EXCEL TECHNOLOGY Group

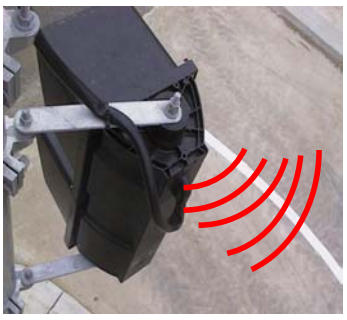
An innovator in the development of intelligent vehicle highway solutions.

RADAR Vehicle Detector

The XLrvd RADAR vehicle detector provides a reliable non-intrusive low cost vehicle detector function suitable to most roadway applications. The typical XLrvd output is vehicle speed and therefore the device may be used for monitoring and logging purposes. The device may also be used as a vehicle detector and can be interfaced to existing traffic control equipment to provide temporary vehicle actuation when loops have failed. The radar detector may also be used for detection in permanent installations where installation of loops is inappropriate.

The device is easy to install when used with a battery and is therefore an excellent solution for temporary speed monitoring and may be in conjunction with a VMS or alternative display which cautions motorists with an excessive speed warning display.

Adjustment of detection performance parameters enables wider usage i.e., on bikeways and where pedestrian detection is required. Defining detection actuation as occurring between two speeds, within a certain defined zone, at a defined distance from the device and in response to a specified scanning rate provides reliable detection for different sized and shaped objects.



Vehicle length and speed detection can be achieved with a controlled orientation towards the target object. A side fire direction from the roadside may be used dependent on the application. The ETG user manual provides detailed discussion concerning applications and expectation variations in respect to detecting the target object under different orientations

Features, Attributes and Applications:

- User friendly interface for configuration parameters
- Non-intrusive reliable detection of vehicles, pushbikes and people
- Temporary or fixed installation applications
- Temporary vehicle actuation during loop damage / repair phase
- Low power traffic speed surveying and logging applications
- Work Zone Speed monitoring, logging and displaying
- Hazardous area vehicle detection – Speed, direction and actuation (contact closure) for activation of driver aware displays
- Short-term traffic survey logging applications
- Low current consumption – battery or cabled supply
- Suitable for bikeways, pedestrian detection and tunnel applications

Designed and manufactured by Excel Technology Group Pty Ltd
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XL-RVD Radar Vehicle Detector

- Operates in the 24Ghz spectrum band
- Horn Antennae H Field Azimuth E Field in Elevation
- Radar Power 8mW
- Frequency stability Typical <100Khz/deg Centigrade
- Nominal Detection Zone
  - –3dbRange Azimuth @21deg
  - 3dbRange Elevation @ 13deg
- Nominal detection range 40 – 50 Mts
- Output – (optional) contact closure (PVAZ172 60V/300milliamps)
- Output - (standard) RS232 Interface – Typical Port configuration 9600,N,8,1
- Message format ASCII character + carriage return +line feed i.e., +40 – 40kmhr
- Direction indicator ie., '+' target object moving towards radar module
- Operational conditions
  - Temperature 0°C to 65°C
  - Relative Humidity 5% - 95%

Adjustments for optimum performance

Factory preset sensitivity adjustment 1 – 10 (1 least sensitive)
Sampling rate 1 – 10 (1 least number of samples per second)
Low speed cutoff threshold – will not report vehicle travelling less than this speed
High speed cutoff threshold – will not report vehicle exceeding this speed
COS set for optimum performance related to angle of radar to roadway traffic direction

General Specification

Physical Specification

Enclosure Weight <1kg
Enclosure Size 165mm x 85mm x 55 mms
Supply voltage 12VDC
Current consumption 100milliamps

Environmental Specification:

Circuitry is rated to 65°C operation with a relative humidity of 90%. Circuit cards are conformal coated and will operate within Australian Standard Guidelines for Traffic Control Devices as per TSC/3 and TSC/4. The CONFORMAL coating material used to protect the circuit cards is labelled SCC3 CC from Electrolube. The conformal coating material has a dielectric strength of 90KV/mm and an operational temperature range of –70°C to +200°C and is self extinguishing when exposed to a flame.

Theory of Operation Explanation

The operation is based on the 'Doppler' effect which is essentially the measurement between the transmitted frequency and the received (or reflected) frequency. The difference is denoted by IF in the following equation.

$$IF = \frac{2Vf_0}{C} \cdot \cos \varnothing$$

Where V = velocity of the target object (m/sec)
F_o = Fundamental frequency (hz)
C = Speed of light (3×10^8 m/sec)
∅=Angle subtended between the radar polar axis and target direction of travel

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