

🗑 Sensidyne Nephelomete	er	
Device	Library	
Environment Library —	Environment Profile	
01: AZ Road Dust	Profile Name	
02: Limestone	Description	
03: Coal Fly Ash		
04: Blank		
05: Blank		
06: Blank		
07: Blank		
08: Blank		
09: Blank		
10: Blank	Etite Save	Cancel
1.0.10.9047 Switch to Env	wironment Library	

# NEPHELOMETER SOFTWARE MANUAL

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REF 360-0139-01 (REV D)

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# 1. Getting Started

### 1.1 Install Driver and Software

Insert the CD-ROM that comes with the device and

- 1. Install USB Driver
- 2. Install Software

### 1.2 Connect Device for the first time

When the device is to be connected to the computer for the first time, it may take awhile for the computer to recognize this USB device and install drivers properly.

Please follow the general guideline below

If this is the first time this device is to be connected.

- 1. Close this program if it is running.
- 2. Power on device by press on the Start/Stop button.
- 3. Connect the device with the USB cable to the computer.
- 4. Wait for the computer to recognize it and install all the drivers.

After the computer has recognized this device for the first time, you can

- 1. run the program first, plug in the device, or
- 2. plug in the device and then run the program

Either way, program will detect the connected device automatically.

It is not necessary to connect a device if you are only going to build the Environmental Library, see section 2. Environmental Library.

🖬 Sens	idyne Nephelo	ometer						
	Device	Library						
Device								
Data	Profile Calibr	ation Utility Alarm						
	Time	Profile Name	Conc (ug/m3)	Min (ug/m3)	Max (ug/m3)	STEL (ug/m3)	Mode	Status
	Downinad D	ata						
Copr	ected Device							
No	Device							
1.0.10.	9047							
Bv d	efault. r	orogram sta	arts with	Device Fo	older	Device	selec	ted.
		Library						
Click	c on 🛄		to	go to the	Library Fo	older for Ad	ding/Editi	ng

Environmental Library entries.



Sensidyne Nephelometer		
Device	Library	
Environment Library	Environment Profile	
01: AZ Road Dust	Profile Name	
02: Limestone	Environmental factor 1.0	
03: Coal Fly Ash		
04: Blank		
05: Blank		
06: Blank		
07: Blank		
08: Blank		
09: Blank		
10: Blank		Cancel

# 2. Environmental Library

Click on the Library tab to select.

For blank library entry, program displays it as



For existing library entry,



### 2.1 Edit Library Entry

Edit to enter edit mode for the selected entry, as shown in the following page.

Sensidyne Nephelometer				
Device	ibrary			
Environment Library	Environment Profile			
01: AZ Road Dust	Profile Name	AZ Road Dust		
	Environmental factor	1.0 🗘		
02: Limestone	Description	Arizona Road Dust		
03: Coal Fly Ash				
04: Blank		1		
05: Blank				
06: Blank				
07: Blank				
08: Blank				
09; Blank				
10: Blank			Edit	Save Cancel
1.0.10.9047				

Enter Profile Name, Environmental factor and Description and then click on

Save Cancel

to save information or

to discard edited data and restore the original information.



### 2.2 Environmental K-Factors for Size Selective Impactor Heads

#### 2.2.1 2.5µ Impactor Head

- 1. Open the Sensidyne Nephelometer software
- 2. Click on the Library tab located at the top
- 3. Select the next available "Blank" item, the button will turn from grey to yellow.
- 4. Press the Edit button.
  - a. For profile name put "PM 2.5"
  - b. For environmental factor put "0.5"

c. Press Save

Sensidyne Nephelometer		
Device	Library	
Environment Library	Environment Profile	
01: AZ Road Dust	Profile Name	PM 2.5
02: Limestone	Environmental factor	0.5
	Description	Impactor Head PM 2.5 = K-factor 0.5
03: Coal Fly Ash		
04: PM 2.5		
05: PM 4.0		
06: PM 10		
07: TSP		
08: Blank		
09: Blank		
10: Blank		Edit Save Cancel
1.0.11.9047 1 Unit Connected		

### 2.2.2 4.0µ Impactor Head

- 1. Select the next available "Blank" item, the button will turn from grey to yellow.
- 2. Press the Edit button.
  - a. For profile name put "PM 4.0"
  - b. For environmental factor put "0.7"
  - c. Press Save

Sensidyne Nephelometer				
Device	Library			
Environment Library	Environment Profile			
01: AZ Road Dust	Profile Name	PM 4.0		
02: Limestone	Environmental factor	0.7		
	Description	Impactor Head PM 4.0 = K-factor	r 0.7	
03: Coal Fly Ash				
04: PM 2.5				
05: PM 4.0				
06: PM 10				
07: TSP				
08: Blank				
09: Blank				
10: Blank			Edit	Save Cancel
1.0.11.9047 1 Unit Connected				

