – USING SYNOLOG STUDIO

Follow the previous instructions to connect the Synolog-TDx/TD1x/HDx/HD2x unit to the PC, changing settings using the Synolog Studio can only be achieved whilst connected. It is recommended to connect the Synolog unit to the PC after a battery change to alter settings including the time.

Changing Log Options

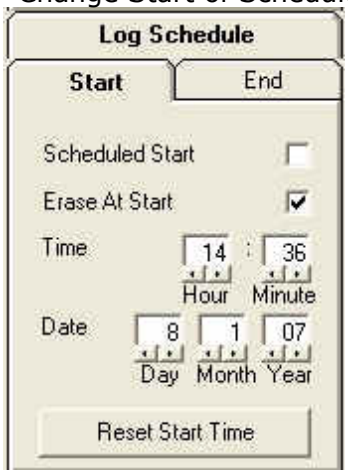
Once connected, settings can be change in the Synolog-TD/HD in the following menu screen. Options can be changed by using the scroll bars next to or below the settings. Selecting a check box allows the relevant setting to be enabled.



Changing Scheduler Options

These functions allow you to schedule a logging period for a future time period.

Change Start of Schedule



Change End of Schedule

Functions

Scheduled Start – Check if you want a scheduled start.
Erase at start – Check if you want the data to be deleted when a scheduled log begins.
Time & Date – Change this using the scroll buttons to be the time you wish the logging to start.
Reset Start Time Button – This resets the start time to the current time in the logger.

Scheduled End – Check if you want a scheduled end of logging.

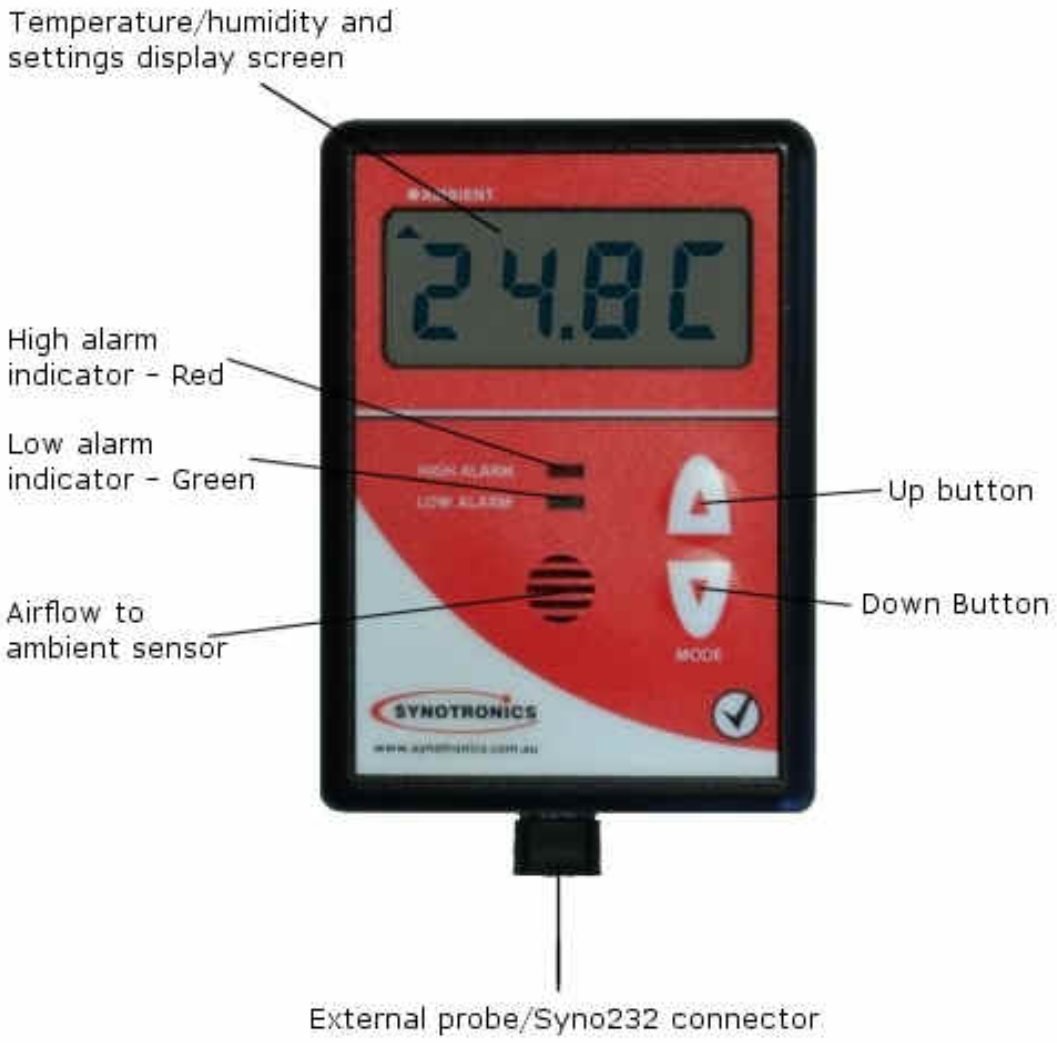
Time & Date – Change this using the scroll buttons to be the time you wish the logging to end.
Reset End Time Button – This resets the end time to the current scheduled start time in the logger.

