Claims

1. Data logger for sensor network, the data logger comprising
   - a central processing unit for signal processing,
   - a memory device connected to the central processing unit for storing the data,
   - an electronic circuit connected to both the central processing unit and the memory device, and
   - a power supply further connected to the electronic circuit for providing electricity to the data logger,
   - **~~Wherein~~ the electronic circuit comprise~~s~~**ing **an universal interface for connecting different types of sensors via various communication modes**;
     wherein the data logger is configured to provide power management algorithm to allow the corresponding sensor network to be self-powered reliably or work efficiently**.**

2. Data logger of Claim 1, wherein
   the universal interface is configured to detect availability of a sensor for configuration or connection.

3. Data logger of Claim 1 or 2, wherein
   the universal interface comprises an analogue port, a digital port or both for receiving analogue or digital signals from the sensors via the various communication modes.

4. Data logger of any of the preceding Claims, wherein
   the universal interface further comprises a communication module, the communication module having a wired terminal, a wireless terminal or both for connecting the sensors via the various communication modes.

5. Data logger of Claim 4, wherein
   the wired terminal comprises a USB terminal, a PoE terminal, a RS-232 terminal, a RS-232 express terminal, a RS-485 terminal, a parallel terminal, a

coaxial terminal, an optical terminal, an Ethernet terminal, a FireWire terminal, ~~,~~ a DSL terminal an ADSL terminal or a combination of any of these terminals for providing the various communication modes.

6. Data logger of Claim 4, wherein
the wireless terminal comprises a Near Field Communication Terminal, a Wi-Fi terminal, a ZigBee terminal, a Bluetooth terminal, a GPRS terminal, an Edge terminal, a 3G terminal, a 4G terminal, a GSM terminal, a HSPA terminal, a CDMA terminal, a WCDMA terminal, an UMTS terminal, a radio (communication) terminal, a LTE terminal, a SATCOM terminal, a WiMax terminal, a satellite network terminal, a VSAT terminal, a MSAT terminal, a VHF terminal, an UHF terminal, a DSL terminal, an ADSL terminal or a combination of any of these terminals for providing the various communication modes.

7. Data logger of any of the preceding Claims ~~Claim 3~~, wherein
the universal interface further comprises at least one analogue to digital converter connected to the analogue port for converting analogue signals to digital signals.

8. Data logger of any of the preceding Claims, wherein:
the power supply comprises at least one connector for receiving the electricity from onboard batteries, external power supplies or both.

9. Sentinel platform for sensor network, the sentinel platform comprising:
- the data logger of any of the preceding claims,
- a base station having a microcontroller connected to the data logger for data processing, and
- a data storage device connected to the data logger, the microcontroller or both for data storage.

10. Sentinel platform of Claim 9 further comprising:
a cloud platform connected to the microcontroller for transferring data to a remote data storage device.

11. Sentinel platform of Claim 10, wherein
the cloud platform comprises at least one wireless terminal for data transmission.

12. Sentinel platform of any of the preceding Claims 9 to 11 further comprising
an user interface for controlling or monitoring the sensors.

13. Sentinel platform of Claim 12, wherein
the user interface comprises a display unit, a keyboard, a computing mouse, a scanner, a memory card reader, a biometric reader, a printer or a combination of any of these.

14. Sentinel platform of any of the preceding Claims 9 to 13 further comprising
a power source for providing electricity.

15. Sentinel platform of Claim 14, wherein
the power source comprises a battery, a solar panel, an electricity generator, a biomass electricity generator, a biofuel electricity generator, a geothermal electricity generator, a piezoelectric element or a combination of any of these.

16. Sentinel platform of any of the preceding Claims 9 to 15, wherein
the base station is configured to manage electricity supply to components of the sentinel platform according to predetermined priority level, power consumption requirement, sampling rate or a combination of any of these.

17. Sensor network comprising:
sensors for collecting data, and
the data logger of any of the preceding Claims 1 to 8, ~~and~~
the sentinel platform of any of the preceding Claims of 9 to 16, or
both <u>the data logger of any of the preceding Claims 1 to 8 and the sentinel platform of any of the preceding Claims of 9 to 16</u>.

18. Sensor network of Claim 17 further comprising

at least one relay node for increasing signal strength of the sensors.

19. Sensor network of Claim 17 or 18 further comprising
two or more different types of sensors having the various communication modes.

20. Method of using a data logger comprising:
- installing an operating system for sensor network,
- selecting sensor type or communication mode of the sensor,
- loading at least one driver software program according to the sensor type, the communication mode or both, and
- applying power plan, sampling scheme, data transmission rate or a combination of any of these.

21. Method of Claim 20 further comprising:
selecting at least one communication mode or channel according to the sensor type, communication mode, or both.

~~22. Method of Claim 20 or 21 further comprising:~~
~~applying power plan, sampling scheme, data transmission rate or a combination of any of these.~~

~~23.~~22. Method of using ~~a~~the sentinel platform according to any of the preceding Claims 8 to 16 comprising:
determining power plan, communication channels, data recording format, sensor types for the sentinel platform.

~~24.~~23. Method of Claim ~~23~~22 further comprising:
installing, configuring, updating or uninstalling at least one device driver or operating systems.

~~25.~~24. Method of installing ~~a~~the sentinel platform according to any of the preceding Claims 9 to 16 comprising:

mounting the sentinel platform on a frame for providing communication of the sentinel platform with less ambient interference.

~~26.~~25. Method of Claim ~~25~~24 further comprising:

connecting an antenna, a camera, power source, data logger or any of these onto the frame.