SENSOR TECHNICAL SPECIFICATION

MODEL NAME: PARKING SATELLITE SENSOR

1. OVERVIEW

Vivacity Labs provides real-time, hyperlocal data to enable the next generation of transport networks. Our technology makes transport systems more efficient & environmentally friendly, through underpinning smart city projects and informing infrastructure investment. Beyond efficiency, we are improving safety on the roads, protecting vulnerable road users in a new wave of intelligent traffic systems.

We do this through our intelligent cameras, which act as sensors to gather, anonymise, and communicate real-time data derived from video feeds.

This document details the technical specification of our Parking Satellite Sensor, which works in conjunction with Parking Hub Sensors (See VCT-STS-02).

2. LOCAL SYSTEM ARCHITECTURE

The Parking Satellite Sensors contains a camera, which views an area of the car park. It sends pictures to a Parking Hub Sensors for processing and data transmission.

The Parking Satellite Sensors can send frames of video to the Hub for processing over Wi-Fi, at a range of up to 40m. Each Hub can connect to up to 20 Satellite Sensors.

3. SENSOR HARDWARE

Figure 1: Sensor Mounted to Lamppost

Sensor cover: White (Other colours available for high volume orders)

Sensor back and heatsink: Brushed aluminium

Sensor Bracket: Stainless steel

5.2 TEMPERATURE RATING

- Sensors can operate up to an ambient temperature of 50° C provided they are shielded from solar irradiation.
- The sensors can operate without a shield in the UK climate.

5.4 IP RATING

IP66 (Internally tested by Vivacity; external certification to follow in the next few months)

4. SYSTEM EXTERNAL REQUIREMENTS

4.1 POWER REQUIREMENTS

- Continuous power supply required
- A battery buffer solution is available when power is only provided at night. The Charge Code provided below is not applicable for the battery buffer version of the sensor.
- Power draw between 2 W to 3 W for normal operation

5. EXAMPLE GENERAL ARRANGEMENT

For lamppost mounted sensors, the general arrangement below indicates a possible mounting and electrical interface.

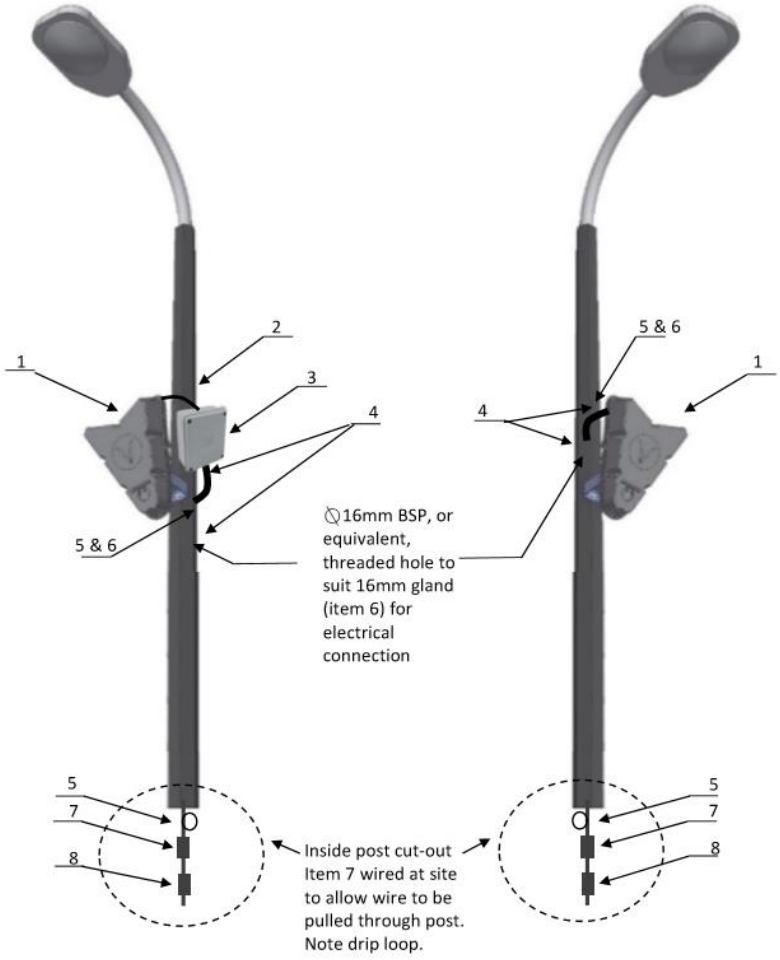

Figure 2: Mounting and electrical general arrangement, with battery buffer (left) and without (right)