CHANGING SYNOLOG SETTINGS – USING SYNOLOG

The following settings can be changed using the buttons of the Synolog

1. High Alarm (indicated by the High Alarm LED being turned on)
2. Low Alarm (indicated by the High Alarm LED being turned on)
3. Recording Data on/off (indicated by REC0(recording off) or REC1(recording on) on the Synolog screen)

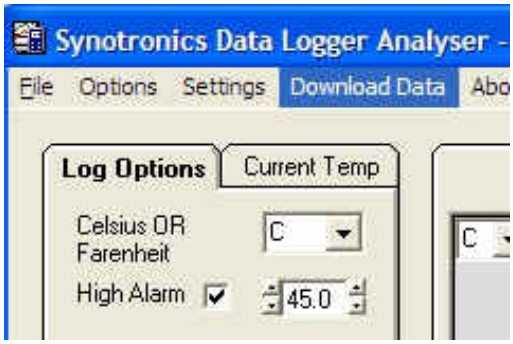
This is achieved by holding the down button for at least a second; it will beep when the new settings mode has been entered. The order it follows is as above. Once the new settings mode is entered, the setting can be changed by pressing the up or down buttons. To leave the change settings mode the button can be held again for a second or left for it to automatically change back to the temperature mode.



DOWNLOADING DATA FROM SYNOLOG-TDx/TD1x/HDx/HD2x

To download data from the Synolog-TDx/TD1x/HDx/HD2x you must first connect it to the PC via the Syno232 and start the Synolog Studio software.

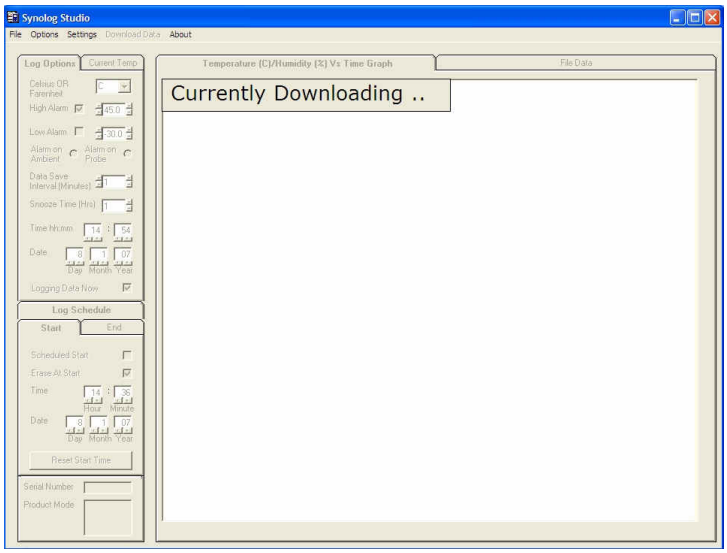
1. Once connected to the device click on the Download Data Menu Item



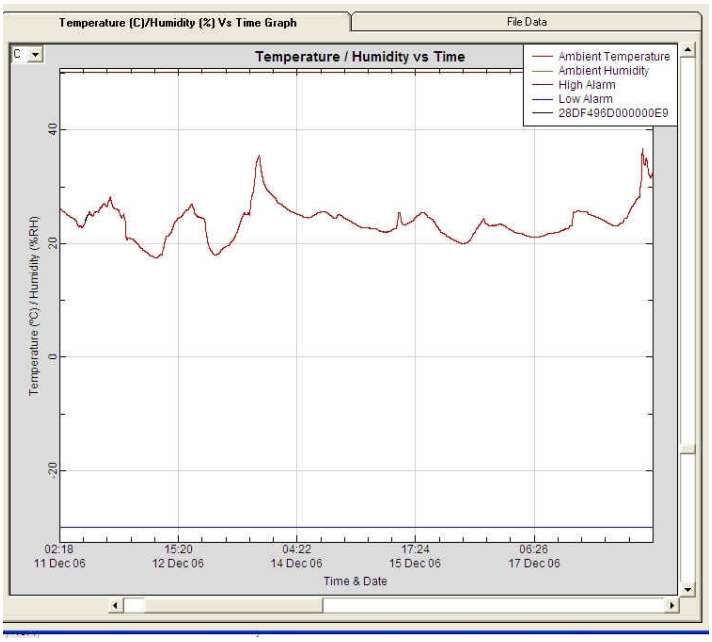
2. If you want to delete the memory of the logger after the data has downloaded click yes, otherwise click no to record at the end of the current data.

3. Select a filename and click save

4. The screen will then show that the data is downloading and the Synolog-TDx/TD1x/HDx/HD2x screen will show the percentage of data remaining to download.



5. Once downloaded the data will be saved and graphed automatically.



EXPORTING DATA TO EXCEL

The data is saved in a file with extension *.syn. This can be exported easily into Microsoft Excel by opening it as a tab delimited file

