

Class V & VI

CMS



Devices for Indirect Vision

Devices for indirect vision is an important component of vehicle safety. It is a device installed on vehicles to observe the adjacent traffic areas that cannot be directly seen, helping drivers to monitor the traffic conditions or road surface conditions on the left, right, and rear sides of the vehicle. It plays a very important role in the safe operation of vehicles. UN ECE R46 defines the performance and installation requirements for indirect vision devices for M and N category vehicles, as well as L category vehicles with bodywork at least partly enclosing the driver.

Class of device for indirect vision are classified as follows:

Class I: Rear-view device;

Class II and III: Main rear-view device;

Class IV: Wide-angle view device;

Class V: Close-proximity view device;

Class VI: Front-view device;

Class VII: Main rear-view mirrors intended for L category vehicles with bodywork.



Class I



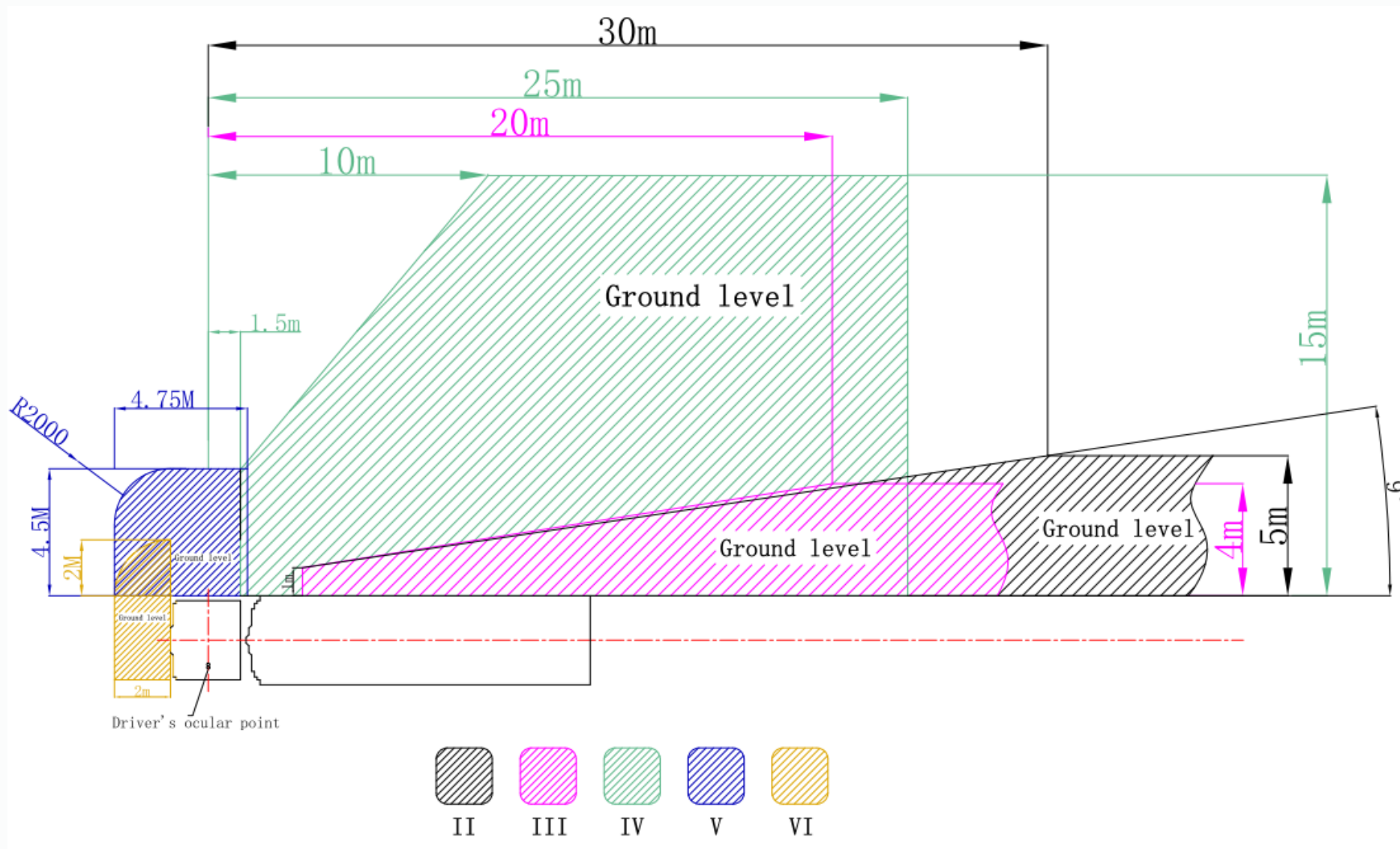
Class III (M1, N1 category)



Class VII (L category)



Field of vision defined by ECE R46 for Class II, III, IV, V, VI



M-category & N- category Vehicles defined by ECE R.E.3

Category M - Power-driven vehicles having at least four wheels and used for the carriage of passengers

M1: Vehicles used for the carriage of passengers and comprising not more than eight seats in addition to the driver's seat.