1. V-City sensor
2. Low voltage cable (12 V)
3. IP66 Enclosure containing battery buffer (additional power draw from battery not included in Charge Code)
4. Nickel Plated internal and external threaded gland
5. Three core double insulated cable (240V)
6. Galvanised steel flexible conduit with PVC coating
7. Inline 2A fuse inside connection box for ease of site assembly
8. Lockable connection socket

6.1 MOUNTING BRACKET

Two mounting brackets are available:

1) Kinked – for use mounting to cylindrical columns
2) Flat – for use mounting to flat walls and surfaces

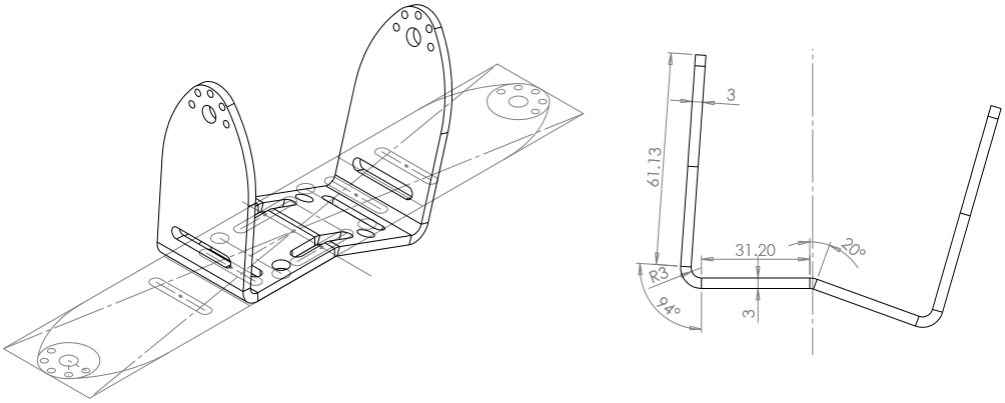

Figure 3: Kinked Bracket

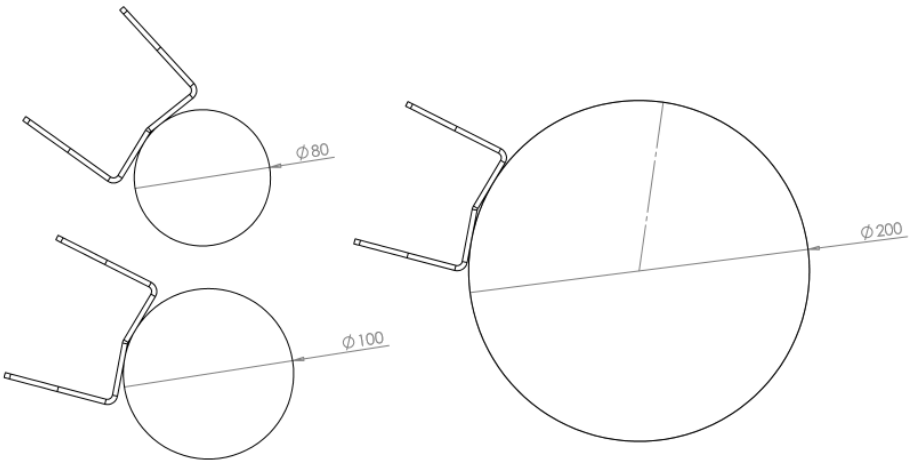

Figure 4: Kinked Bracket Mounted onto range of diameter cylindrical sections

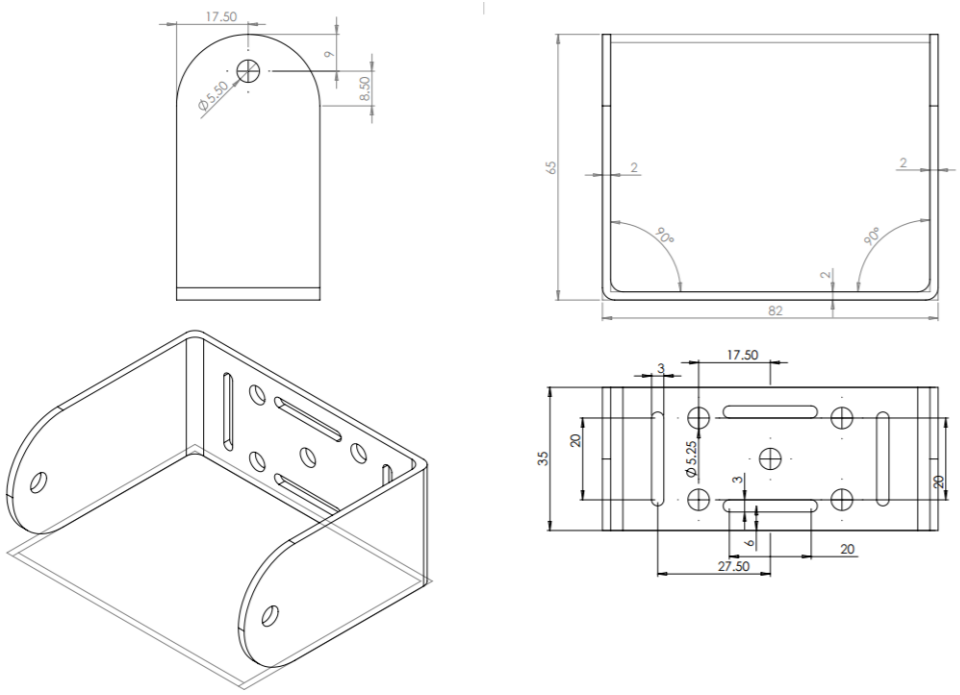

Figure 5: Flat Bracket

6. SENSOR FIELD OF VIEW