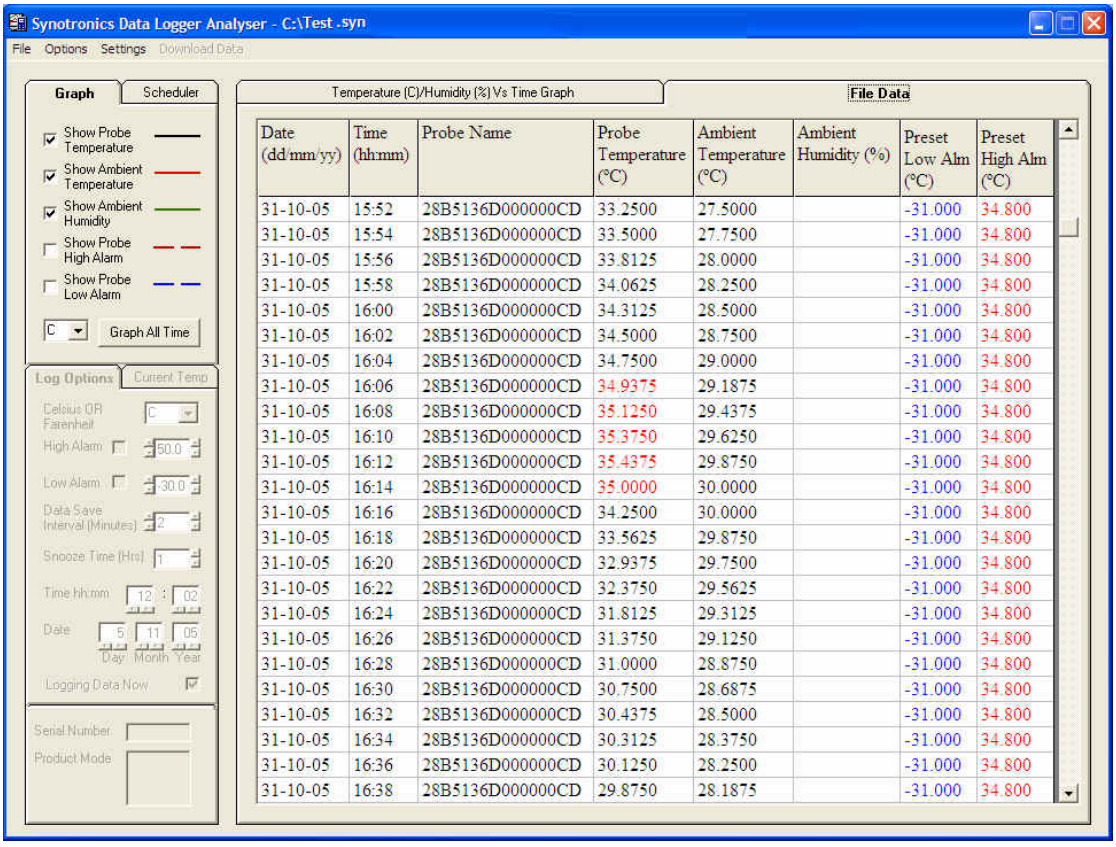
1. Select Open in Excel
2. In the Files of type, select "All Files"
3. Select the file you would like to open
4. The text import wizard will open
5. Click next to open as a delimited file
6. In the next screen select 'Tab' in the Delimiters menu and click 'next'

7. In the next screen click finish
8. The data will now be in Excel. If you save this file in Excel you will not be able to open it again in SynoLog Studio so it is recommended to save as a different file in Excel.

VIEWING DATA

To view the data downloaded or recovered from a saved file click on the "File Data" Tab near the top right. This will allow you to view each data value.

If the data value has gone above or below preset limits this will be shown by making the data red (above preset high limit) or blue (below preset low limit).