### 2.2.3 10µ Impactor Head

- 1. Select the next available "Blank" item, the button will turn from grey to yellow.
- 2. Press the Edit button.
  - a. For profile name put "PM 10"
  - b. For environmental factor put "1.0"
  - c. Press Save

Sensidyne Nephelo	meter						_ <b>_</b> X
Device		Library					
Environment Libr	ary	Environment Profile					
01: AZ Road	l Dust	Profile Name	PM 10				
02: Limesto	ne	Environmental factor	1.0	A.			
U.L. Linesto		Description	Impactor Head PM 10	= K-factor 1.0			
03: Coal Fly	Ash						
04: PM 2.5							
05: PM 4.0							
06: PM 10							
07: TSP							
08: Blank							
09: Blank							
10: Blank	-				Edit	Save	Cancel
1.0.11.9047 1 Unit (	Connected						.:

### 2.2.4 Total Suspended Particulate (TSP) Head

- 1. Select the next available "Blank" item, the button will turn from grey to yellow.
- 2. Press the Edit button.
  - a. For profile name put "TSP"
  - b. For environmental factor put "1.0"
  - c. Press Save

Device Library Environment Library O1: AZ Road Dust O2: Limestone D2: Li	
Environment Library O1: AZ Road Dust O2: Limestone D2: Lim	
01: AZ Road Dust Profile Name Environmental factor 02: Limestone Description Inlet Head TSP = K-factor 1.0	
02: Limestone Description Inlet Head TSP = K-factor 1.0	
Description Inlet Head TSP = K-factor 1.0	
03: Coal Fly Ash	
04: PM 2.5	
05: PM 4.0	
05: PM 10	
07: TSP	
OB: Blank	
09: Blank	
10: Blonk Edit Save	Cancel
0.11.9047 1 Unit Connected	



3. Once the new environmental library is saved to your PC software, connect your device and upload the new environments.

Sensidyne Nephelometer	- 0 <b>- X</b>
Device	
T23899-V1.0.4-Manual	Ter Ter Ter T
Data Profile Calibration Utility Alarm	
B-Profile Set_11/9/2018 11:35:30 AMProfile Sent	
⊕ AZ Road Dust	
B- Limestone B- Coal EV Ash	
Show Library Add Up Down Delete SetUp	p Device
Connected Device	
T23899	
V1.0.4 Manual	
1.0.11.9047   1 Unit Connected	

4. Press the Show Library button

	Show Library
Sensidyne Nephelometer	
Device	Library
Environment Library	T23899-V1.0.4-Manual
01: AZ Road Dust	Data         Profile         Calibration         Utility         Alarm <ul> <li>Profile</li> <li>Set</li></ul>
02: Limestone	⊕-A2 Road Dust ⊕ Limestone ⊕ Coal F/Ash
03: Coal Fly Ash	
04: PM 2.5	
05: PM 4.0	
06: PM 10	
07: TSP	Hide Library Add Up Down Delete SetUp Device
	123999 V1.0.4 Manual
1.0.11.9047 1 Unit Connected	

- 5. Select the first Environment, PM 2.5 from you library, and press the Add button. This will add the environment to the Profile Set.
- 6. Repeat this step for each new additional Environment K-factor that was added.

Sensidyne Nephelometer	
Device	lbrary
Environment Library	T23899-V1.0.4-Manual
01: AZ Road Dust	Data Profile Calibration Utility Alarm
02: Limestone	
03: Coal Fly Ash	
04: PM 2.5	⊕ TSP
05: PM 4.0	
06: PM 10	
07: TSP	Hide Library Add Up Down Delete SetUp Device
	T23899 VI.0.4 Manual
1.0.11.9047 1 Unit Connected	L

7. Press the "Setup Device" to send the new environments and K-factors to the Nephelometer. All environments should be in your Profile Set.

SetUp Device

ensidyne Nephelometer	
Device	Library
vironment Library	T23899-V1.0.4-Manual
01: AZ Road Dust	Data Profile Calibration Utility Alarm
02: Limestone	
03: Coal Fly Ash	H PM 2.5 H PM 4.0 H PM 10 H PM 10
04: PM 2.5	EstUp Device Done
05: PM 4.0	
06: PM 10	
07: TSP	Hide Library Add Up Down Delete Setup Device
_	Connected Device



### 2.3 Multiplying K-Factor Environments

When using a size selective impactor head in an Environment with a K-factor other than 1.0, you must multiply the K-Factor for the impactor head by the K-factor for the Environment being sampled. The numbers should be rounded to the tenth.

