

## COMMUNICATIONS OPTIONS OVERVIEW

### REGULAR-SPEED COMMUNICATIONS

Regular-speed communication methods are preferred for small to medium-sized signs.

#### RF WIRELESS MODEM:

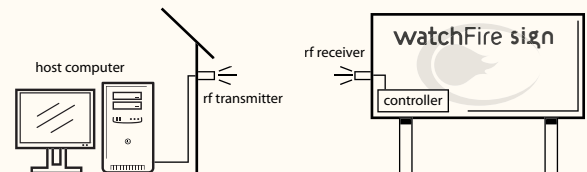
The RF Modem uses 2.4 GHz point-to-point radio transmission for communication. This technology is resistant to interference and has a range of at least 1000 feet. The GroupLink option is available.

##### PRO:

- No wires between the host computer and sign.
- Host radio is able to be mounted indoors.

##### CON:

- Line-of-sight obstructions can inhibit communication with the sign.
- Wires must run from host computer to the host radio to a maximum distance of 100 feet.
- If radio is mounted outside, end user is responsible for appropriate surge protection.



#### RF WIRELESS MODEM (250ft CABLE):

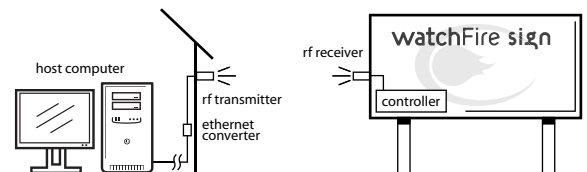
The extended radio cable option uses identical radios as the RF Modem option, but includes an extended 250' ethernet radio cable used to create a point-to-point network from the radio to the host PC. This requires an accessible ethernet network card on the host PC for communications.

##### PRO:

- No existing network required.

##### CON:

- Requires an available ethernet port on the host PC. This may require additional hardware on the host PC.



#### RF WIRELESS MODEM with GROUPLINK:

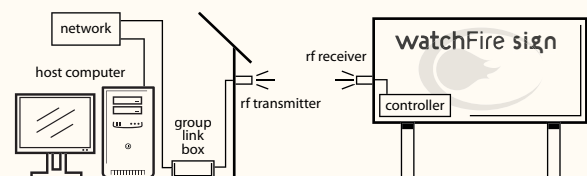
GroupLink Radio uses the same radio as the RF Modem.

##### PRO:

- Allows any number of computers to communicate with the sign over a network. However, only designated computers on the network have access to the sign. The sign can be updated from any designated computer that is on the same network as the host PC.
- Security includes spread spectrum radio technology, hardware locks, and communication access restricted to designated computers.

##### CON:

- Same as the RF Modem option.



#### FIBER OPTIC DATA CABLE:

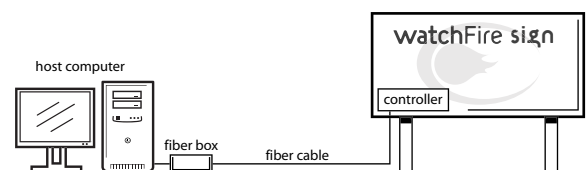
FiberCom uses fiber-optic cable and a fiber adapter box for fast, stable communications. The intrinsic security of the fiber adapter box means FiberCom does not require a USB hardware lock.

##### PRO:

- Fiber-optic cable can be run in the same conduit as power wires.
- Fiber-optic communication is more reliable than radio and modem communications.

##### CON:

- Fiber-optic cable must be run in 1.5" conduit from the host PC's fiber box to the sign.



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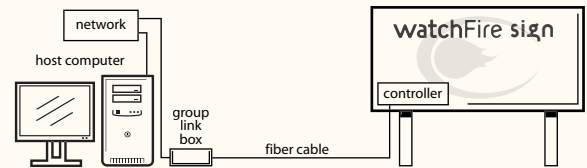
GroupLink Fiber uses similar fiber to the **FiberCom** solution with additional GroupLink hardware.

**PRO:**

- Allows any number of computers to communicate with the sign over a network. However, only designated computers on the network have access to the sign. The sign can be updated from any designated computer that is on the same network as the host PC provided the computers share folders.
- Security includes FiberCom unit, hardware locks, and communication access restricted to designated computers.

**CON:**

- Same as **FiberCom** solution.



#### PHONE CONTROL:

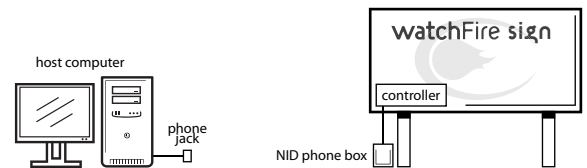
Phone control uses a dedicated analog land-line phone modem. We recommend using a phone line surge suppressor at the host PC to protect against power surges traveling through the copper phone line.

**PRO:**

- No range restrictions.
- Sign can be dialed from anywhere, including from our service department to aid troubleshooting.

**CON:**

- Requires a separate, dedicated analog phone line terminated (NID) at the sign pole.
- Typically slower than Radio or Fiber communications.



