



HAWKEYE[™]
RADAR EVOLVED

Frequently Asked QUESTIONS

Functionality

- 1. How many detectors would you require for a typical four-leg intersection?** – You would need four radars – one for each approach.
- 2. Hawkeye is useful at intersections but is it also useful on corridors and freeways?** – Yes, though you would need to have a radar device for every twelve lanes of coverage.
- 3. Would it work on a Freeway, with two-foot buffer separated Express lanes to provide readable speeds and travel times by lane?** – Yes, it can capture up to twelve lanes of detection and can provide all stats like vehicle count, speed, density and the rest per lane and approach.
- 4. Sideroads management: are you able to control a sideroad that has traffic turning before the intersection?** – Yes, the radar has a capture range of 1000ft and a -50 to +50 degree Azimuth angle field of view.
- 5. If there is a driveway perpendicular to the direction of travel about 600+ feet from the radar mounting location, can Hawkeye detect presence of a stopped vehicle waiting to pull out into traffic?** – No. The radar requires a vehicle to move for at least 5-10 meters with a speed of at least 5 km/hr before it's initially tracked.
- 6. Is the product providing Turning Movement counts?** – No. This feature is available through another Rhythm product, namely code|Green. Check with your regional sales representative.
- 7. How does the sensor do stop bar presence detection and advance detection at 1000ft? Is it providing true presence detection?** – With perfect line-of-sight it is possible to detect objects 1000ft away with radar configured to high-power mode. Detecting objects at the stop bar and 1000ft away will depend on how close the radar is mounted to the stop bar. The Radar has a +/- 8-degree elevation angle for the radar signal. Radar is mounted with roughly -2 degrees depression to the roadway.

- 8. How many detection zones are available with each Hawkeye radar sensor?** – Each sensor can cover twelve lanes of traffic, with up to four zones per lane. Our software is able to recognize that there's an object and how many are in the zone at the stop-bar.
- 9. How long are the presence and the advanced zones when configured?** – Typically, the presence zone is 66ft and the advanced – 430ft, total: 500 feet for the entire lane.
- 10. How do you capture the Dilemma zone?** – The Dilemma zone can be marked and monitored, and relevant output sent to the cabinet.
- 11. Is the monitoring bi-directional? Can both directions be configured for inverse/wrong way detection?** – Yes. One radar can be used to monitor bi-directional traffic and also detect the wrong way movements in both of those directions.
- 12. We need to visually verify a wrong way driver made it to the main line traffic lanes before the counter actions begin. Is the Hawkeye solution supporting a CCTV application?** – We have a context camera provided with the radar sensor. When a wrong way driving event occurs, we will be able to record/save video of the event. This way a system operator can receive the alarm and then review the video to confirm the event prior to taking other actions. No CCTV application per se' is provided.
- 13. Can the Hawkeye system integrate with other software systems? For example, does it allow for subscribing to events such as a traffic incident?** – The events will be provided via alarms or emails. The system will have an API that can be queried to get events. In order to integrate them into your system, you would need to write a script to query our system and push it into your system.
- 14. Can vehicular weaving stats be gathered within the detection zone?** – Data for vehicular weaving within a lane is not available.

- 15. What controllers does it work with?** – The Hawkeye Vehicle Detection System will work to provide vehicle detection for any traffic cabinet and controller. There is a detector card or SDLC options available. The system supports all cabinets NEMA TS1, NEMA TS2 Type 2, NEMA TS2 Type 1, 33X/C1/170/2070, ITS/ATCC/ATC.
- 16. If there is no rack in a TS1 cabinet, how can we pass the call through from the Hawkeye processor to the controller? Is a rack needed?** – If using In|Sync, we provide a Y-Cable. If the controller supports vehicle detection via the SDLC port, we can provide the SDLC module to communicate detection data directly to the controller. Otherwise a rack is needed, and with it we would use detector cards.
- 17. What is the maximum distance from controller to radar?** – Distance is not an issue. A minimum of Cat6 cable is required. For cable distances over 100m long, inline Ethernet extenders are used to repeat the signal; they are inexpensive.
- 18. What is the safe power and resistance measure when testing power?** – If testing power to the radar unit, you should see 48 VDC +/- 2 VDC. The network cable should be tested to ensure no shorts or open connections. The cable should be tested without injectors or surge protected devices connected. Cat6 cable with 23 AWG solid copper wire should be used.
- 19. What is the power budget of the radar and the context camera? (How much does each take)?** – The radars will not draw more than 0.5 A at 48 VDC (24 Watt). A 480 Watt 48 VDC power supply is provided to power up all required devices.
- 20. How does the radar recognize and classify vehicles?** – The radar determines vehicle classification from the signal response of the vehicle. Large responses correlate to large vehicles and small responses correlate to small vehicles. Thresholds are used to categorize the response to a vehicle type. These thresholds are fixed.
- 21. Can the sensor be mounted on a wood pole, potentially with a luminaire arm or other type of extension bracket to get the sensor out in front of traffic? Or will there be too much vibration?** – Yes. For an extension arm, if wind/vibration is likely, the sensor should not be way out on the end.

It is recommended that you position it somewhere between 1/3 and 2/3s of the way to avoid deflection. If mounting on a set-back pole, pick the pole which is diagonal to the stop bar, so you can get a good view of left turn vehicles, etc. (Check for exceptions when the mast arm is not grounded properly, even though the pole itself is grounded, and then consider the best alternative.)

