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QXX Wireless Frequently Asked Questions

1. *What wireless technology is used by the QXX?*
   The QXX uses the bottom two layers of the IEEE 802.15.4 Low Rate Wireless Personal Area Network (LR-WPAN) Standard. A tailored IR Application Protocol ensures minimal message latency while providing a fully handshaked protocol for transfer reliability. The IEE 802.15.4 protocol is ideal for securely handling short messages at the end of each fastening while using minimal power.
2. *At what frequency does it operate?*
   The QXX uses the unlicensed 2.4GHz ISM (Industrial, Scientific and Medical) band. There are 15 channels (Channels 11 -25) available with adjustable power levels.
3. *Can I use my WiFi router to communicate with the QXX tool?*
   No. WiFi is the common name given to the IEEE 802.11b/g/n standard which operates in the same ISM band but uses different channel definitions and signal encoding. WiFi is great for large data transfers, office and always on applications. It is not suited for low power consumption, rapid fire short messages and quick response on power up.
4. *How far away can my tool be from the PCM and still communicate reliably?*
   A good guideline is 30 meters (100ft). The channel power setting should be set to the lowest setting that still provides reliable transmission with expected obstructions.
5. *Will my cell phone cause interference?*
   No. Cell phones work on a different frequency and technology.
6. *We use WiFi in our plant for computer communications, will QXX interfere with it?*
   No, the power level is very low and the channel may be selected to one not used by the WiFi router in the area. IEEE 802.15.4 channels 15, 16, 20, and 21 fit in between the WiFi Channels 1, 6, and 11 (In Europe use IEEE 802.15.4 channels 15, 16, 21 and 22 which fit in between WiFi channels 1, 7 and 13).
7. *What channel and power setting should I select?*
   WiFi installations predominantly use one or two of the three available channels. Any IEEE 802.15.4 channel in that space may be used. During installation the energy scan diagnostics may be used to reveal the quieter channels to choose from. Depending on the distance and obstructions, the power level should be reduced to the minimum level that still provides reliable communications.
8. *What if I need two PCMs, Will the tools get confused?*
   No. During installation one or more tools are associated with one particular PCM by its channel and PAN ID.
9. *What if two tools are trying to talk to the PCM at the same time? Will one message be lost?*
   No.
   1. The tool software is designed for collision avoidance and to send data only when no other tool is transmitting.
   2. If tool messages are sent at the same time, the radio firmware buffers the messages.

3. With EOR retires turned on; all messages are acknowledged and will be repeated if no confirmation of receipt is received.

10. *What happens if I have to change batteries during production?*
    You will lose communications while the battery is not connected to the tool but communications will resume automatically on reconnection using the same PAN ID, channel and power level that was previously used before the interruption.
11. *What if I am working in an area shielded from wireless communications or temporarily out of PCM range? Will I lose the data?*
    The tool is capable of storing 1,200 End-of-Run (EOR) records internally in the event of communication loss between the tool and the PCM. Once the communication resumes, the tool will transfer the entire backlog to the PCM.