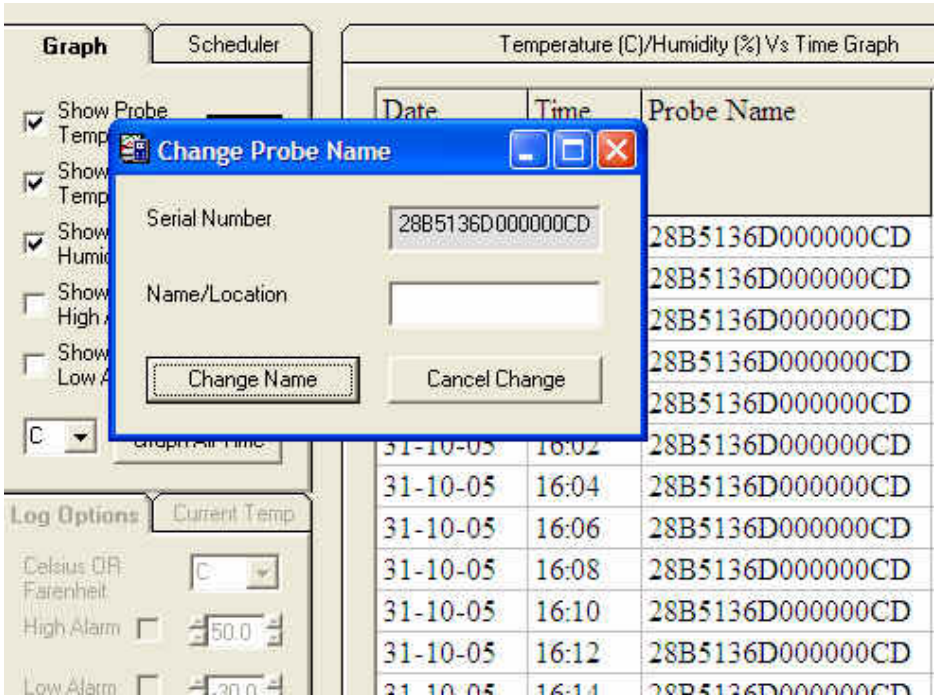


Date (dd/mm/yy)	Time (hh:mm)	Probe Name	Probe Temperature (°C)	Ambient Temperature (°C)	Ambient Humidity (%)	Preset Low Alm (°C)	Preset High Alm (°C)
31-10-05	15:52	28B5136D000000CD	33.2500	27.5000		-31.000	34.800
31-10-05	15:54	28B5136D000000CD	33.5000	27.7500		-31.000	34.800
31-10-05	15:56	28B5136D000000CD	33.8125	28.0000		-31.000	34.800
31-10-05	15:58	28B5136D000000CD	34.0625	28.2500		-31.000	34.800
31-10-05	16:00	28B5136D000000CD	34.3125	28.5000		-31.000	34.800
31-10-05	16:02	28B5136D000000CD	34.5000	28.7500		-31.000	34.800
31-10-05	16:04	28B5136D000000CD	34.7500	29.0000		-31.000	34.800
31-10-05	16:06	28B5136D000000CD	34.9375	29.1875		-31.000	34.800
31-10-05	16:08	28B5136D000000CD	35.1250	29.4375		-31.000	34.800
31-10-05	16:10	28B5136D000000CD	35.3750	29.6250		-31.000	34.800
31-10-05	16:12	28B5136D000000CD	35.4375	29.8750		-31.000	34.800
31-10-05	16:14	28B5136D000000CD	35.0000	30.0000		-31.000	34.800
31-10-05	16:16	28B5136D000000CD	34.2500	30.0000		-31.000	34.800
31-10-05	16:18	28B5136D000000CD	33.5625	29.8750		-31.000	34.800
31-10-05	16:20	28B5136D000000CD	32.9375	29.7500		-31.000	34.800
31-10-05	16:22	28B5136D000000CD	32.3750	29.5625		-31.000	34.800
31-10-05	16:24	28B5136D000000CD	31.8125	29.3125		-31.000	34.800
31-10-05	16:26	28B5136D000000CD	31.3750	29.1250		-31.000	34.800
31-10-05	16:28	28B5136D000000CD	31.0000	28.8750		-31.000	34.800
31-10-05	16:30	28B5136D000000CD	30.7500	28.6875		-31.000	34.800
31-10-05	16:32	28B5136D000000CD	30.4375	28.5000		-31.000	34.800
31-10-05	16:34	28B5136D000000CD	30.3125	28.3750		-31.000	34.800
31-10-05	16:36	28B5136D000000CD	30.1250	28.2500		-31.000	34.800
31-10-05	16:38	28B5136D000000CD	29.8750	28.1875		-31.000	34.800

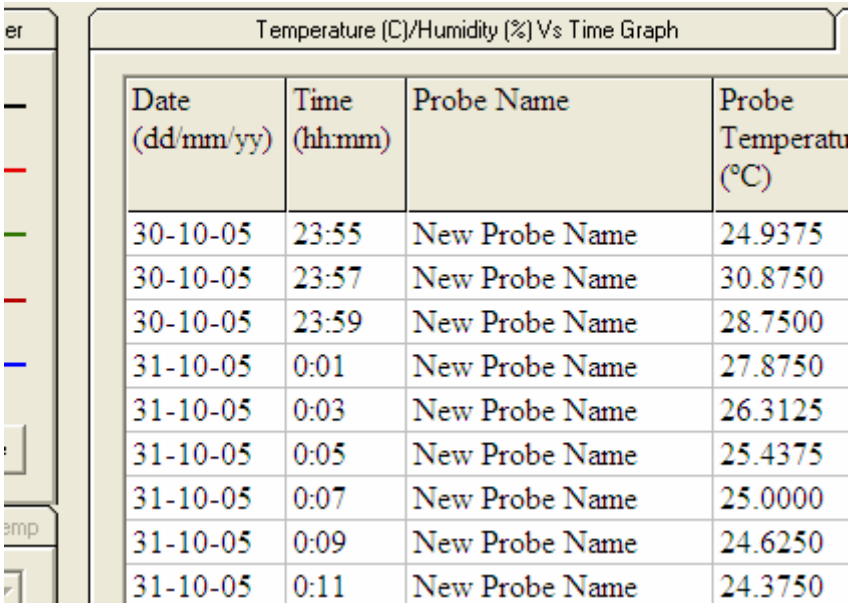
ASSIGNING & CHANGING PROBE NAMES

Each probe has a distinct serial number, when the data is downloaded these serial numbers are downloaded also. The serial numbers can be given a name to make it easier for the user to know which is which.

To assign or change a name, double click on the serial number you wish to change. A change probe name dialog box appears.

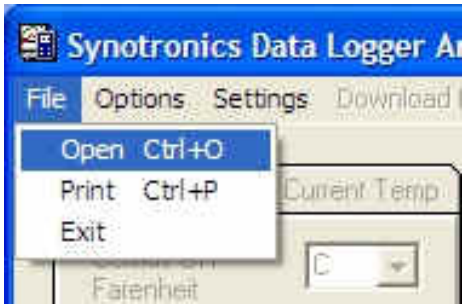


In the Name/Location text box type the new name for the probe and click the change name button.



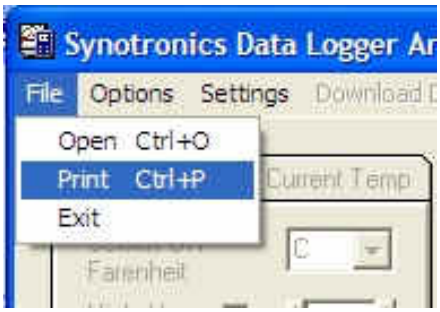
OPENING SYNOLOG FILES

Downloaded files are saved with the extension *.syn. In order to open previously saved files click on the File Menu Item and then Open, this will open a dialog box to find the file where you saved it. This will then be opened in the graph and the table.

