Smart Management System for Street Lighting

HKPC TechDive - Smart City
3-11-2020
Introduction

System Layout

1-8 Streetlights connect to 1 Gateway

Functions of Street light controller:
1. Automatic street light ON / OFF depends on time and environmental luminous
2. Manual remote street light ON / OFF
3. Control street light dimming
4. Lantern fault detection

Why use LoRa?
• Further reduce the subscription fee for cellular network

Why use NB-IoT?
• Low subscription fee for cellular network
• Good outdoor coverage

Why use LoRa?

Why use NB-IoT?

1. Maintenance operator can remotely monitor the street light status
2. Reduce the manpower on patrol
3. Shorten the maintenance schedule

Network server
Street light controller overview

Casing of the street light controller

PCB of the street light controller

- Luminous sensor
- NB-IoT module
- Processor with RTC
- LoRa module
- Power monitor
- Power supply from street light
- Relay
- Dimming module
310 street lights controllers have been installed at Kowloon Bay
1. Display electrical parameters of each street light
2. Display fault reason
3. Control individual street light On / Off
4. Control group street lights On / Off
5. Refresh individual street light status
6. Refresh group street lights status
1. Display a big picture of street lights status within district
2. Check individual street light status
1. Analysis individual street light historical data
2. Download the historical data from database

Street light status
Green: Voltage
Yellow: Luminous
Red: Active Power
Blue: Current
1. Email alert maintenance operator when street light has fault

2. Fault type:
   i. Burnt-out
   ii. Over current
   iii. Below current
   iv. Voltage abnormal
   v. Abnormal On
   vi. Controller fault
   vii. No communication