

Theory and Terminology

Banner's Sure Cross® Network

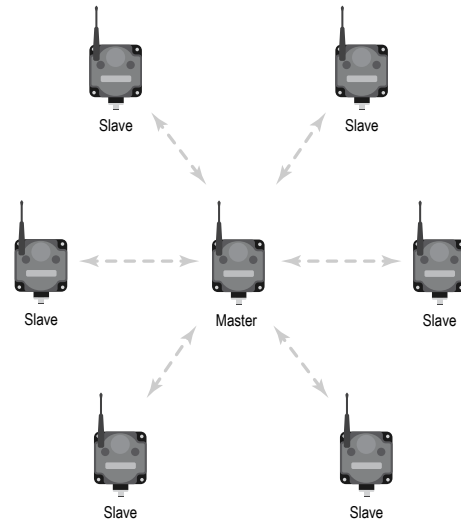
Efficient networking involves three distinct concepts: network topology, master and slave relationships, and Time Division Multiple Access (TDMA) architecture. The network topology describes the physical layout of the network. The master and slave relationship between devices refers to the functional relationship between the devices. TDMA is the method used to allocate data transmission and receive time slots.

Network Topology

Banner's Sure Cross products use a star network layout, or topology, for wireless network communications. In a star topology, the master maintains a communications connection with each node on a separate communications line. Because the communications lines are separate, when communication between one node and the master fails, the rest of the network is unaffected.

The Master/Slave Relationship

In the Sure Cross DX80 wireless network, the Gateway is the master device and initiates all communications with the slave devices, the DX80 Nodes. The slave devices can not initiate communications with the master device, and the slaves cannot communicate with each other.



Reliable Communication

To ensure each Node can reliably send and receive data to the master device, Time Division Multiple Access (TDMA) architecture assigns each device a specific time period in which to send and receive data. Establishing specific intervals when each device sends and receives data ensures devices do not conflict with each other to send and the master device never has to receive data from more than one slave device at a time, as happens when using a contention-based architecture.

In the Sure Cross system, device identification numbers are used to assign communication slots within the TDMA frame. Device ID number 0 is always reserved for the Gateway, but Nodes may be numbered in any order using device IDs 1 through 47. When all the device IDs are not used, the send and receive frames for those devices are unused.

In addition to ensuring reliable communications, TDMA architecture lends itself to efficient power management techniques. When each Node knows the specific time period to receive or send, the radio doesn't have to 'listen' all the time, nor does it have to continuously send to avoid data collisions. The radio is cycled on at a specific time to send or receive and is turned off to conserve power.