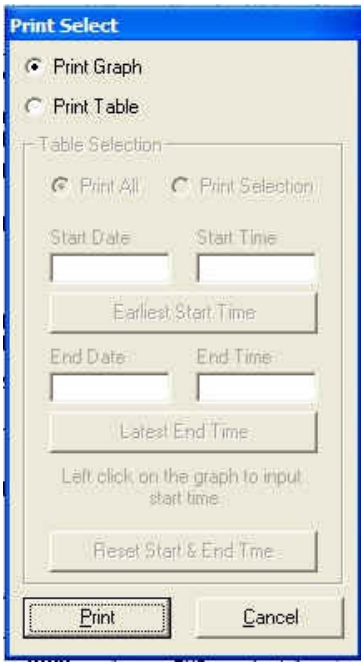


PRINTING THE GRAPH

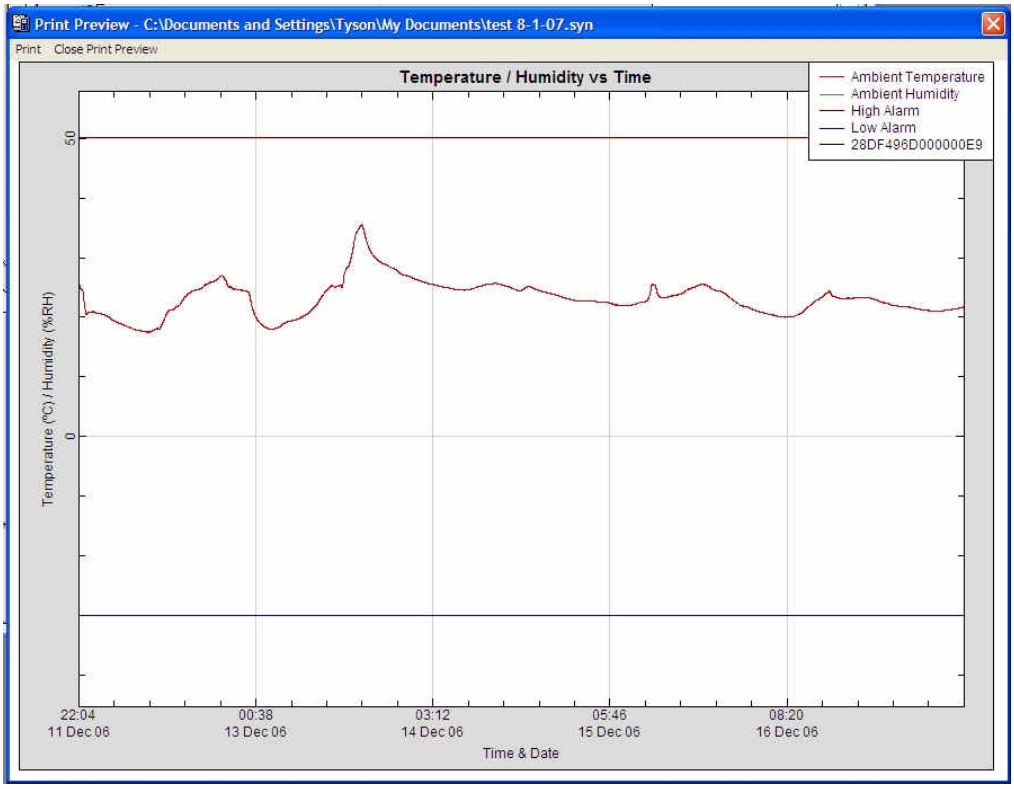
Click on the File Menu Item and then Print.



Select Print Graph and click Print. This will print whatever you had selected on the graph.

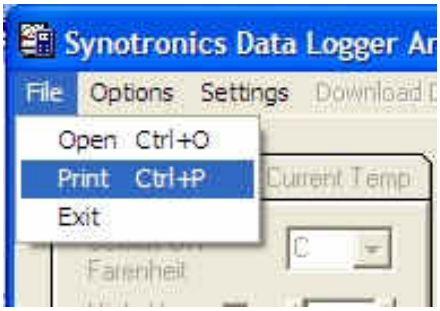


A Print Preview screen will appear showing what will be printed. Click Print to print the graph.



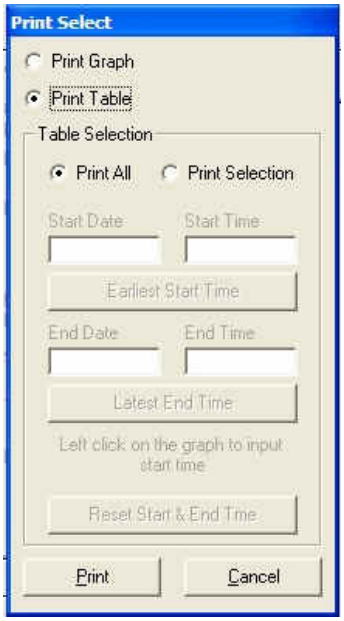
PRINTING TABULAR DATA

Click on the File Menu Item and then Print.

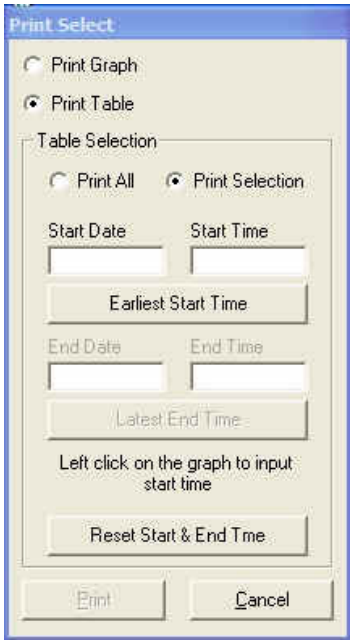


Select Print Table.

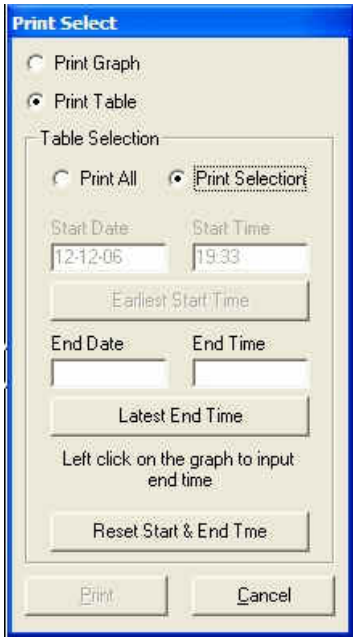
To print all the data, click Print All and then click the Print button.



