



### ***BR20 Base Radio Antennas Separation***

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The Accutech BR20 DIN-rail mounted Base Radio may be purchased with an optional internal Trio K-Series radio for long-haul communications to a centralized data collection site or data-concentrating RTU/PLC. This option provides a powerful tool allowing the system's designer to integrate data gathered by the BR20 into a larger system.

The Accutech radio uses a 900MHz antenna to communicate with Accutech field units. The Trio K-Series radio also requires its own 900MHz antenna and can accommodate a second antenna for repeating or bridging operations. This results in two (and sometimes three) antenna connections to the BR20.

Installation of the BR20 itself is fairly straightforward, but extra care must be taken when mounting the Accutech and Trio antennas. Both the Accutech Base radio and the Trio K-Series Remote radio operate on the same 900MHz unlicensed frequency band. This presents the possibility of interference between the two systems, which might slow down communications on one system or both, or may completely halt data traffic.

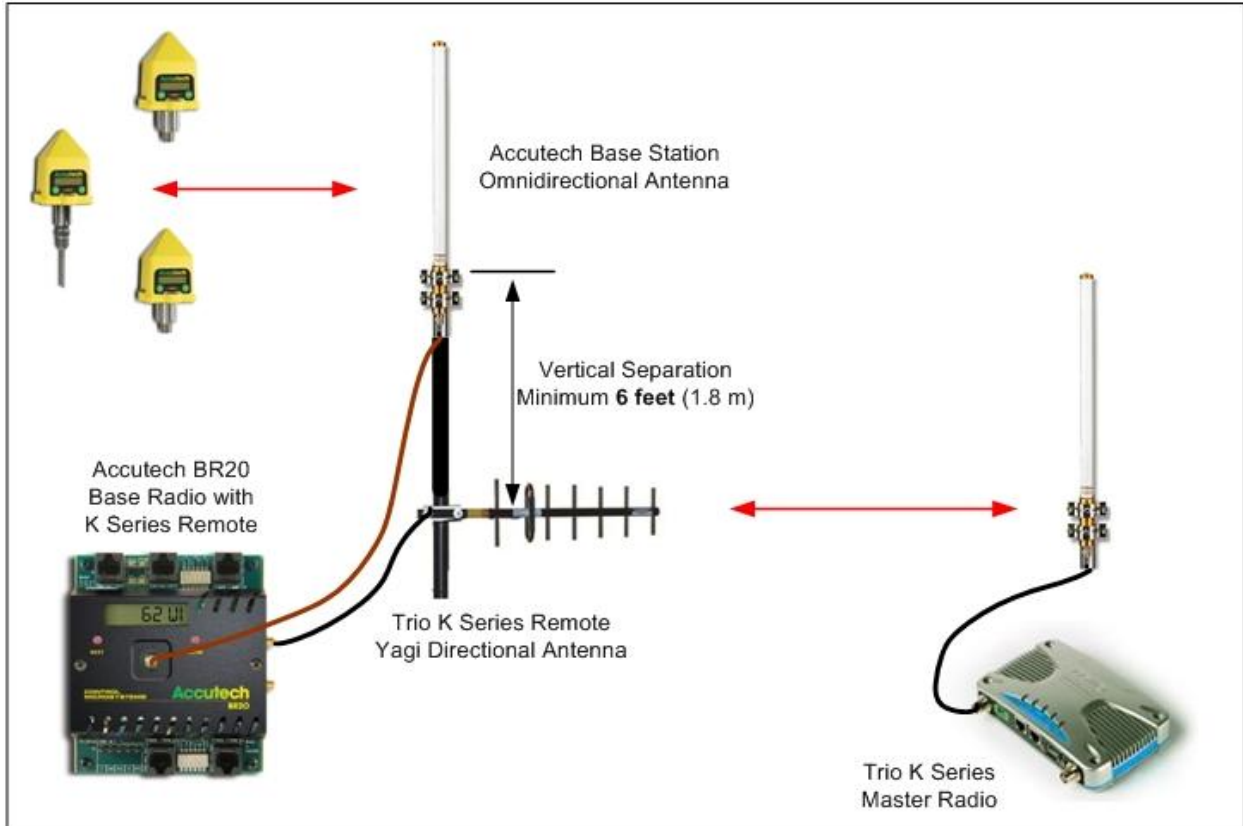
The Trio radio will typically be configured as a Remote unit. In such a case it will typically only transmit intermittently (e.g. once per minute) as the Host polls the site. Any interference caused by the Trio radio will be brief and can usually be ignored. (If the Trio radio will be transmitting much more frequently, use the antenna separation recommended for a Trio Bridge) Instead the interference-generating ability of the Accutech Base radio must be considered, as it is transmitting continuously to its remote field units.

