

# Intelligent Vehicle Actuated Wireless Road Traffic signal Controller

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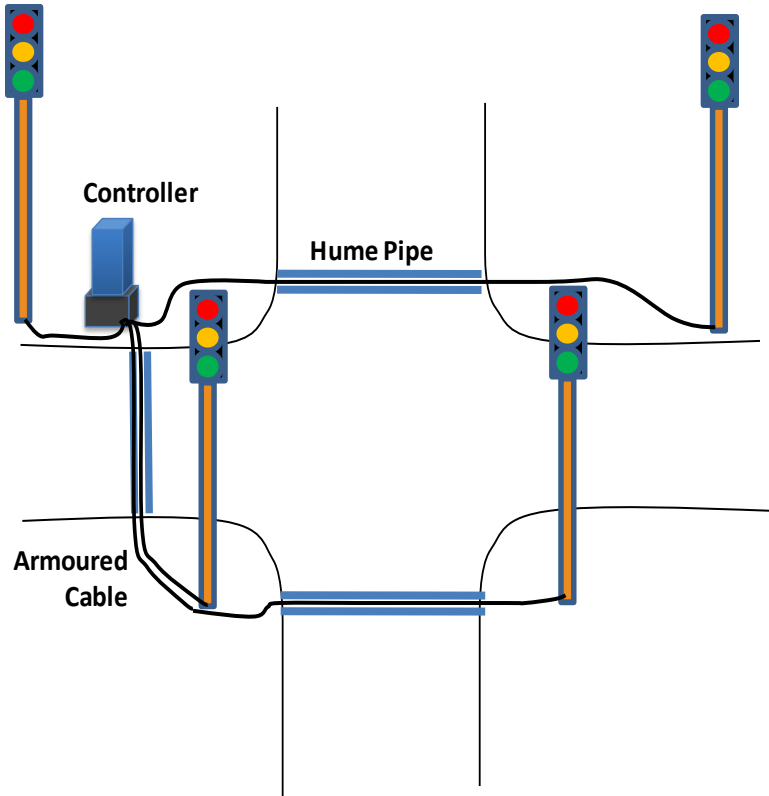
# Traffic Signal Controller

## Introduction

- An equipment used to control traffic at road intersections
- Traffic Signal Controller equipment occupies pavement space
  - Obstruct pedestrians movements.

## Installation issues

- Cutting road surface
- Laying underground RCC Hume pipe
- Pulling armored cable .
- All the said activities damage good roads
- Often the roads are not brought back to its original condition after the civil work.
- Getting permission



**Conventional Controller installation**

# Going wireless is an effective alternative

## Advantages

- No digging
- Easy installation
- Minimum disturbance to road users

## Selection of Wireless band

- Licensed band
  - Secure
  - Every installation will require clearance from authorities. May not be practical
- Unlicensed ISM band
  - Heavily crowded
  - Possibility of getting jammed
  - Need additional care for secured operation

## Challenges

- Packet Drops
- Delay between Primary and secondary lamp poles
- Cross talks between near by junctions.
- Wireless failure

