



## *MistLX Model 2000 USER GUIDE*

*Version 2.3  
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## 1. Introduction

The MistLX unit is an advanced wireless monitoring system that integrates environmental sensors into a small form factor battery powered housing.

The unit runs stand alone with batteries. The battery pack is field replaceable. High performance, high temp non-rechargeable lithium batteries are employed in the design.

The wireless unit communicates with the base station via a short range BlueTooth radio version 4.0.

The MISTLX unit includes a high performance digital signal processor (DSP) that allows advanced analysis programs.

The MistLX unit provides input buffering and filtering on the AC channels, including programmable low and high pass filters and an onboard decimation filter. Low frequency signals near DC can be measured with a direct coupled input setting.

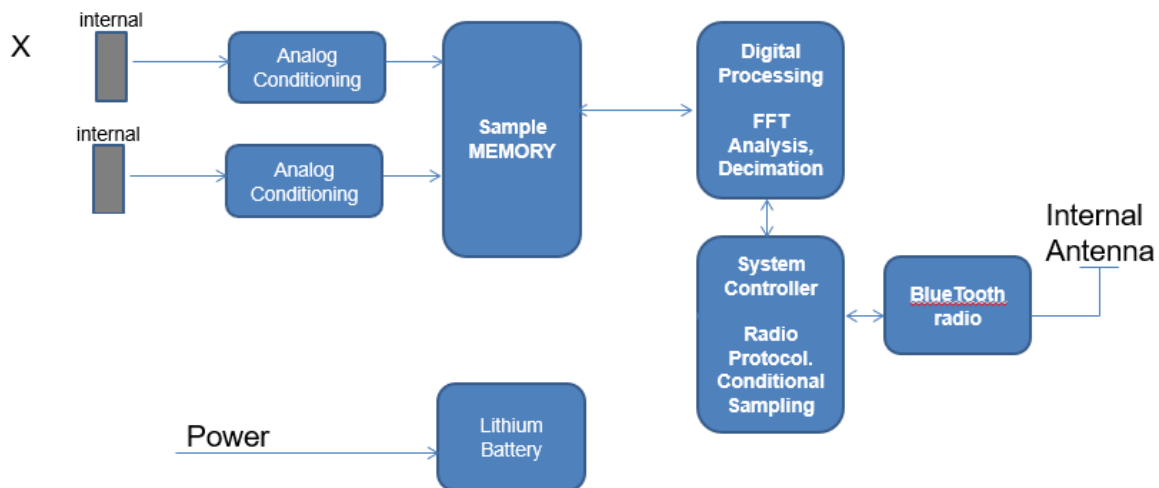
## 2. Key Features

MistLX has the following features:

- ❖ Wireless connectivity using BlueTooth radio technology.
- ❖ Water and weatherproof durable casing sealed to IP67 standards.
- ❖ Anti caustic casing made from stainless 316 or Aluminum and corrosion resistant plastics.
- ❖ Battery operation.
- ❖ High temp design 175F.
- ❖ Battery monitoring features.
- ❖ Multi-year battery life depending on configuration.

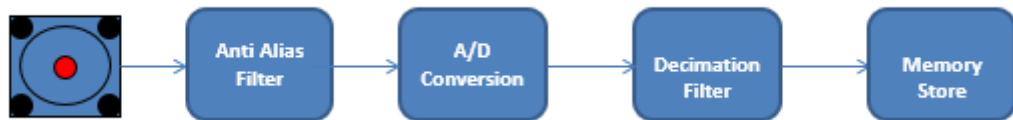
### 3. Overview

An overview of the MISTLX unit is shown in the figure below. The input AC signals pass through a conditioning block, then to an A/D converter, and then are placed into system memory. The Digital Processing block collects sampled data and provides additional functions such as decimation and frequency analysis. The system controller communicates over the radio interface to send and receive commands and data.



### Analog Conditioning

The analog conditioning block is shown in the figure below. This circuit is duplicated once per analog input. AC signals come from the internal accelerometers and then pass through filtering before being converted by a high precision A/D converter. The digital samples are filtered and decimated before being stored to memory.



