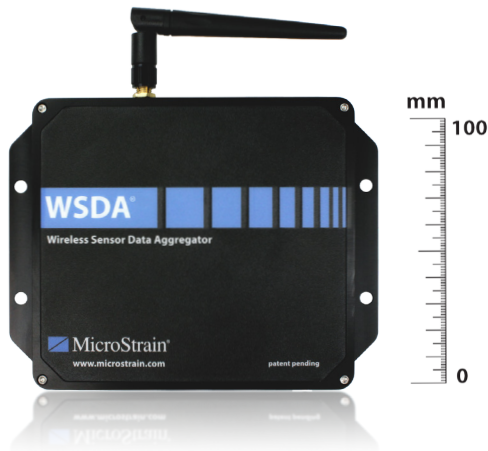


## Wireless Sensor Data Aggregator With 600 MHz XScale and 2 GB Flash



### Introduction

The Wireless Sensor Data Aggregator (WSDA<sup>®</sup> -1000) is a single-board computer with ethernet connectivity designed to collect data from networks of distributed wireless sensors. The WSDA<sup>®</sup> -1000 is capable of collecting data from a wide range of MicroStrain<sup>®</sup> wireless sensor nodes operating in LDC or Synchronized sampling mode. The wireless sensor network can be set up and controlled remotely via MicroStrain<sup>®</sup> NodeCommander<sup>®</sup> software. Once set up, the WSDA<sup>®</sup> -1000 may operate in one of three distinct modes:

SensorCloud<sup>®</sup> Enabled, LAN (Local Area Network), and Standalone.

### Features & Benefits

#### General

- minimal setup required; collect data within minutes
- autonomously aggregates wireless sensor data
- supports a wide range of MicroStrain<sup>®</sup> wireless sensor nodes transmitting in LDC or Synchronized Sampling modes
- 2 GB non-volatile embedded flash for local storage
- command, control, and monitoring of a remote wireless sensor network from your PC
- web interface for system configuration
- three modes of operation: SensorCloud<sup>®</sup>, LAN, Standalone
- full industrial temperature range supported (-40 °C to 85 °C)

#### SensorCloud Upload Enabled

- seamlessly integrates with SensorCloud<sup>®</sup> for world-wide data access and visualization
- includes a free basic SensorCloud<sup>®</sup> account
- local storage is used for SensorCloud<sup>®</sup> caching

### Applications

- structural health monitoring
- condition based monitoring of high value assets
- environmental monitoring
- food processes & cold-chain management

### System Overview

#### WSN Setup

The wireless sensor network can be setup, modified, and monitored using the WSDA<sup>®</sup> -1000 in conjunction with MicroStrain<sup>®</sup> NodeCommander<sup>®</sup> software. This capability enables the user to remotely control the WSN from any PC provided sufficient network access is available.

#### SensorCloud<sup>®</sup> Enabled

Optionally, the WSDA<sup>®</sup> -1000 seamlessly integrates with SensorCloud<sup>®</sup>, a unique data visualization application, which allows the user to navigate through gigabytes of data within seconds and quickly drill down to points of interest. If enabled, sensor data is autonomously and securely pushed up to SensorCloud<sup>®</sup> periodically. Data is locally cached in case of Internet connectivity disruption thereby safeguarding data integrity. The WSDA<sup>®</sup> -1000 comes with a free basic account on SensorCloud<sup>®</sup>, and the upload option is available within the WSDA<sup>®</sup> -1000 web interface.

#### Local Data Acquisition on a LAN

If SensorCloud<sup>®</sup> upload is disabled, the WSDA<sup>®</sup> -1000 may act as an autonomous data logger on a LAN with a DHCP server. In this mode, the WSDA<sup>®</sup> -1000 only stores data on locally on the 2 GB embedded flash. Data can be downloaded and cleared from the WSDA<sup>®</sup> -1000 using the download tool.

#### Standalone Mode

If a LAN with a DHCP server is unavailable, the WSDA<sup>®</sup> -1000 may also operate autonomously as a wireless sensor network data logger. In this mode, the WSDA<sup>®</sup> -1000 stores data locally on the 2 GB embedded flash. Using the WSDA<sup>®</sup> downloader tool with a crossover Ethernet cable, the user can download and clear data from the WSDA<sup>®</sup> -1000. This is useful in applications where network access is unavailable.

## Specifications

CPU	Marvell® PXA270
Operating system	Linux 2.6.21 kernel
CPU speed	600 MHz
Internal memory	32 MB flash, 128 MB flash
Data storage memory	Micro SD 2 GB
Connectivity	IEEE 802.3 Ethernet, 10/100, IEEE 802.15.4 wireless, optional external cell modem
Accessibility	HTTP, HTTPS TCP/IP socket
IP assignment	DHCP
Remote data synchronization	optional - periodically uploads data to secure portal (SensorCloud®), requires internet connection or cellular modem
Firmware upgrade options	upgradable via local web interface
Node support	supports LDC mode and synchronized sampling mode for the following: <b>V-Link®-mXRS™, SG-Link®-mXRS™, G-Link®-MXRS™, DVRT-Link™-mXRS™, TC-Link®-6CH-mXRS™, TC-Link®-1CH-mXRS™, EH-Link®, SG-Link® OEM-S, TC-Link® OEM</b> , all legacy 2.4 GHz wireless nodes
Communication cable	10 foot CAT 6 Ethernet
Power supply	universal 12 volts DC
Power supply range	7.0 to 36.0 volts DC
Power consumption	max - 2000 mW, typical - 1400 mW
Radio frequency (RF) transceiver carrier	2.4 GHz direct sequence spread spectrum, license free worldwide (2.405 to 2.480 GHz) – up to 16 channels, radiated power programmable from 0 dBm (1 mW) to 16 dBm (39 mW)
RF data packet standard	IEEE 802.15.4, open communication architecture
Range for bi-directional RF link	16 dBm (39 mW) Extended Power with range up to 2 kilometers (not available in Europe) 10 dBm (10 mW) Standard Power with range up to 1 kilometer 0 dBm (1 mW) Low Power with range up to 70 meters
Node synchronization	1 Hz beacon provides +/-32 microsecond node to node synchronization
Status LEDs	multi-color LEDs signal activity status
Operating temperature	-40 °C to +85 °C
Dimensions	146 mm x 109 mm x 22 mm without antenna
Weight	305 grams with antenna
Enclosure material	black anodized aluminum
Software	<b>Node Commander®</b> Windows XP/Vista/7 compatible
Software Development Kit	includes Data Communication Protocol and sample code
FCC ID	XJQMSLINK0001
IC ID	8505A-MSLINK0001

