

## **Operational description**

The device is a simple compact water sensor circuit that automatically turns on a radio transmitter (nRF24L01+) and sends a coded signal over a discrete frequency (2468 MHz) on the ISM band, when the contacts get wet. This allows a receiver to close the water main valve (there is an electrically actuated ball valve installed in series with the building's manual shutoff valve), emit an audible tone, light a visual indicator and send a text message to the user. The receiver has a reset button that is depressed which allows the valve to be reopened and the system returns to its ready state.

The device can also be programmed to act as a radio signal repeater for a nearby sensor. In that case, it is a simpler (fewer parts- no switching or power regulation) version of the sensor. It remains in receive mode until it detects a transmission from a sensor. The device then switches to transmit mode to transmit an equivalent sensor signal to the receiver. The repeater demodulates the received signal and re-modulates the signal that it sends out. It does not remain in the send mode but returns to receive mode after a brief time period.