#### **4.    *Sensitivity***

MistLX inputs should be programmed in the System Database as follows:

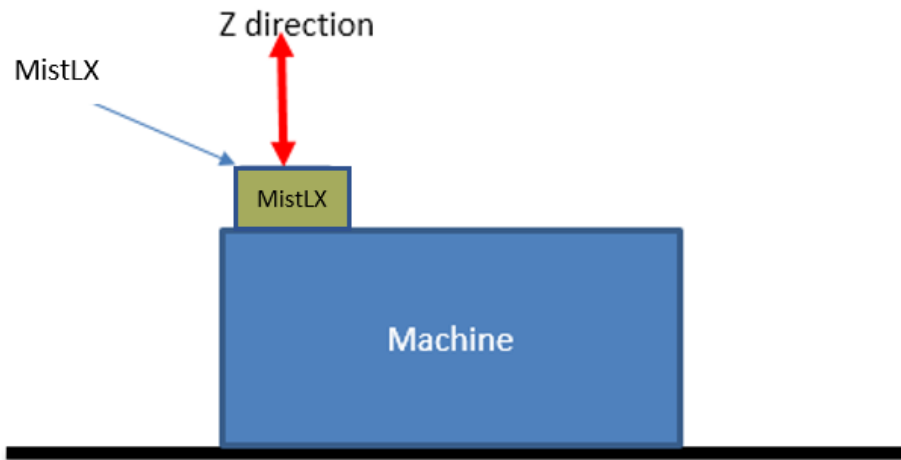
Parameter	Chan	Sens	Offset
<b>X</b>	Spec2	100	0
<b>U</b>	Spec1	100	0
<b>T</b>	Proc1	1000	0

## 5. *Z Direction*

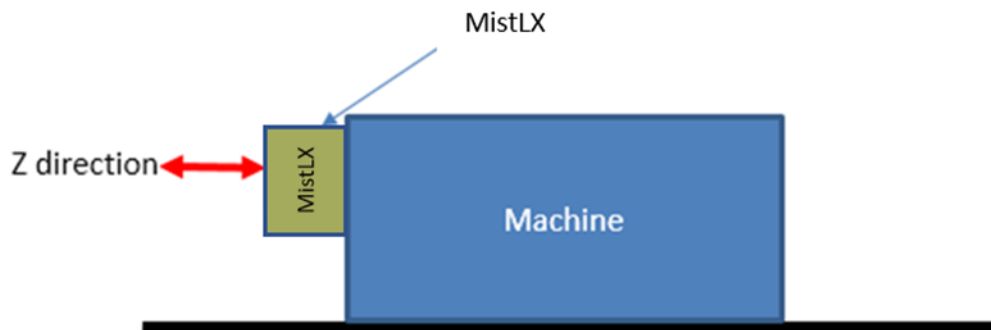
### Z Direction

The Z direction is always from the top toward the base of the unit. If the unit is mounted on the floor of a room, for example, the Z direction is toward the floor. If the unit is mounted on a wall, the Z direction is toward the wall.

Example of mounting on top of Machine.



Example of mounting on top on side of Machine





## 6. **BlueTooth Radio Specification**

*The Bluetooth v4.0 Compliant Protocol Stack for Single-Mode BLE Solution*

The Bluetooth Module is v4.0 Compliant for Single-Mode BLE solutions. It operates at 2.4Ghz with 4dbm output power.

The BLE device is: CC2540TF256RHAT

**QDIDs for CC254x**

Design Model Number	Device	BT Core Spec	Declaration ID	QDID	Includes	Core Spec Features
CC254x Host Subsystem - Core 5.0	CC2540/CC2541	v5.0	<a href="#">D043835</a>	127435	GAP, GATT, ATT, SMP, L2CAP, HCI	v4.0
CC254x Controller Subsystem - Core 5.0	CC2540/CC2541	v5.0	<a href="#">D043834</a>	127418	HCI, Link Layer, RF PHY	v4.0
CC254x BLE v1.5.x Profile Subsystem	CC2540/CC2541	v5.0	<a href="#">D043836</a>	127436	Alert Notification Profile, Battery Service, Blood Pressure Profile and Service, Cycling Speed and Cadence Profile and Service, Device Information Service, Find Me Profile, Glucose Profile and Service, Health Thermometer Profile and Service, Heart Rate Profile and Service, HID over GATT Profile and Service, Immediate Alert Service, Interoperability Test Specification, Link Loss Service, Phone Alert Status Profile, Proximity Profile, Running Speed and Cadence Profile and Service, Scan Parameters Profile and Service, Time Profile, TX Power Service	

## **7. *Battery Considerations***

All features of the MistLX unit can be enabled whether on battery power or DC power. Some advanced operational modes are not recommended when on battery power. The unit is capable of sampling long time domain waveforms and can sample continuously. In battery operation, this will deplete the battery quickly.

## **8. *Recommend Operating Conditions Temp***

Operational Temperature range is 0 – 175F.

## 9. ***FCC/CA Approvals***

This unit Contains FCC ID:2ADT3BA2000

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.