Example: The K-factor for coal fly ash with the PM 4.0 impactor head would be the product of the K-factor of PM 4.0 = 0.7 and K-factor for Coal Fly Ash = 1.9

 $K_2 = 0.7 * 1.9 = 1.33 = 1.3$ 

Environment/ Impactor Head	AZ Road Dust (K=1.0)	Limestone (K=1.1)	Coal Fly Ash (K=1.9)
TSP (K=1.0)	(K <sub>2</sub> =1.0)	(K <sub>2</sub> =1.1)	(K <sub>2</sub> =1.9)
PM 2.5 (K=0.5)	(K <sub>2</sub> =0.5)	(K <sub>2</sub> =0.6)	(K <sub>2</sub> =0.8)
PM 4.0 (K=0.7)	(K2=0.7)	(K2=0.8)	(K <sub>2</sub> =1.3)
PM 10 (K=1.0)	(K2=1.0)	(K2=1.1)	(K2=1.9)

- 1. Select the next available "Blank" item, the button will turn from grey to yellow.
- 2. Press the Edit button.
  - a. For profile name put "PM 2.5 Limestone"
  - b. For environmental factor put "0.6"
  - c. Press Save



- 3. Repeat this step for each new additional Environment K-factor that was added.
- 4. Press the "Setup Device" to send the new environments and K-factors to the Nephelometer. All environments should be in your Profile Set.

SetUp Device

# 3. Device Operation



Connect Sensidyne Nephelometer to the USB port of computer, the program will detect the connected device automatically and its serial number; "123456" in this example, along with the firmware version, e.g. "V1.0.0", and current operating mode, "Manual" will be shown as a tag. The same information is also shown on the folder tab, as shown in next page.





Sensidyne Nephelometer	X
Device Library	
123456-V1.0.0-Manual	
Data Profile Calibration Utility Alarm	_
Time Profile Name Conc (ug/m3) Min (ug/m3) Max (ug/m3) STEL (ug/m3) Mode Status	
Download Data	
Connected Device	51
V1.0.0	
Manual	
1.0.10.9047 1 Unit Connected	:

If this is the first device connected, it will be selected automatically.

When a device is connected and detected, its clock will be checked. If time difference between this device and computer exceeds 3 minutes, a message will show up, as above.

Use Set Clock to synchronize device's clock, see section 3.2, Utility Folder.

### 3.1 Profile Folder

Click on the Profile folder, the existing profiles in the device are shown in a tree style hierarchy.

	Sensidyne Nephelon	neter			
	Device	Library			
12	23456-V1.0.0-Manual				
	Data Profile Calibrat	tion Utility Alarm			 
	☐ Profile Set ⊕ AZ Road Dust				
	Show Library	Add Up	Down Delete		SetUp Device
C	Connected Device				
	123456 V1.0.0 Manual				
1.0	.10.9047 1 Unit Con	nected			

### 3.1.1 Adding a profile entry

Show Library

to open up the Environmental Library.

Hide Library to close the Environmental Library.

Only the valid library entries will be shown in the library box for selection.





Add this selected library entry to the device's profile set.

🖩 Sensidyne Nephelometer			
Device	ibrary		
Environment Library	123456-V1.0.0-Manual		
01: AZ Road Dust	Data Profile Calibra	ation Utility Alarm	
02: Limestone	AZ Road Dust	it.	
03: Coal Fly Ash	K = 1.1		
	Hide Library	Add Up Down Delete St	etUp Device
	Connected Device		
	123456 V1.0.0		
1.0.10.9047 1 Unit Connected			.::

### **3.1.2 Changing profile entry order, removing entry**

🛢 Sensidyne Nephelometer		
Device	rary	
Environment Library	123456-V1.0.0-Manual	
01: AZ Road Dust	Data Profile Calbration Utility Alarm	
02: Limestone	B→A2 Road Dust 	
03: Coal Fly Ash	└─K = 1.1 ⊡· Coal Fly Ash └─K = 1.9	
	Hide Library Add Up Down Delete SetUp Dev	vice
	- Connected Device	
	123456 V1.0.0 Manual	
1.0.10.9047 1 Upit Connected		

Select the profile entry displayed on the Device's [Profile Set] tree,



### 3.1.3 Sending Profile Set to Device

Whenever an entry is added to, moved up/down or deleted from the tree hierarchy, the root item (the top item) will be changed to red color and displayed as "Profile Set..Modified" and

setUp Device will become highlighted.

After all the modifications are done, click SetUp Device to send [Profile Set] to the device.

A message window will show up for confirmation,

ОК	
Cancel	

to start sending profile to device.

to return to Profile Editing.