To reduce the Accutech Base radio's transmitted signal to a level which the Trio Remote radio can ignore, the installer must mount the antennas a significant distance apart. The antennas may be mounted with either horizontal or vertical separation. Vertical separation has been found to be much more effective. This is because antennas are typically designed to transmit most of their power horizontally. Vertically mounted antennas will transmit very little signal straight up or down.

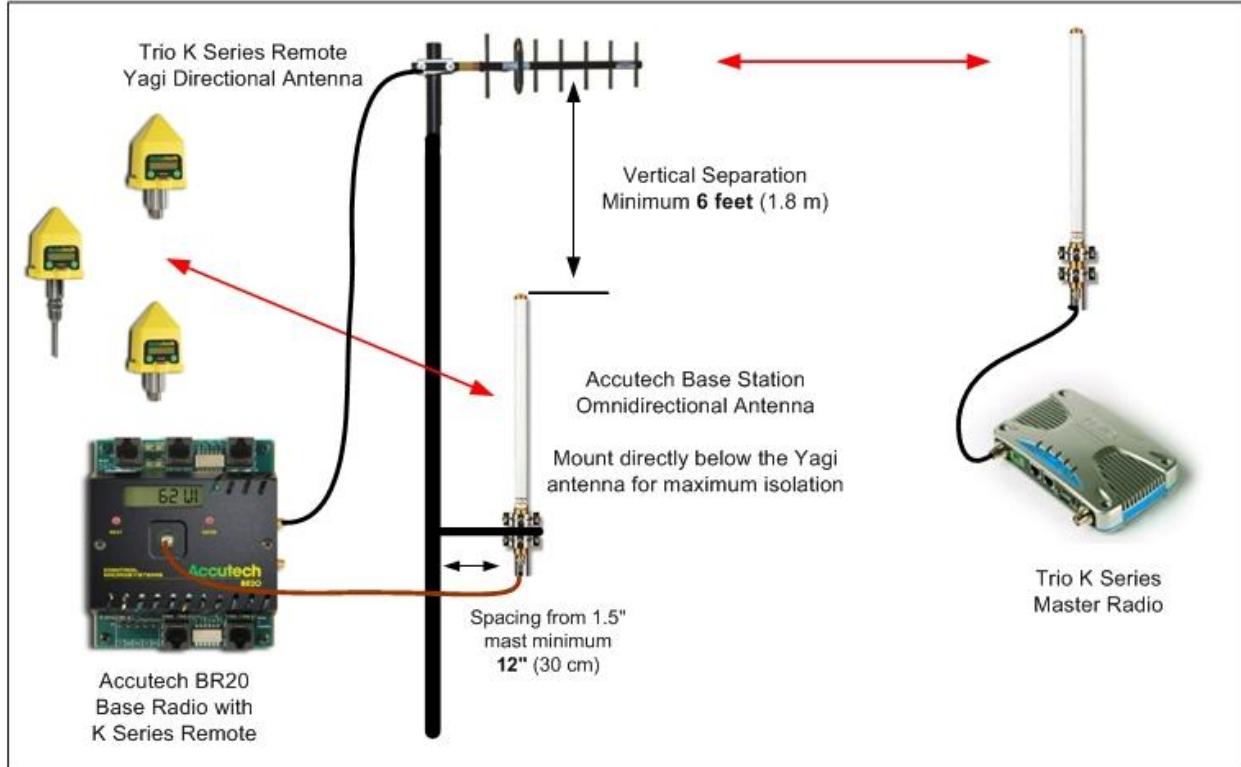
Calculations have been done to show that if the Accutech and Trio antennas are kept a minimum of 6 feet (2m) apart vertically (one directly above the other) there will be minimal interference. Alternately the installer may mount the antennas with at least 45 feet (14m) of horizontal separation. Clearly it will be easier in most installations to simply place one antenna 6 feet (2m) above the other.

The Accutech Base Radio may be installed with an optional low-gain whip antenna mounted directly on its chassis. Even in this case the installer must ensure that the antenna separation guidelines discussed in this document are followed. This may require placing the BR20 in a fiberglass or plastic housing (transparent to radio signals) directly below the Trio antenna.

