MIRION TECHNOLOGIES   Dosimetry Services Division

instadose 2 Dosimetry Communication Specifications

instaLink™ USB:

The instaLink USB allows workstations connected to the internet to transmit dose data to Mirion's secure servers. For the instaLink USB to work it must be connected to the workstation at all times and the instaLink USB software must be installed on the workstation. The software has a small footprint of less than 1Mb.

KEY FEATURES

Bluetooth® wireless technology version 4.0, single mode compliant
- Supports master and slave modes
- 4+ simultaneous connection is master mode

Integrated *Bluetooth* low energy stack
- GAP, GATT, L2CAP, SMP
- *Bluetooth* low energy profiles

Radio performance:
- TX power: +4dBm to -23dBm
- RX sensitivity: -87dBm to -93dBm
- USB, USB HID and virtual COM port emulation
- *Bluetooth* end product, CE, and FCC qualified

Hardware Features:
- *Bluetooth* low energy radio
- Built-in antenna

Certifications:
- *Bluetooth* wireless technology 4.0
- CE and FCC

REQUIREMENTS / FUNCTIONALITY OF SOFTWARE:

- Internet Connectivity
- Runs on Window XP, Vista, and 7
- Access to *.instadose.com / port 443
- During installation, the application will be added to the StartUp menu – the application will launch when the workstation boots up
- The application window does not need to be open for a device to be read
- If the workstation is hibernating (sleeping) communication with instadose 2 dosimeters will not occur

INSTALLATION STEPS

The instaLink USB software will work on Windows XP, Vista, and 7, Windows 8 is currently unavailable.

NOTE: DO NOT plug in the instaLink USB until after the software has been installed.

To install the instaLink USB software onto workstations you must have administration privileges and follow the steps below.

- Go to www.instadose.com and login with the given username and password
- [Click] Download software under the Manage section of the home screen
- [Click] download instaLink USB software and follow the instructions.

instaLink™ Hotspot Station:

The instaLink hotspot station securely transmits dose data to Mirion's server. The station comes with a power cord and mounting brackets. The instaLink hotspot station can be connected to your network by either Ethernet or WiFi. The instaLink comes with configurable Wifi/Ethernet options: WPA, SID, Proxies, etc.

KEY FEATURES:

- Software comes preloaded and is designed to be functional upon arrival at the customer site
- instaLink can be plugged directly into a network – Once connected it will attempt to connect to instadose web service

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DISCOVERY / CONFIGURATION APPLICATION:

Install the instaLink discovery configuration software to scan and detect instaLink hotspots connected to the network. IT departments can configure network settings and unique identifiers for each hotspot.

INSTALLATION STEPS

- Plug a instaLink hotspot into your hardwired network.
- Install and run the discovery application software. They software will identify each instLkink hotspot connected to the network. The following options are configurable:
    - WiFi – sid and access credentials (username / Password)
    - Proxy / Network security settings
    - Unique instaLink Identifier (Name) to assist in data collection statistics

Bluetooth® Smart Dosimeter:

The instadose 2 dosimeter utilizes *Bluetooth* Low Energy (BLE) Technology to transmit dose data to a variety of devices. A facility can select from:

- iPhones or iPads with the instadose app installed
- PCs with BLE or with the instaLink-USB connected
- instaLink Hotspot Station

DATA TRANSFERS:

Bluetooth low energy technology supports very short data packets (8 octet minimum up to 27 octets maximum) that are transferred at 1 Mbps. All connections use advanced sniff-sub rating to achieve ultra low duty cycles.

FREQUENCY HOPPING:

Bluetooth low energy technology uses the adaptive frequency hopping common to all versions of *Bluetooth* technology to minimize interference from other technologies in the 2.4 GHz ISM Band. Efficient multi-path benefits increase the link budgets and range.

STRONG SECURITY:

Full AES-128 encryption using CCM to provide strong encryption and authentication of data packets.

TOPOLOGY:

Bluetooth low energy technology uses a 32 bit access address on every packet for each slave. The technology is optimized for one-to-one connections while allowing one-to-many connections using a star topology.

A new *Bluetooth* Smart feature is the "advertising" functionality. The instadose 2 dosimeter (acting as a slave) can in this way announce that it has dose readings to transmit to the master (iPhone, iPad, instaLink USB or instaLink).

Figure 4 shows how the instadose 2 dosimeter communicates reads.

The instadose 2 dosimeter periodically sends messages and will always be a slave once the connection is established. An ipad, iPhone, or instaLink product is ready to receive an advertisement message and a connection request. The ipad, iPhone, or instaLink product will always be a master once the connection is established.
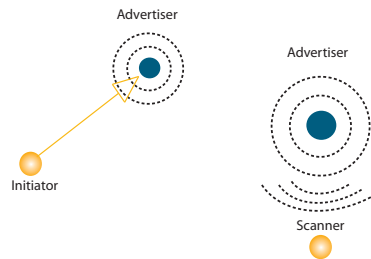

Figure 4

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