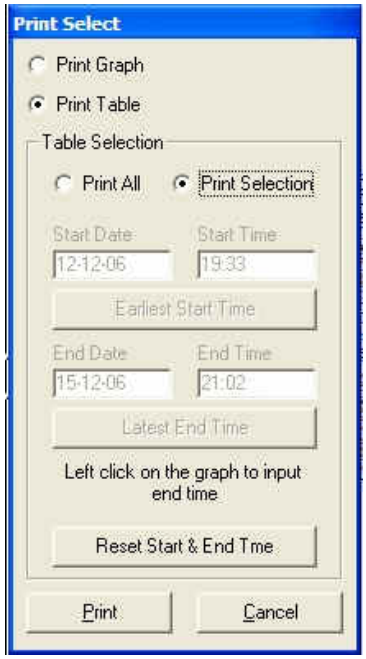
To print a selection of data, select Print Selection.



Click on the graph on the main screen to select your start time or click the earliest start time button to automatically insert the earliest start time.



Click on the graph on the main screen to select your end time or click the latest end time button to automatically insert the latest end time.

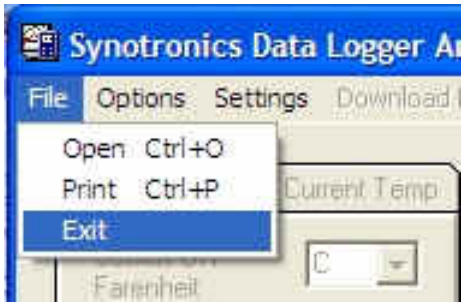


The Reset Start & End Time button can be clicked at any time to start the selection process again.

Click Print to print the data.

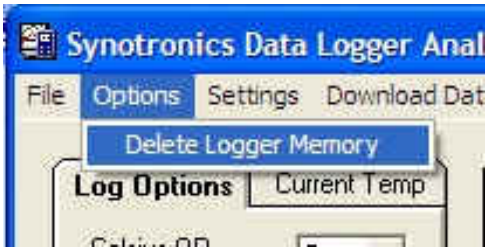
EXITING SYNOLOG STUDIO

Click on the File Menu Item and then Exit menu item. This will close Synolog Studio.



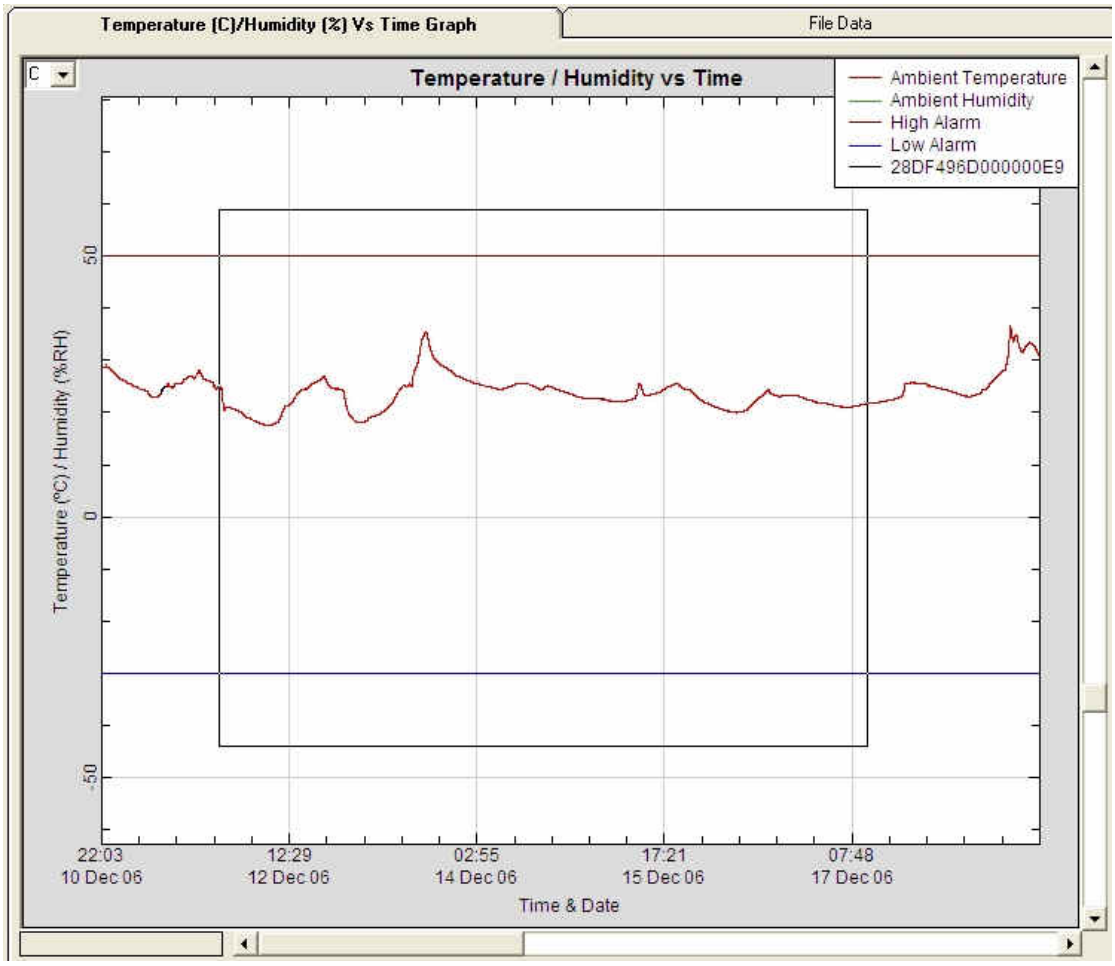
DELETING SYNOLOG MEMORY

Click on the Options Menu Item and then click on Delete Logger Menu. You will be asked for a confirmation to continue. The Synolog unit will beep when the memory has been deleted.