### Accutech BR20 with Optional K Series radio – Omni antenna mounted on top



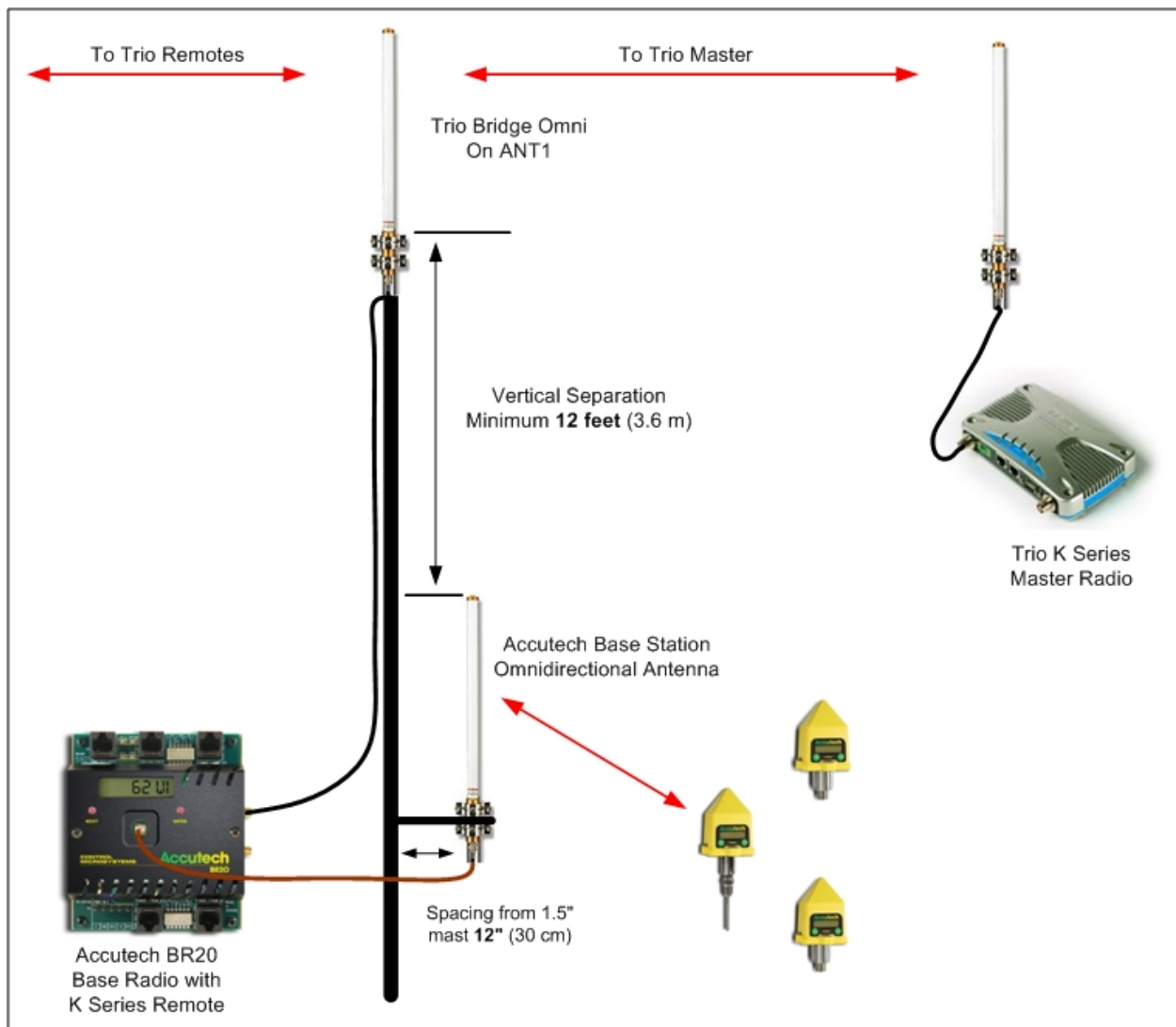
### Accutech BR20 with Optional K Series radio – Yagi antenna mounted on top



### Trio Radio Configured as Bridge

When the Trio radio is configured as a Bridge repeater it will transmit constantly, instead of intermittently. In such a case the antenna separation will need to be significantly greater as the interference to the Accutech Base radio will be continuous. If horizontal separation is used, the Accutech and Trio antennas must be kept at least 100 feet (30m) apart. If vertical separation is instead used, the antennas must be kept at least 12 feet (4m) apart.

