

## Configuring Spiders with Wi-Fi

### Typical Spider System Configurations

The Spider hardware platform supports two different software working modes: black-box and PC tethered mode. When Spider operates in black-box mode, preset projects can be executed based on a user defined schedule. In PC tethered mode, the PC is used as a control terminal to access the Spider through an Ethernet network. The Spider can be switched between the two modes. The PC tethered mode is ideal for applications such as structural testing in a laboratory environment while black-box mode is ideal for remote monitoring.

The figure below illustrates some of the different configurations that are possible with the Spider system.

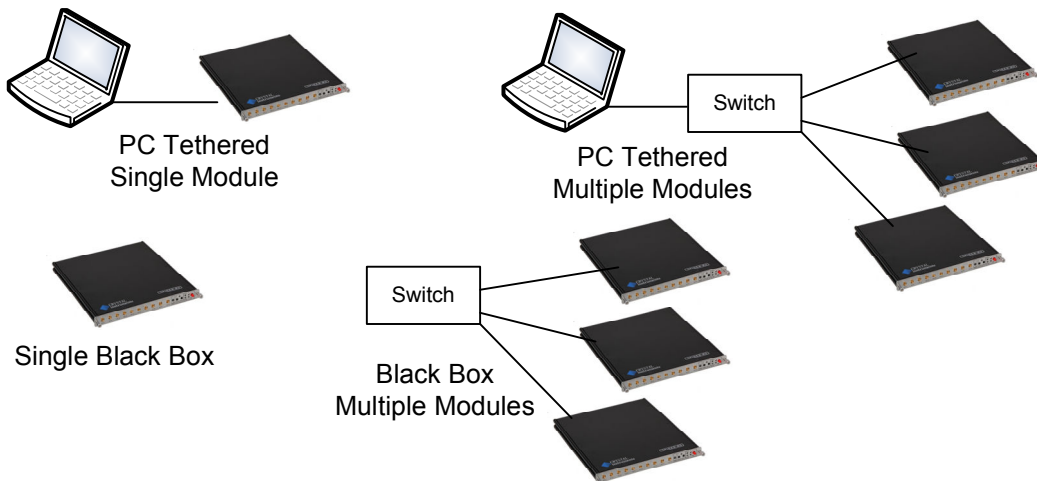


Figure 1. Typical Spider system configurations

#### Configuration 1: PC Tethered with One Spider Module

One Spider module can be directly connected to a PC or to a LAN network through Ethernet. No switch is needed. The PC is used as a control and monitoring terminal via the EDM software.

#### Configuration 2: PC Tethered with Multiple Spider Modules

Multiple Spider modules can be connected to make a high channel count system. Multiple switches can be used in cascade to extend the number of modules. The PC is used as a control and monitoring terminal via the EDM software. CI can recommend several manufacturers of network switches that meet the requirement of time synchronization.

### Configuration 3: Black-Box Mode with One Spider Module

This is the same as Configuration 1, except that the PC is not required during run time. A PC is required to upload the Spider Black-Box Engine to the Spider module so it can run without a PC during run time. The PC is only used to configure the Spider and to download data files.

### Configuration 4: Black-Box Mode with Network Switches and Multiple Spider Modules

This is the same as Configuration 2 except that the PC is not required during run time. A PC is required to upload the Spider Black-Box Engine to the Spider module so it can run without a PC during run time. The PC is only used to configure the Spider and to downloading files. CI can recommend several manufacturers of network switches that meet the requirement of time synchronization.

### Configure Spider with Wi-Fi

Wi-Fi belongs to a class of [wireless local area network](#) (WLAN) devices based on the [IEEE 802.11](#) standards. Because of the close relationship with its underlying standard, the term *Wi-Fi* is often used as a synonym for IEEE 802.11 technology. The following picture shows a typical Wi-Fi network router with several Ethernet ports and a Wi-fi interface.



Figure 2. Typical Wi-Fi Router

Wi-Fi routers usually come with multiple Ethernet ports. If the user wants to operate only one Spider module, then the Spider can be directly connected to the Wi-Fi router.