# 3.2 Utility Folder

Device     Library       123456-V1.0.0-Manual	
123456-V1.0.0-Manual       Data       Profile       Calibration       Utility       Alarm	
Data Profile Calibration Utility Alarm	
Set Clock Manual Mode Continuous Mode STEL Mode Clear Da	a
123456	
Manual	
TO'TO'AA44   T Ault Connected	

Set Clock	to synchronize device's clock with computer's.
Manual Mode	to set device to Manual Mode
Continuous Mode	to set device to Continuous Mode
STEL Mode	to set device to STEL mode
Clear Data	to clear device data file.

# 3.3 Calibration Folder

🛢 Sensidyne Nephelometer	
Device Library	
123456-V1.0.0-Manual	
Data Profile Calibration Utility Alarm	
Start Calibration	
Connected Device	
123456	
Manual	
1.0.10.9047   1 Unit Connected	

Start Calibration

for starting zero calibration process.

#### A message window will show up



Follow the instructions in this message window and click

to start.



🖩 Sensidyne Nephelometer	
Device Library	
123456-V1.0.0-Manual	
Data Profile Calibration Utility Alarm	
8/31/2010 10:05:18 AMCalibrationStarte	d
PurgingTime Remaining : 26	
CalibratingDo NDT unplug Device	
Start Calibration	
Connected Device	
123456 V1.0.0	
Manual	
1.0.10.9047 1 Unit Connected	



## 3.4 Alarm Folder

🖩 Sensidyne Nephelon	neter		
Device	Library		
123456-V1.0.0-Manual			
Data Profile Calibrat	ion Utility Alarm		
Download Ala	rm		Clear Alarm
Connected Device			
123456			
Manual			
			)
1.0.10.9047   1 Unit Conr	nected		
Clear Ala	arm Ta		

 Download Alarm
 To Clear Alarm Log File

 Download Alarm
 To Down Load Alarm Log File



🗟 Sensidyne Nephelometer					
Device Library					
123456-V1.0.0-Manual					
Data Profile Calibration Utility Alarm					
8/31/2010 10:07:09 AMDownload Alarm LogPlease Wait					
RetrieveAlarm372 Bytes OK					
ProcessingDo NDT unplug Device					
Download Alarm	ar Alarm				
Connected Device					
123456					
Manual					
1.0.10.0047 11 bit competed					

## Downloading alarm record.

🛢 Sensidyne Nephelom	eter		
Device	Library		
123456-V1.0.0-Manual			
Data Profile Calibrat	on Utility Alarm		
8/31/2010 10:07:14	AMDownload Alarm Lo	gDone	
Alarm Log File : <u>My Do</u>	ocuments\Sensidyne_Data	aBase\123456\2010_08_31_10_07_09_Alarm.txt	
Time, Alarm 05-12-10 17:45:28,L 05-12-10 17:45:7,S 06-15-10 18:08:46,L 06-15-10 18:09:45,S 06-15-10 18:23:19,L 06-15-10 18:23:19,L 06-25-10 05:54:52,2 06-29-10 12:13:02,Z 07:27-10 15:19:04,L 07:27-10 15:20:03,S	aser 82.1 ensor aser 83.9 ensor ensor ero Cal Low ero Cal Low ero Cal Low esor 79.2 ensor		
Download Alar	m		Clear Alarm
Connected Device			

When alarm retrieval is done, records will be displayed, as above.

# 3.5 Data Folder

🛢 Sensidyne Nephelometer								
Device	Library							
123456-V1.0.0-Manual								
Data Profile Calibration Utility Alarm								
Time	Profile Name	Conc (ug/m3)	Min (ug/m3)	Max (ug/m3)	STEL (ug/m3)	Mode	Status	
7/19/2010 09:30	Zero Calibration	71	0	0	0	Manual	Low	
7/27/2010 15:20	AZ Road Dust	0	0	0	0	Manual	Low,Laser,Sensor	
8/31/2010 10:00	Zero Calibration	71	0	0	0	Manual	Low	
Download Da		Documents\Sensidy	na DataBaca\12345(	5\20100831-100806	CSV			
		- Documents (Sensidy	ne_batabase(12040)	5(20100031-100000	.031			
Connected Device								
123456 V1.0.0								
Manual								
1.0.10.9047 1 Unit Connected								

Download Data

to start downloading data from the device.

When data retrieval is done, record(s) will be shown in the data grid, as shown above. Records will be save in a CSV file located in a sub folder named "Sensidyne\_DataBase\xxxxx" under "My Documents", where xxxxx stands for the device's serial number.

CSV File : My Documents\Sensidyne\_DataBase\K0124\20100512-084916.CSV

A quick link to open up this CSV file.

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