



## COLLISION AVOIDANCE SYSTEM

The AMT **Collision Avoidance System (CAS)** has been developed in response to industry requirements for a safer, more productive and less stressful working environment when using Heavy Vehicles (HV) and Large Mobile Equipment.

Quite apart from the risk of serious injury to personnel working in and around the vicinity of mobile equipment, the direct cost to the operators of repairs and downtime is significant.

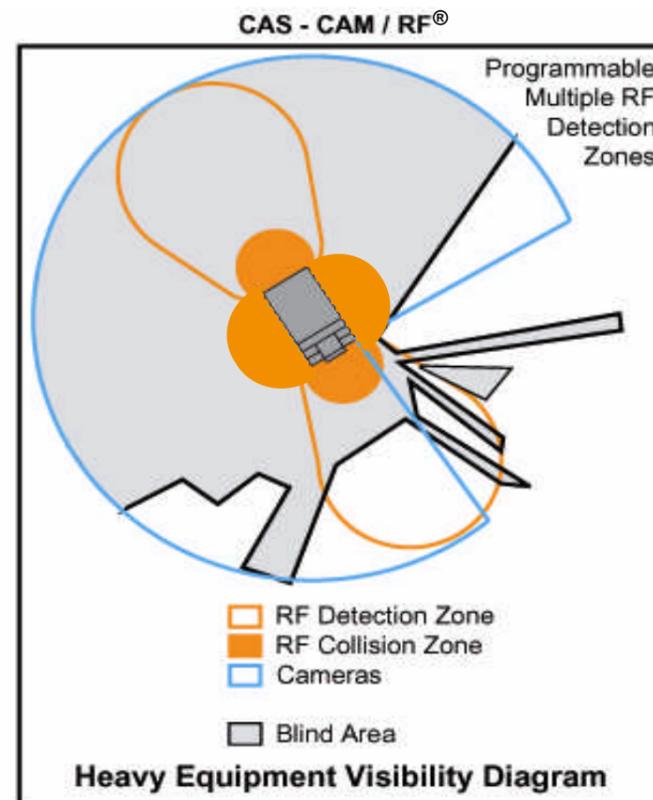
The **CAS** design enables the installation of the system in its entirety (**CAS-CAM/RF®**) or the high resolution colour video system (**CAS-CAM**) as a stand alone product.

The **CAS-CAM** has the necessary in-built smarts to interface directly to the Radio Frequency (RF) transceiver system at a later stage, should the client so desire.

The complete **CAS-CAM/RF®** system provides a visual and audible warning of impending danger in the event a tagged unit enters the designated **“AT RISK”** zone associated with the HV.

## KEY PERFORMANCE CAPABILITIES

- Visual and audible warning to the operator of the HV when LV's, Personnel or tagged Stationary objects are within the programmed detection range.
- Warning to the **“AT RISK”** personnel and/or Vehicle/s when they are within the programmed detection range.
- Visual identification of the LV's or stationary objects within the programmed detection range.
- Multiple programmable detection zones.
- Coded identification of objects within detection range displayed at all times.
- Data logging capability on all Heavy Vehicles and Light Vehicles for monitoring.



- Reliable operation in adverse environmental conditions (e.g. dust, fog, smoke and darkness).
- Improved vision for the Heavy Vehicle operator.
- System assists without inhibiting current operations.
- Mechanism for Heavy Vehicle acknowledgment of alarms.
- Safety Audit trail in the event of a collision.
- Easy interface with existing Fleet Management Systems via RS-232, RS-485 or CAN interfaces.
- Eliminates or significantly reduces the noise problems caused by the current audible reversing alarms.

## HOW IT WORKS

The **CAS-CAM/RF®** System utilises two state-of-the-art technologies to aid in the prevention of collisions:-

**Colour video cameras with a high resolution LCD Display Unit, and Radio Frequency (RF) transceivers**

These technologies have been integrated into a unique collision avoidance system providing the operators with advanced automatic object detection and classification.

The system also provides an automatic warning that identifies potential collisions and alerts the HV operator to areas where collisions could occur. At the same time, a warning is given to the **“AT RISK”** object of impending danger.



All HV, LV, Personnel and Stationary Objects are fitted with an RF transceiver tag. The HV continually receives and transmits and is, therefore, always aware of any **“AT RISK”** objects within the designated range.

These signals are also detected by the LV, Personnel, Stationary Object and/or HV tags. All tags transmit an identification code which is deciphered by the **CAS-CAM/RF®** system and classified. The number of tags detected in each class is displayed on the HV Display Unit.

## APPLICATIONS

The **CAS-CAM/RF®** technology is the result of three years development by AMT. It is suitable for any industry where Heavy Vehicles and Large Mobile Equipment are used, for example:-

- Quarrying / Mining / Earthmoving & Construction
- Forklift / Handling / Storage
- Road / Rail Transport
- Agriculture
- Refuse Industry
- Any other poor visibility environment involving heavy vehicles

**HEAVY VEHICLE (HV) & LARGE MOBILE EQUIPMENT**

**Display Unit**

- Full Colour Display (6.4" Colour LCD)
- Anti-glare screen
- Programmable functions include: mirror, brightness, colour, camera title, camera cycling & auto switch to reverse/forward camera on either gear selection and/or rear/front RF detections
- Data logging capability
- Wide operating power supply range 10 – 30 VDC, 25W max
- 4 Function membrane keypad
- On-screen display function
- Two camera inputs & RF units (expandable to 6 inputs with Expansion Unit)
- Video output – PAL
- RS-232 & RS-485 interfaces
- Optional Sun Visor
- IP 32 rated enclosure



**Camera Unit**

- High Resolution Colour
- Viewing Angle: 153 Degrees
- Minimum illumination: 0.03 Lux
- Day/Night Camera
- Photo-chromatic Lens
- Waterproof connection system
- IP 66 rated enclosure

**RF Unit**

- Programmable Multiple detection ranges
- Ranges from 0 – 80m (accuracy +/- 20%)
- RF transceiver for unlicensed bands
- Digital RF Data transmission with full error control
- Detection angles ranges from 90 – 120 degrees at rear & 180 degrees at front and sides
- External Transmit and Receive activity indicators
- IP 56 rated enclosure
- Optional side RF units for 360 degrees coverages



**Expansion Unit**

- 4 Local camera inputs & RF units
- 4 auxiliary inputs (opto isolated) for eg. reverse & forward gear signals
- 2 switched contact outputs (voltage free) for eg. reverse alarm circuit
- RS-232, RS-485 & CAN interfaces
- Wide operating power supply range 10 – 30 VDC, 50W max
- IP 54 rated enclosure

**LIGHT VEHICLE (LV) & STATIONARY OBJECTS (SO)**

- Dash Mounted alarm unit with audible alarm, visual alarm & power indicator (LV only)
- RS-232 interface
- Optional Rotating Beacon activated within pre-programmed detection range
- RF transceiver for unlicensed bands
- Digital RF Data transmission with full error control
- Object detection angle of 360 degrees
- Data logging capability
- Operating power supply: nominal 12 VDC, 5A max (with external beacon)
- IP 56 rated enclosure



**CAS-CAM/RF®**

**Collision Avoidance System**  
**High Resolution Colour Cameras &**  
**Automatic RF Proximity Detection**

*Specifications subject to change without notice.*

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