#### CELLULAR MODEM:

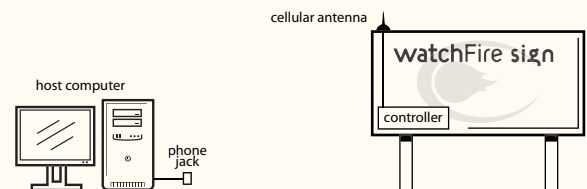
Uses a standard 14.4k CDMA cellular modem.

**PRO:**

- No range restrictions. The sign can be updated from anywhere, which can assist troubleshooting.
- Best suited for signs in remote locations that make other communications options unfeasible.

**CON:**

- Slowest available communication option.
- Requires phone modem on the host computer.
- Requires wireless data service contract. Cellular coverage is not available in all areas and must be negotiated with the wireless service provider.



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### HIGH-SPEED COMMUNICATIONS

High-speed communication methods are preferred for large signs and Watchfire<sup>®</sup> Digital Outdoor signs.

#### BROADBAND WIRELESS:

Broadband wireless uses a high-speed wireless cellular modem to communicate with the sign over the internet. It is the standard option for WDO signs.

##### PRO:

- No range restrictions. The sign can be updated from anywhere with an internet connection, which can also assist troubleshooting.

##### CON:

- Broadband wireless is not available in all areas.
- Wireless data coverage must be negotiated with the wireless service provider, such as Verizon or AT&T. Monthly fees apply.

#### BROADBAND DSL / CABLE:

A high-speed DSL modem resides in a weatherproof, air conditioned, NEMA-rated enclosure along with the sign controller.

##### PRO:

- No range restrictions.
- Sign can be dialed from anywhere, including from our service department to aid troubleshooting.

##### CON:

- DSL is not available in all areas. Signs in remote areas, or signs without a specific address may not have DSL coverage.
- Speed and stability of DSL may vary depending on the internet provider and contract.
- DSL requires a dedicated phone line terminated at the sign pole (NID box) and a DSL service subscription. Monthly fees apply.

#### FIBER XVS

Several options are available, all connecting to the sign using fiber. All options control the sign from indoors. There is no controller inside the sign.

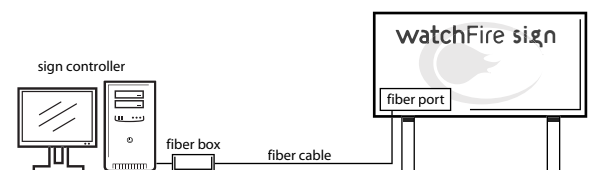
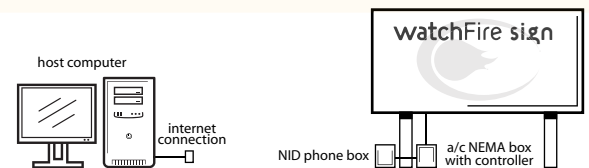
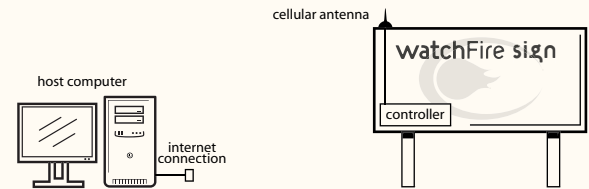
1. Stand-alone premium PC with video capture card directly controls sign and runs Ignite editing software. Live video is available when needed ("on demand"). Since there is no charge for this option, the premium Dell PC with Ignite is essentially free.
2. Indoor dedicated controller attached to customer network directly controls sign and is updated by another network computer running Ignite. There is no video input. Sign is programmed using Ignite on another network computer provided by customer or purchased from Time-O-Matic.
3. Indoor dedicated controller attached to a 24/7 video source runs the sign as a video device. Sign programming is from third-party solution. Ignite is available only for setup and troubleshooting.
4. Rack mount versions of any of the above are available for a small charge, to be configured at the time of order.

##### PRO:

- Most cost effective method.
- Fastest communication method (Ethernet update).
- Sign control is located indoors for maximum reliability.
- Fiber-optic cable can run in the same conduit as power wires.

##### CON:

- Indoor controller/computer must remain on at all times.
- Fiber cable must be run in 1.5" conduit to the sign.



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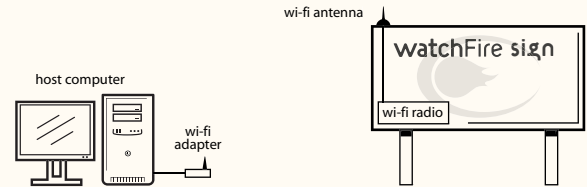
#### XVS HI-SPEED WIRELESS:

Uses an industrial-grade wireless ethernet modem with WEP128 encryption for fast, secure communication. Second fastest communication method. Comes with two connection options:

- **Short range radio:** A wireless network card in conjunction with a laptop or PC for close proximity communication and updating.

**PRO:** Least expensive.

**CON:** Maximum range of 300 feet.



- **Long range radio:** Uses a matching wireless ethernet modem to create a direct connection with the BCW.

**PRO:** Most secure and greatest range.

**CON:** Most expensive because it includes two long-range wireless ethernet modems.