22. Is a higher mounting location better or worse for the sensor? – Radar could be mounted at minimum 20ft high and minimum 66ft away from the stop bar, depending on the objectives. If mount is too high you might lose distance. Higher mounting means looking down more at the stop bar. If distance is not the objective, then the mount can be elevated as high as necessary, but the sensor must be able to see at least 50 meters from the mounting position, so a vehicle can be tracked into the zone of concern. The software allows entering these values and determining the appropriate mounting height and angle for your deployment.

23. Is the accuracy of the software any different in terms of quality, based on whether it is a mast-arm or luminaire mount? – No, the output is accurate almost 100% regardless of the mount type. Each deployment site should be evaluated for optimal line of sight viewing. Radar bounce will need to be minimized.

24. What is the angle range of detection? – The radar can be adjusted by rotating or tilting to provide the most optimal line of sight. It can cover -50 degree to +50-degree Azimuth angle field of view.

25. How many radar sensors can one Equipment Panel with one Hawkeye Processor handle? – Currently the Equipment Panel will support up to four sensors. However, additional equipment can be added very easily to support more.

26. If the spread of the radar detection zone spans into the adjacent approaches, can it still count the separate movements? – Most commonly the radar takes counts by lane at the stop bar. Collecting data from adjacent approaches is not advised, as it cannot be guaranteed that the radar will have an accurate view of the adjacent approach.

27. How does the sensor handle occlusion? – The radar tracks an object and its velocity. It is able to project that object behind occluded vehicles. In some cases, the objects can be merged. This only happens when the objects are further away and stopped. As the objects are moving, they create separation. Radar mounting height can also improve this result.

28. Can the radar track and report on car crashes? – Trajectories can be custom reported. They are not part of the standard intelligence pack. This is most suitable for highway applications, along with wrong way detection and queue detection. These are features which are in development.

29. If there is an incident in the center of the intersection (“between” the stop bars), can the Hawkeye radar detect this? – Typical radar sensor installation is focused on the stop bar and several hundred meters beyond. If you want to view the middle of the intersection, you lose distance. Because of this, the apex of the intersection is not monitored.

30. Do we need a separate radar for pedestrian counting or can use the same radar as for vehicles? – The radar is indeed capable of observing pedestrians. However, if the radar is deployed to monitor the vehicle lanes, it should not be used to monitor the pedestrians, as it will not be focused on the area of roadway to provide reliable pedestrian data. We recommend using different radars for vehicle and pedestrian data collection, so the units can be focused optimally.

31. How many radars can the processor handle if being used for pedestrian detection? – The processor can handle as many sensors with pedestrian statistics, as with any other type of data. There is no difference or impact on the capabilities of the processor.

32. Can tractor trailer interfere with the detection? – It depends on the angle and vector of mounting. The planning needs to consider terrain and area specifics so that optimal mounting can be provided. The radar detection algorithm can project a vehicle into an area where it loses visibility and then track that vehicle when visibility is restored.

- 33. Can the radar work and maintain data accuracy in cold weather conditions? What latitude and longitude points can it be set at?** – Yes, the Hawkeye radar works perfectly in any weather conditions within the range of -40°C to +74°C (operating). The system is fully capable of operating in the coldest of Canadian climates to the warmest of US climates.
- 34. Would snow on the ground act the same as a sheet of water on the ground (i.e. interfering with the radar)?** – The detection is not susceptible to glare, moisture or weather conditions. The radar will still track object accurately.
- 35. Do you need any special computer to view the output ASPM data and charts?** – No, the ASPM visualization tool is web-centric, and can be launched from any browser and computer (Chrome browser is recommended).
- 36. Can one choose to report just some metrics?** – All metrics are provided as part of the intelligence pack, but the user can choose which ones to display.
- 37. On the video display, what do color codes mean?** – On the heatmap the more intensive colors help spot issues at a glance. Thresholds can be set so color gradients would show proximity or distance away from these thresholds. Also, a color legend is always provided on the reporting charts that helps with interpreting the statistics.
- 38. Can you download files?** – Yes, data export in a CSV file is available.
- 39. Is the radar being used for railroad detection gating?** – No, not at this stage.
- 40. Can radar data be used for enforcement?** – While the system has not been devised for such purposes, the data has been enforcement rated in the court of law.

Experience and Adoption

- 1. Is the Hawkeye Vehicle Detection System being used anywhere in the US?** – We have deployments in Iowa and Georgia; testing is underway in Florida, and testing has been successfully completed by FDOT and experimental approval has been granted by MassDOT. The radar is under testing with TxDOT, GDOT and LaDOT, and soon to begin with Caltrans and VDOT.
- 2. Is it freeway tested?** – It is still under testing by some agencies and the AFPM software provides metrics, specific to freeways, e.g. Peak-Hour Factor, Floating Speed, Density, Wrong way, Traffic interruptions etc. Check with your regional ARM for more information.
- 3. Can I watch a live presentation or a webinar?** – Yes, a URL to a webinar is available on the rhythmtraffic.com website. You can also try the free demo of the ASPM/AFPM module, available on the hawkeyeradar.com/demo website
- 4. Do you have any technical data sheets you could provide?** – Yes, you can download the relevant datasheets from the Technical Documentation section under the Resources tab of the www.rhythmtraffic.com website.
- 5. What is the service life of the equipment?** – Rhythm Engineering provides a one-year full warranty, including software updates and hardware maintenance. Afterwards, clients have an option to purchase extended support. Call our support line or your Regional Account Manager for details.
- 6. Is free trial possible and for what period?** – No, currently Rhythm only offers the radar and the ASPM/AFPM module as a production system as we find it hard to meet existing client demand.
There is a free demo available on the hawkeyeradar.com.



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