TEMPERATURE:

- **TMP102**:
  Service: serviceTempature
  Service ID: 1

  For positive temperatures (for example, +50°C):
  Twos complement is not performed on positive numbers. Therefore, simply convert the number to binary code with the 12-bit, left-justified format, and MSB = 0 to denote a positive sign.
  Example: (+50°C)/(0.0625°C/count) = 800 = 320h = 0011 0010 0000 (this will be fine for the demo)

  For negative temperatures (for example, –25°C):
  Generate the twos complement of a negative number by complementing the absolute value binary number and adding 1. Denote a negative number with MSB = 1.
  Example: (|–25°C|)/(0.0625°C/count) = 400 = 190h = 0001 1001 0000
  Twos complement format: 1110 0110 1111 + 1 = 1110 0111 0000

- **SE98A**:
  Service: serviceTempature
  Service ID: 2

  25C = (0x190 * 0.0625)
  The resolution is 0.125 ° C per LSB

- **SI7005**:
  Service: serviceTempature
  Service ID: 3

  $$Tempature(^{\circ}C) = \left(\frac{TEMP}{32}\right) - 50$$

- **SI7005**:
  Service: serviceHumidty
  Service ID: 1

  $$\%RH = \left(\frac{RH}{16}\right) - 24$$

VIBRATION:

- **ADXL345 (X):**
  Service: serviceVibration
  Service ID: 1

- **ADXL345 (Y):**
  Service: serviceVibration
  Service ID: 2

- **ADXL345 (Z):**
  Service: serviceVibration
  Service ID: 3

SHOCK

- **ADXL345/ADXL377 (X):**
  Service: serviceShock
  Service ID: 1

- **ADXL345/ADXL377(Y):**
  Service: serviceShock
  Service ID: 2

- **ADXL345/ADXL377(Z):**
  Service: serviceShock
  Service ID: 3

  The first two bytes of the data payload represent the number of samples from free-fall detection to impact.

  The next 70 bytes are from the low G sensor in 2G mode

  The remaining bytes are from the high G sensor in 200G mode

  The sampling frequency is 800Hz.

```
typedef enum packetService
{
    serviceTempature,
    serviceHumidty,
    serviceVibration,
    serviceShock,
    serviceOther = 255
      }packetService;
```