

Beverage Metrics

Operational Description of 418 MHz Transmitter

418 MHz Transmitter:

The Shield is a 418 MHz, single frequency, on-off keyed (OOK) type transmitter. Its architecture and design are based on a negative feedback colpitts type oscillator which is frequency stabilized by a surface acoustic wave (SAW) resonator. The unit is powered by one 3 volt lithium battery and consumes close to 5 mA of current. The system modulation is accomplished by the turning on and off of the transmitter with a microprocessor running at 5 MHz. The data rate of the modulation is ca. 1200 BPS. There is either a pushbutton or hall-effect sensor on the transmitter which when engaged activates the unit. The antenna type employed is a helical loop which is permanently mounted to the transmitter's PCB.

Beverage Metrics Transmission Scheme

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Preamble on all transmissions	= 32 pulses of 416 uSec on and 416 uSec off.
De-squelch pulse	= 1160 uSec.
Total duration	= 192.5 mSec.

Data packets are sent in 66% - 33 % format where a digital "One" is 66% on and 33% off. A "Zero" is 33 % on and 66% off.

The following times are measured at the output of the microprocessor.
A "one" is on for 610 uSec and off for 320 uSec typically.
A "Zero" is on for 320 uSec and off for 610 uSec.

Activated Transmission:

Pour Activation Packet	Second Packet	Third Packet
Delayed 1 to 6 seconds After pour activation	Delay 15 – 20 seconds after first packet	Delay 30-35 seconds after second packet

Retransmit Packet lengths:

* Please note worst case was submitted.

Packet size varies depending on the number of pours that haven't been transmitted a total of 3 times.

Data packet for 1 pour	= 119 mSec.
Data packet for 2 pours	= 161 mSec.
Data packet for 3 pours	= 202 mSec.
Data packet for 4 pours	= 244 mSec.

System integrity transmissions begin 4 hours after last pour and every 4 hours from then on, to let the system know that the device is on line and functioning properly. They employ the same format as a single packet transmission but pour data is 0.