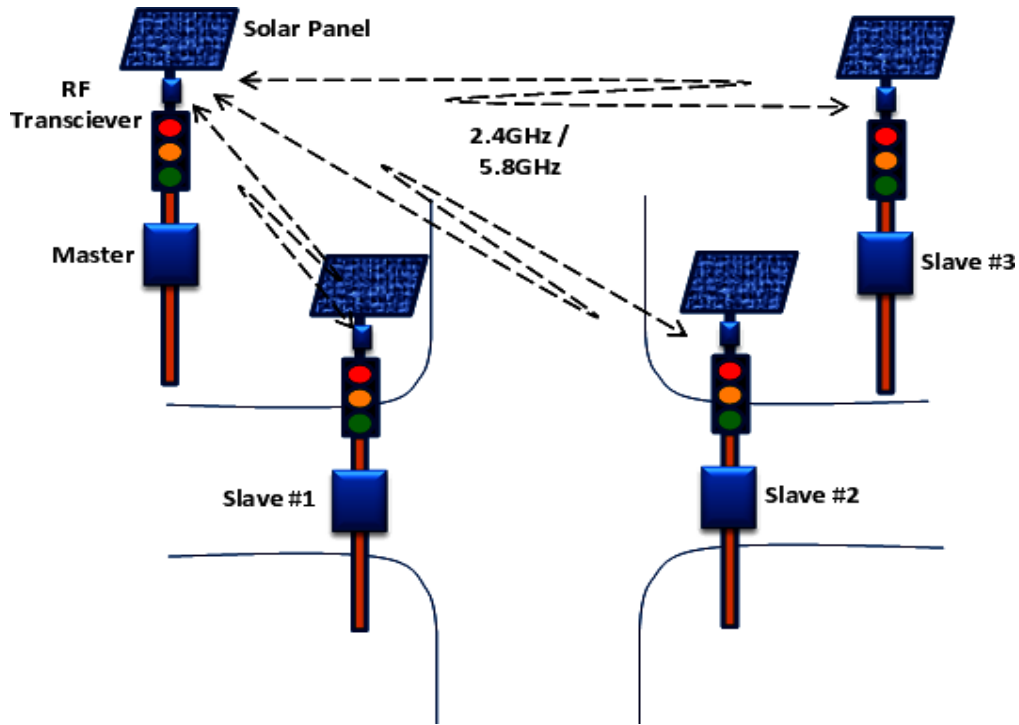


## Wireless Traffic Signal Controller (WiTraC)

- State-of-the-art Traffic Signal Controller
  - Use unlicensed ISM band
  - Operates on Solar Power
    - Optimized for 12VDC Operation
  - Power Saving
    - Power efficient LED signal aspects
    - Brightness control for signal lamps
    - Selective switching of night flash
  - Miniature design
    - Pole mounting







WiTraC  
Master



WiTraC  
Slave

## WiTraC installation

## Salient Features

- Vehicle Actuated
  - Inductive loop detector and above ground detector compatible
- ATCS Compatible
  - Compatible to CDAC Composite Signal Control Strategy, CoSiCoSt
    - Developed and tuned to Indian traffic condition of high heterogeneity and poor lane discipline
    - Indian Patent 239258
- GPS Enabled

## Modes of Operation

- Pre-timed
- Full Vehicle Actuated
  - With or without stage skipping
- Semi-Actuated
  - With or without stage skipping
- ATCS
- Combination of the above modes in any order
- Hurry Call
- Manual
- Forced Flash

## Other Features

- Cable-less Synchronization
  - Pre-timed
  - Vehicle Actuated
- Remote Administration
  - Hurry Call
  - Forced Flash
  - Junction Off
  - Plan Download
- Wireless Police Panel

## Power Saving

- PWM Based Intensity Control
  - Up to 50% Power saving during night
- Selective Switching of Flashing lamps
  - Primary
  - Secondary
  - Tertiary
  - Combination of the above

## Safety Features

- Self diagnosis on Power up and runtime
- Green-Green Conflict Monitoring
- Lamp failure / Short circuit Monitoring
- Battery Voltage Monitoring (Solar Power)
- Fallback on secondary frequency in case of wireless signal jam
- Automatic selection of Flashing program on error conditions
- Error logs sent to traffic monitoring centre, if networked

## Cost Saving Factors

35% to 40% Cost saving at a typical 4-arm junction

- Road cutting and refilling
- Micro-tunneling where road cutting not possible
- Savings on armored cable and laying
- Plinth for traffic signal controller
- Optimum solar panel and battery
- Disturbance cost
- Maintenance cost due to cable damage / battery etc.
  - Delay, Disturbance & Cost



## Field Implementations



1. CDAC Keltron Junction, Trivandrum



2. Vellayambalam Junction, Trivandrum



1. Savarkar Bhavan Junction, Pune

Thank You