ZOOMING GRAPH

The graph can be zoomed by clicking and holding the mouse button whilst on the graph and moving while a selection box shows your selection. Release the mouse button to let the graph zoom.



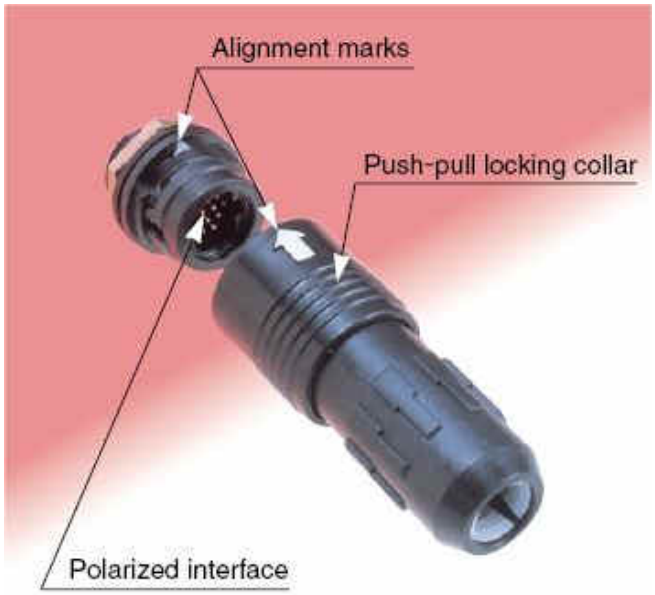
To zoom out simply right click on the graph, the time it takes to return to the whole graph will depend on the size of the file.

CONNECTING & DISCONNECTING AN EXTERNAL PROBE

The connection point for an external probe is on the bottom of the unit, this connector is protected by a dust cap which needs to be taken off before plugging in a probe.

The probe connector is then pushed onto the base of the unit, the unit will detect the probe and the screen display will show the probes temperature after detection.

The connector has a locking mechanism which requires the top of the connector to be pulled down to release the lock and thus release the connector.

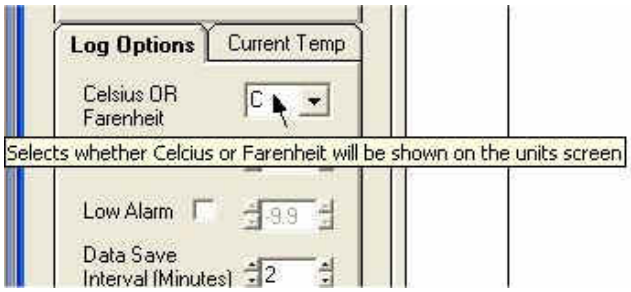


SNOOZE FUNCTION

The user can set high and low alarms; a snooze time can also be set in the Synolog Studio Software. When the alarms go off the user has the option to press both the buttons on the Synolog Unit, this will snooze the audible alarm for the time period set with the Synolog Studio Software.

ADDITIONAL SOFTWARE HELP

For help on the use of each function just hold the mouse curser over each setting to enable a pop up help box.



BATTERY SOURCE

The Synolog-TD/HD runs from 3 AAA batteries, these are placed in the battery compartment on the back of the unit.

SYNOLOG-TDx SPECIFICATIONS
2 Channel temperature logger with display and external probe connector

General Specifications	
Dimensions	28mm x 66mm x 92mm (1.1" x 2.6" x 3.65")
Power Source	3 x AAA, 1 Year Battery Life Replaceable
Operating Range	0ºC - 85ºC & 0-100%RH (-30ºC - 65ºC with AAA Lithium)
Download Cable	Syno232 Download Cable
PC Software	Designed to use with SynoLog Studio for downloading and analyzing data.
In-Built Display	
Size	46mm x 20mm (1.8" x 0.8")
Resolution	0.1 ºC (0 ºC - 85 ºC), 0.1ºF
Update Interval	15 Seconds (7.5 sec for half an hour after a probe is connected)
Internal Temperature Sensor (in SynoLog unit)	
Type of Sensor	Band-gap with digital interface
Accuracy	±0.5 ºC (0 ºC – 70 ºC), ±0.9 ºF Related to temperature of internal sensor
Resolution	0.0625 ºC (0.1125 ºF)
External Temperature Probe	
Connector	SynoLog-TDR (Rear connector) SynoLog-TDB (Bottom connector)
Type of Probe	SynoProbe Digital Interface Probe
Measurement Range	-40 ºC – 130 ºC (-40 ºF – 266 ºF)
Serial Numbers	Each probe has an unique internal serial number which is detected and recorded by the SynoLog
More Details	Come in a range of lengths and in custom size: www.synotronics.com
Temperature Alarms	
Visual Alarms	High and low set points trigger separate LED's
Audible Alarms	High and low set points trigger buzzer
Snooze Function	Buzzer can be snoozed for a preset amount of time after trigger
Memory	
Recording Sampling Rate	0 - 800 minute Interval (1 minute steps)
Memory Type	Non-Volatile Eeprom
Data Sample Capacity	> 16,000 Samples
Data Retention	> 100 Years Without Power
Other Specifications	
Scheduled Record	Unit can be set to start recording at a pre specified start time and stop at a pre specified end time
EMC	EMC Compliant : N15320

Disclaimer: The above specifications may be subject to change without notice. The manufacturer and its suppliers hold no responsibility for damage expenses, lost profits, or any other claims arising from the use of these products.