The sensor field of view is defined as a function of sensor height above the ground.

- Sensor Height should be between 3.5 m and 15 m above the ground.
- Different camera locations may be possible but have not been tested.
- The field of view defines the area in which detections are possible.
- The working range defines the area for which accuracy figures have been quoted.
    - If high accuracy detections are required, the road coverage should be confined to the working range.

Parameter	Field of View	Accurate Detection Zone
Vertical Plane **(Figure 6)**	80°	>20° Elevation from ground
Horizontal Plane **(Figure 7)**	130°	110°

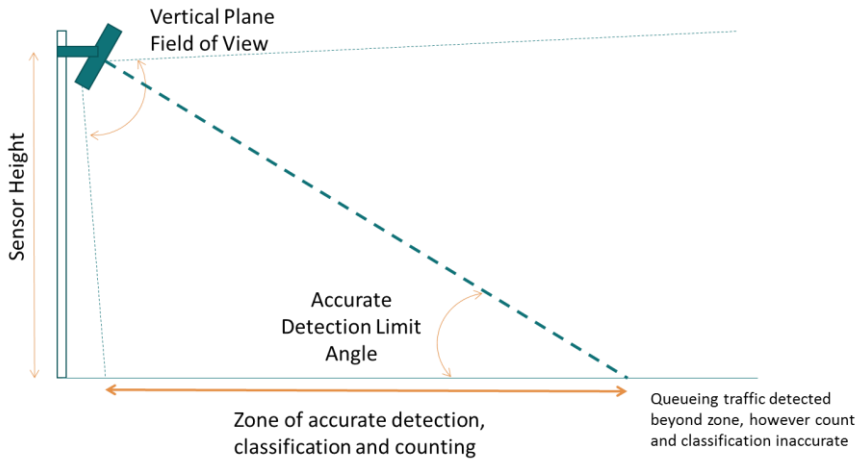

Figure 6: Vertical Plane Field of View

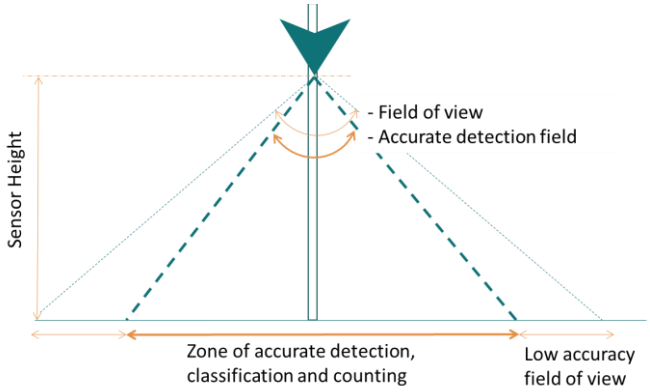

Figure 7: Horizontal Plane Field of View

A sensor positioned 6 m back from a row of perpendicular parking, at a height of 4m can cover 10 spaces.