

Sensor Network Adapter



Benefits

- **Compatible with the Sensor Network Analyzer (SNA):**
Enables additional functionality to the already powerful SNA.
- **Custom protocol support:**
Supporting the SNA's flexible decode engine, the 2400E is able to capture any protocol over IEEE 802.15.4 PHY.
- **Active analysis:**
When used with the SNA, the 2400E can start or join a ZigBee or 802.15.4 networks, interact with live devices, and access information not available through passive "sniffing" alone.
- **Commissioning tool:**
When used with the SNA, the 2400E can commission ZigBee devices over-the-air and perform tasks including service discovery, bindings, and over-the-air firmware upgrades.
- **Capture entire network:**
The SNA synchronizes time-stamping for multiple 2400Es to enable a single time-correlated view of the entire network. Suitable for networks of any size—simply add more 2400Es as the network grows.
- **Portable and light weight:**
Suitable for use in remote locations.



2400E Sensor Network Adapter

The 2400E is a data capture accessory that acts as an observation and control point enabling the use of Daintree's Sensor Network Analyzer software in live wireless embedded networks.

The 2400E Adapter provides both Ethernet and USB interfaces, and can be operated in two connection modes:

- **USB mode:** Simple USB connection to a host computer enables network and protocol analysis on compact networks. Device may be powered by USB.
- **Ethernet mode:** Multiple adapters can be used to enable coordinated and timestamp-synchronized analysis of physically dispersed networks.

Features

Get started quickly in USB mode

- A single adapter, connected directly to a PC running the Sensor Network Analysis software, will quickly collect and display captured packets. No external power source is required.
- For smaller and minimally distributed networks, rapidly display network formation or statistics.

Analyze a large physically dispersed network

- With Ethernet networking, place multiple Ethernet-connected adapters in different locations. Wireless Ethernet bridges allow placement in remote locations and areas not wired with Ethernet.
- Obtain a single time-correlated view of the entire network, regardless of network size or distance. All adapters are synchronized by the Sensor Network Analyzer application software, enabling detection and discard of duplicate traffic.

Add more Adapters as your needs increase

- Start with one or two Adapters and add more Adapters as your needs and networks grow.
- With standard Ethernet support, place your device anywhere.
- With the purchase of multiple SNA software licenses, allocate and share Adapters between multiple users on a single-user per adapter basis.

Warranty: Daintree's hardware products are warranted against defects in materials and workmanship for a period of one year from the date of delivery.

Detailed Specifications

Connection mode independent

Timestamping	All received packets are timestamped with the time received before being passed to host computer. Timestamp clock is set by the SNA. Timestamps are accurate to 100us where a single 2400E Adapter is used to capture packets. For multi-node capture, overall system accuracy is 1ms.
Link Quality Indication (LQI), Frame Check Sequence (FCS)	Indication of LQI for each captured packet is provided and available to the SNA. LQI is the signal strength at the 2400E Adapter receiver and not the ultimate packet destination node. Frame check sequence validity (error or no error) is also provided and available to the SNA.
PHY/MAC	Conforms to IEEE 802.15.4-2003 Wireless Medium Access Control and Physical Layer Specifications for Low-Rate Wireless Personal Area Networks operating on 2.4GHz band only.
Indicators	<ul style="list-style-type: none"> – DC power (green LED) – Radio interface activity (green LED) – 2400E Adapter status (red/green LED)
Host Software	Requires compatible host software application such as Daintree's SNA. The SNA will automatically check the 2400E Adapter firmware and recommend an upgrade if necessary.
Operating temperature range	5°C to 45°C
Accessories included	Antenna, USB cable, 2m (6ft) Ethernet cable, multi-country AC adapter. In some multi-adapter configurations, a USB hub or an Ethernet hub or switch may be required (not supplied).
Physical	Approx. 85 x 85 x 30mm (excluding antenna), approx. 100gm (including antenna, excluding other accessories). The 2400E Adapter is intended for stationery, indoor use only.

USB mode

Connectors	Mini USB Type B (optional 2.1mm barrel connector for DC power for non-USB powered operation).
Power requirements	Powered from host computer via USB, or optionally DC 8-12V (unregulated), 400 mA min. via 2.1 mm barrel connector. Presence of DC power overrides USB power.

Ethernet mode

Connectors	Ethernet RJ45, 2.1mm barrel connector for DC power.
Additional indicators	<ul style="list-style-type: none"> – Ethernet link (green LED, above RJ45 connector) – Ethernet activity (green LED, above RJ45 connector)
Power requirements	Requires DC 8-12V (unregulated), 400 mA min. via 2.1 mm barrel connector. Multi-country AC adaptor is included. Note that the Ethernet operation requires external power. Ethernet operation is disabled when powered USB connection in place.
IP addressing and hostname	The 2400E Adapter comes pre-configured to support DHCP and its hostname is set to its serial number. The Sensor Network Analyzer application can be used to configure the Adapter with a static IP address or DHCP, or to modify the hostname. An additional tag can be stored to identify the 2400E Adapter's location. This configuration can be done in either USB or Ethernet mode.