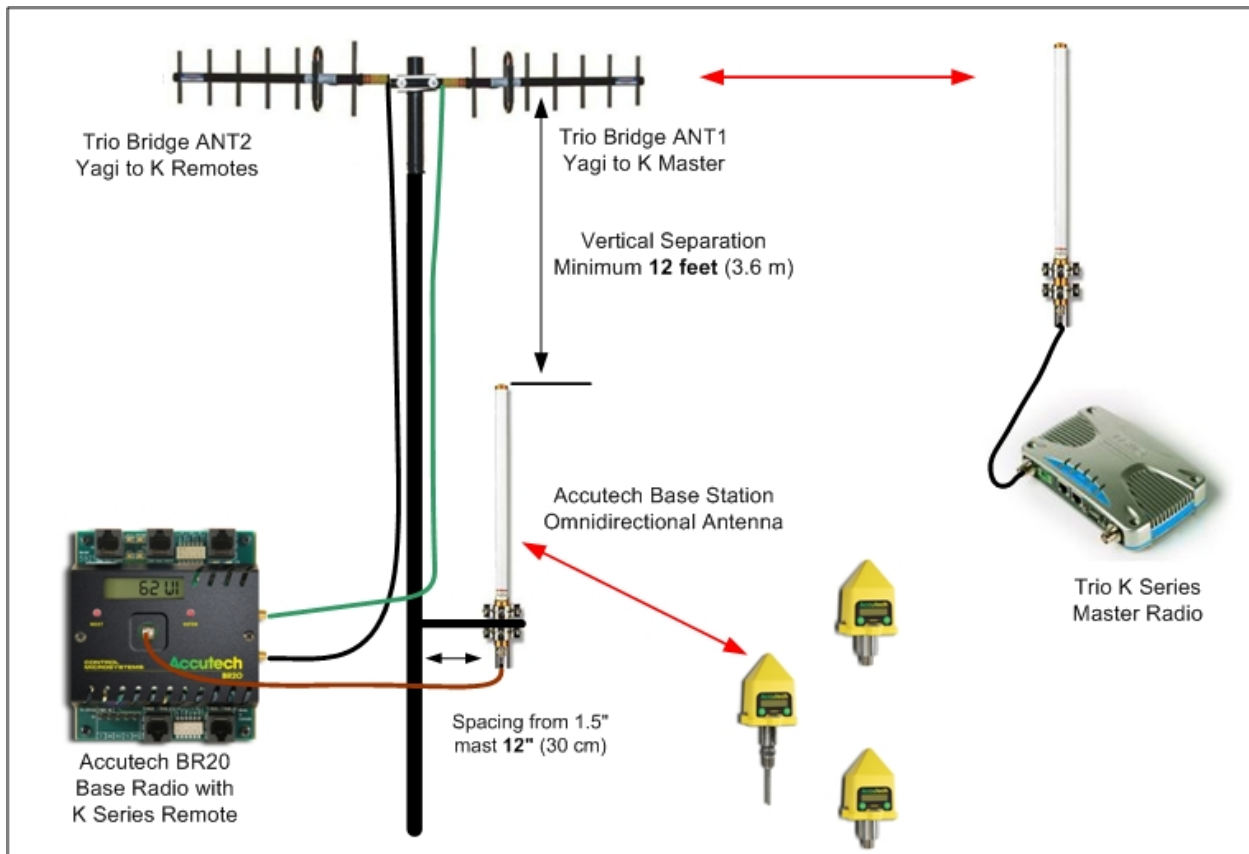
### Accutech BR20 with Optional K Series radio – Single Antenna Bridge



### Trio Radio Configured as Dual-Antenna Bridge

The Trio radio may be configured as a Bridge and also configured for dual-antenna mode. In this case it will transmit upstream (towards its Master) on the ANT1 port, and downstream (towards its Remotes) on the ANT2 port. Both antennas must be separated from the Accutech antenna by the same amount as above - 12 feet (4m) vertically or 100 feet (30m) horizontally.

### Accutech BR20 with Optional K Series radio – Dual Antenna Bridge



### **Two Co-Located Accutech BR10 Base Radios**

While this document primarily deals with the Accutech BR20 Base Radio, a comment may also be made about the BR10 Accutech-only Base Radio. The previously-mentioned 6 foot vertical separation (or 45 foot horizontal separation) of antennas must also be used in a situation where two Accutech BR10 Base radios are mounted in the same vicinity.

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**TSN03896 - Technical Support Notice – Accutech – BR20 Base Radio Antennas Separation.pdf**

**November 13, 2009**

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