Triple+

Detect. Connect. Protect.

Operational description

CLM^{TM} product line (Triple+ CLM™ HUB, CLM Shutoff Unit, CLM Water Flood Sensor, CLM ISO5211 Actuator) provides the entire leak management solution for our end users, from detection of natural gas to automatic gas shut-off and alerting the homeowner of the leak through wireless communication; our system is not dependent on external power supplies.

CLM Shutoff Unit

The wireless, battery operated integrated shutoff unit is installed on the main water pipe. It shuts off the water supply whenever a leak is identified or when triggered by the operator via the smartphone app.

1. The system components communicate via RF channel.

2. CLM system includes 3 battery-powered devices (Integrated shutoff, ISO5211 Actuator and Water Flood sensor) and 1 device with external power supply (HUB). Therefore, shutoffs, actuators and water flood sensors are at sleep mode majority of the time and wake up periodically for status update. The HUB is always in receive mode.

3. Actuator/Shutoff triggering can be driven by one of 3 following occurrences:
   a) External signal from alarm system
   b) From user's smartphone App or generally via the cloud connection
   c) RF command from one of the Flood Sensors exposed to water

4. The shutoff units and the actuators transmit packets periodically and the other components response on any request and informs if status has changed. The data sent from the shutoff/actuator to the HUB contains the following information:
   a) Status (open/closed).
   b) The condition of the batteries.
   c) The last activation status (if completed successfully or failed due to timeout or bad position detector's condition).

5. In case of marginal RF communication, a repeater unit might be installed between the HUB and the shutoff/actuator/detector. The repeater is configured to reproduce the packets of the end units (actuator/shutoff/detector) to the HUB and back to the end unit.

6. The Flood-sensor transmits packets periodically (every 1 min) with its internal unique ID as address and the Flood-sensor index is added to the unit type. The controller monitors its Flood-sensors according to its internal address list (generated in the SYNC state) and responses. If the Flood-sensor status has changed and flood is detected, it will send a burst message and the controller will send a CLOSE command in the nearest Valve's status request.

7. Up to 31 end units can be connected to a single HUB. The information of the end unit packet includes the Unit ID as given in sync state and the unit status.

RF Specifications	
Internal Clock	32 MHz
Operation Frequency	915 MHz
Bandwidth	100 KHz
Transmit duration	3 ms
Transmit interval	15 sec
Maximal Output Power	10 dBm (10mW)