

## SensMit/IRROmesh Logger Manual

The Logger is a SensMit device intended for users who do not have a local internet connection at their monitoring site. The device is left on-site, where it receives and stores information from the mesh; sent to it by the single unique Base station with which it has been associated.

### Notes:

1. *A Logger cannot be used with more than one Base station.*
2. *Logger is best-used for meshes with 10 nodes or less.*
3. ***Always connect Logger to a PC running SensMitPath or IRROmesh Downloader prior to completing the installation, and confirm the correct time is displayed in the dialogue box.***
4. *Always confirm correct operation by downloading and reviewing data one day after the first installation.*

Logger runs off solar power and super capacitors (battery-only version available on request), and has to be within 400' clear line-of-sight of its Base. It can be removed from the site for modest periods of time without any data loss, but data transfer rates between Base and Logger are slow, so it can take an extended period for Base and Logger to catch up on its return. See your installation guide.

Logger needs to be used with either:

1. SensMitPath software installed on a PC. Get SensMitPath software and its user manual from [www.sensmitwebdiv.com](http://www.sensmitwebdiv.com). Data is securely sent from Logger to SensMitWeb for storage and publishing.
2. IRROmesh Downloader software installed on a PC. Get IRROmesh Downloader from [www.Irrometer.com/downloads](http://www.Irrometer.com/downloads) Data downloaded using this software is in unencrypted readable format, making it less secure but available to be uploaded via CSV format into a third party application such as Irrometer WaterGraph.

You can also upload the IRROmesh CSV file to SensMitWeb using the CSV Upload feature on the site's Utilities page.

**Note:** There are important restrictions on streaming IRROmesh Logger data – see 'Limitations on Logger' below.

There are some important tools available through SensMitWeb:

1. Data is encrypted and compressed as it is collected by nodes, and then the website decrypts and exposes it. From time to time, different data formats will be demanded by new sensor types that are released into the IRROmesh platform, and the decryption algorithms will be imbedded in the website. Existing in-field devices will not be able to read this data without being upgraded.
2. There is a suite of diagnostic and monitoring tools built into the website. Because IRROmesh is so fully automated, there is no opportunity to monitor system status in-field. That means that there is no ready visibility of the mesh status or the individual radios until the next download event. This could result in the user being unaware of data collection interruptions due to missing radios etc...
3. The website enables application programming interfaces (API's) which specify how different web-based software components should interact with each other. This lets the data from IRROmesh flow via the website directly into whichever 3rd party application is desired, and also allows the data flow to be transferred to other endpoints at will. Logger used with IRROmesh Downloader only enables a manual CSV upload to either WaterGraph or SensMitWeb.

## Downloading Logger

Connect the USB end coming from Logger to the PC running SensMitPath or IRROmesh Downloader and start the software. If the Logger is asleep at the time you make the connection, see 'Logger Behaviours' below. You will see the Records counter in the software's dialogue box reduce to zero – only then is the download complete. For a large mesh over a longer period, this download can take up to 30 minutes. The software **must again be running** if data is to be sent to SensMitWeb.

## Limitations on Logger

Logger **is not enabled to stream data** from the mesh via IRROmesh Downloader in real-time. If you wish to stream data in real-time, Logger can send it directly to SensMitWeb (via SensMitPath), or you can use an IRROmesh Cell modem or PC-Link - there are no limitations on these functions. There is no way to use Logger to stream data to a third-party application directly.

Following are some permitted and non-permitted actions relating to the use of Logger when being uploaded via USB to IRROmesh Downloader to WaterGraph.

### Permitted Logger Actions:

1. Connect Logger to PC for 1 hour each day
2. Connect Logger to PC for 6 hours on one day, not to be repeated during the next 48 hours
3. Connect Logger to PC twice on a single day for 30min, not to be repeated during the next 48 hours

### Non-permitted Logger Actions: (will likely result in Logger lock-up)

4. Connect Logger to PC twice a day for more than 36 hours in a row
5. Connect Logger to PC for 16 hours
6. Connect Logger to PC more the 5 times on a single day

If a rule is broken, Logger will cease to function for 36 'mesh awake' hours (Logger lock-up). No data will be collected during that time. A 'locked-out' IRROmesh Logger will display a blinking red light-only, on a two second interval. You can restart Logger by de- and then re-powering it at any time, but any then stored un-downloaded data will be lost. Each stop and start of the software counts as one 'Connect'.

These rules **do not apply** when sending Logger data via SensMitPath from the PC to SensMitWeb.

## Logger Behaviours when Sleeping

Logger sleeps along with the mesh, and if set in Low Power mode (automatic on IRROmesh Downloader-initiated Loggers), will sleep whenever it is not receiving data. When you arrive at the site to download a sleeping logger, it must first be awoken.

Plugging its USB cable into a PC will wake a sleeping Logger. But if Logger is sleeping and its USB cable is already plugged in, you must unplug the cable for 8 seconds to wake it. The GREEN LED will light for 2 seconds, to indicate the removal of the cable has been detected. Now plugging in the cable will wake the Logger in 2 seconds or less. The green LED will flash indicating it is ready and the red LED will flash once every 2 seconds, indicating you are forcing the Logger to be awake, while the rest of the network is asleep.

Download may now commence.

- 1) If you have awoken the Logger and there is no data to send to the software or after all data has been sent, Logger will go back to sleep for the rest of the sleep period that was interrupted.
- 2) Logger will also go back to sleep if the USB cable is again unplugged as and when it needs to.

### **Download File Management**

If you are using IRROmesh Downloader on your PC to download Logger, the first time you download Logger a unique file in the format 'logger.csv.basename.txt' is created on your PC in the directory that IRROmesh Downloader occupies. Each subsequent time you download from that Logger, that file on your PC is appended. If you download from multiple Loggers, a file for each Logger is created with its unique Base ID in the file name. This is the file to upload into WaterGraph. A new file is created with each download.

If you are flowing downloaded Logger files from your PC to SensMitWeb directly using SensMitPath, there are no file management issues for the user to manage. The encrypted original file is stored on your PC at download and is sent to SensMitWeb automatically the next time the PC is on-line while SensMitPath is running.