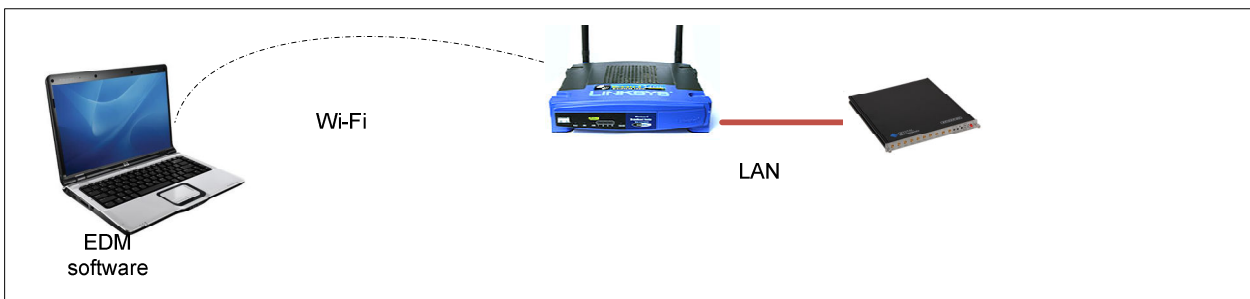
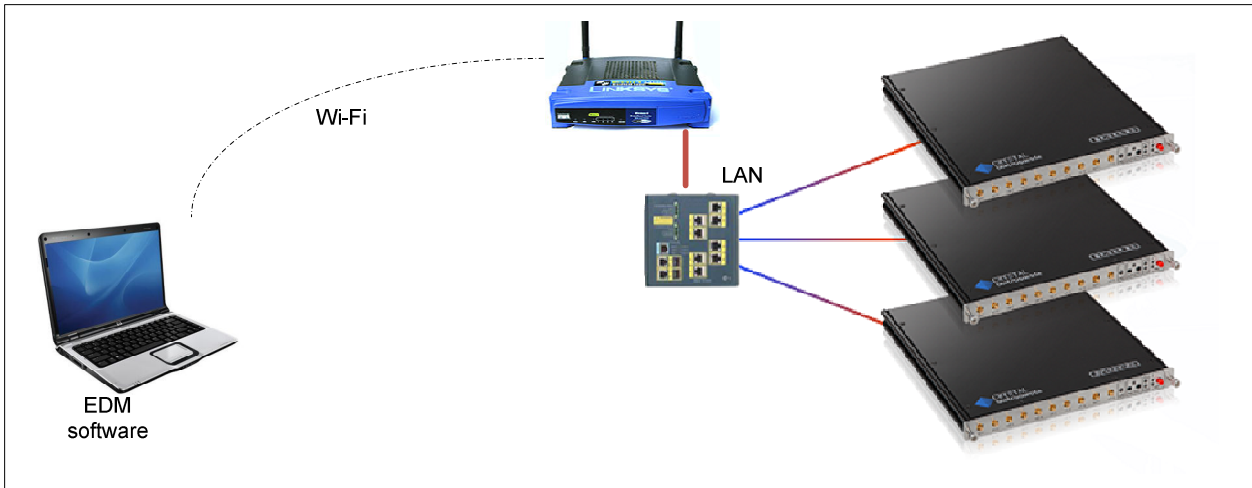


Figure 3. Spider connected with a Wi-Fi router

For a computer to access the Spider Local Area Network, a network router can be connected to the Spider LAN in following diagram. The EDM software can be installed in a PC that is remotely communicating with the LAN through Wi-Fi.



**Figure 4. Control the Spider system remotely using Wi-Fi**

Wi-Fi transmission usually goes a few hundred feet in distance. But with special high-gain antenna, the transmission distance can go several hundred yards or even miles. The industry is actively developing different technology that supports long distance Wi-Fi.

One of the great advantages of Spider is that its real-time operation does not rely on a PC. All the spectral processing and data storage are handled locally, inside the box. Even if the Wi-Fi communication is slow or unreliable, which can happen from time to time, the real-time performance of data processing and recording are always guaranteed. In fact, the PC can be disconnected after the configuration and the Spider system will run on its own.

For assistance of Wi-Fi configuration, please contact [Support@go-ci.com](mailto:Support@go-ci.com) .