SYNOLOG-TD1x SPECIFICATIONS
1 Channel temperature logger with display

General Specifications	
Dimensions	28mm x 66mm x 92mm (1.1" x 2.6" x 3.65")
Power Source	3 x AAA, 1 Year Battery Life Replaceable
Operating Range	0ºC - 85ºC & 0-100%RH (-30ºC - 65ºC with AAA Lithium)
Download Cable	Syno232 Download Cable
PC Software	Designed to use with SynoLog Studio for downloading and analyzing data.
In-Built Display	
Size	46mm x 20mm (1.8" x 0.8")
Resolution	0.1 ºC (0 ºC - 85 ºC), 0.1ºF
Update Interval	15 Seconds (7.5 sec for half an hour after a probe is connected)
Internal Temperature Sensor (in SynoLog unit)	
Type of Sensor	Band-gap with digital interface
Accuracy	±0.5 ºC (0 ºC – 70 ºC), ±0.9 ºF Related to temperature of internal sensor
Resolution	0.0625 ºC (0.1125 ºF)
Temperature Alarms	
Visual Alarms	High and low set points trigger separate LED's
Audible Alarms	High and low set points trigger buzzer
Snooze Function	Buzzer can be snoozed for a preset amount of time after trigger
Memory	
Recording Sampling Rate	0 - 800 minute Interval (1 minute steps)
Memory Type	Non-Volatile Eeprom
Data Sample Capacity	> 16,000 Samples
Data Retention	> 100 Years Without Power
Other Specifications	
Scheduled Record	Unit can be set to start recording at a pre specified start time and stop at a pre specified end time
EMC	EMC Compliant : N15320

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SYNOLOG-HDx SPECIFICATIONS
3 Channel temperature and humidity logger with display and external probe connection

General Specifications	
Dimensions	28mm x 66mm x 92mm (1.1" x 2.6" x 3.65")
Power Source	3 x AAA, 1 Year Battery Life Replaceable
Operating Range	0ºC - 85ºC & 0-100%RH (-30ºC - 85ºC with AAA Lithium)
Download Cable	Syno232 Download Cable
PC Software	Designed to use with SynoLog Studio for downloading and analyzing data.
Display	
Size	46mm x 20mm (1.8" x 0.8")
Resolution	0.1 ºC (0 ºC - 85 ºC), 0.1ºF
Update Interval	15 Seconds (7.5 sec for half an hour after a probe is connected)
Internal Temperature & Humidity Sensor	
Type of Sensor	CMOSens® technology with digital interface
Temperature Accuracy	±0.5 ºC (5 ºC–40 ºC), ±0.9 ºF Related to temperature of internal sensor
Humidity Accuracy	±2 %RH accuracy (10% - 90% range)
External Temperature Probe	
Connector	SynoLog-HDR (Rear connector) SynoLog-HDB (Bottom connector)
Type of Probe	SynoProbe Digital Interface Probe
Measurement Range	-40 ºC – 130 ºC (-40 ºF – 266 ºF)
Serial Numbers	Each probe has an unique internal serial number which is detected and recorded by the SynoLog
More Details	Come in a range of lengths and in custom size: www.synotronics.com
Temperature Alarms	
Visual Alarms	High and low set points trigger separate LED's
Audible Alarms	High and low set points trigger buzzer
Snooze Function	Buzzer can be snoozed for a preset amount of time after trigger
Memory	
Recording Sampling Rate	0 - 800 minute Interval (1 minute steps)
Memory Type	Non-Volatile Eeprom
Data Capacity	> 16,000 Samples
Data Retention	> 100 Years Without Power
Other Specifications	
Scheduled Record	Unit can be set to start recording at a pre specified start time and stop at a pre specified end time
EMC	EMC Compliant : N15320

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SYNOLOG-HD2x SPECIFICATIONS
2 Channel temperature and humidity logger with display

General Specifications	
Dimensions	28mm x 66mm x 92mm (1.1" x 2.6" x 3.65")
Power Source	3 x AAA, 1 Year Battery Life Replaceable
Operating Range	0ºC - 85ºC & 0-100%RH (-30ºC - 85ºC with AAA Lithium)
Download Cable	Syno232 Download Cable
PC Software	Designed to use with SynoLog Studio for downloading and analyzing data.
Display	
Size	46mm x 20mm (1.8" x 0.8")
Resolution	0.1 ºC (0 ºC - 85 ºC), 0.1ºF
Update Interval	15 Seconds (7.5 sec for half an hour after a probe is connected)
Internal Temperature & Humidity Sensor	
Type of Sensor	CMOSens® technology with digital interface
Temperature Accuracy	±0.5 ºC (5 ºC–40 ºC), ±0.9 ºF Related to temperature of internal sensor
Humidity Accuracy	±2 %RH accuracy (10% - 90% range)
Temperature Alarms	
Visual Alarms	High and low set points trigger separate LED's
Audible Alarms	High and low set points trigger buzzer
Snooze Function	Buzzer can be snoozed for a preset amount of time after trigger
Memory	
Recording Sampling Rate	0 - 800 minute Interval (1 minute steps)
Memory Type	Non-Volatile Eeprom
Data Capacity	> 16,000 Samples
Data Retention	> 100 Years Without Power
Other Specifications	
Scheduled Record	Unit can be set to start recording at a pre specified start time and stop at a pre specified end time
EMC	EMC Compliant : N15320

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SUPPPORT & SERVICE

Synotronics Pty Ltd

http://www.synotronics.com.au
technical@synotronics.com.au

Phone: +61 8 84314723
Fax: +61 8 84314736

23 Bishop Street
Skye, 5072
South Australia