M2: Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass not exceeding 5,000 kg.

M3: Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass exceeding 5,000 kg.

Category N - Power-driven vehicles having at least four wheels and used for the carriage of goods

N1: Vehicles used for the carriage of goods and having a maximum mass not exceeding 3,500 kg.

N2: Vehicles used for the carriage of goods and having a maximum mass exceeding 3,500 kg but not exceeding 12,000 kg.

N3: Vehicles used for the carriage of goods and having a maximum mass exceeding 12,000 kg.



Devices for Indirect Vision Required for M-category Vehicles

Vehicle Category	Interior Rear-view Devices	Exterior View Devices				
--	Rear-view Devices	Main rear-view Devices		Wide-angle View Devices	Close-proximity View Devices	Front-view Devices
--	Class I	Class II	Class III	Class IV	Class V	Class VI
M1	Compulsory	Optional	Compulsory	Optional	Optional	Optional
M2	Optional	Compulsory	Not permitted	Optional	Optional	Optional
M3	Optional	Compulsory	Not permitted	Optional	Optional	Optional



M1



M2



M3

Devices for Indirect Vision Required for N-category Vehicles

Vehicle Category	Interior Rear-view Devices	Exterior View Devices				
--	Rear-view Devices	Main rear-view Devices		Wide-angle View Devices	Close-proximity View Devices	Front-view Devices
--	Class I	Class II	Class III	Class IV	Class V	Class VI
N1	Compulsory	Optional	Compulsory	Optional	Optional	Optional
N2 (≤7.5t)	Optional	Compulsory	Not permitted	Compulsory For both sides if a Class V mirror can be fitted Optional For both sides together if not	Compulsory (1 on the passenger's side) Optional (1 on the driver's side (both shall be fitted at least 2 m above the ground)).	Optional

Devices for Indirect Vision Required for N-category Vehicles

Vehicle Category	Interior Rear-view Devices	Exterior View Devices				
		Main rear-view Devices		Wide-angle View Devices	Close-proximity View Devices	Front-view Devices
--	Rear-view Devices					
--	Class I	Class II	Class III	Class IV	Class V	Class VI
N2 (> 7.5t)	Optional	Compulsory	Not permitted	Compulsory	Compulsory (1 on the passenger's side) Optional (1 on the driver's side (both shall be fitted at least 2 m above the ground).	Compulsory
N3	Optional	Compulsory	Not permitted	Compulsory	Compulsory (1 on the passenger's side) Optional (1 on the driver's side (both shall be fitted at least 2 m above the ground).	Compulsory

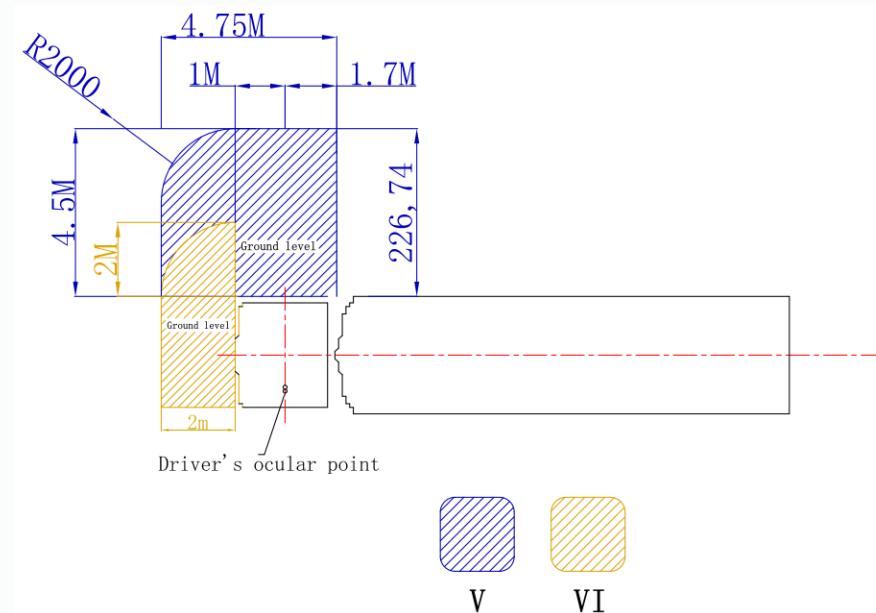


Class V close-proximity view device & Class VI front-view device

Class V: The field of vision shall be such that the driver can see a flat horizontal portion of the road along the side of the vehicle. In the transverse direction, the parallel plane passing at a distance of 4.5 m in front of the plane. To the rear, the plane parallel to the vertical plane passing through the driver's ocular points and situated at a distance of 1.75 m behind that plane. To the front, the plane parallel to the vertical plane passing through the driver's ocular points and situated at a distance of 3 m in front of that plane.

Class VI: The field of vision shall be such that the driver can see at least a flat horizontal portion of the road, which is bounded by:

- (a) A transverse vertical plane through the outermost point of the front of the vehicle;
- (b) A transverse vertical plane 2,000 mm in front of the plane defined in (a);
- (c) A longitudinal vertical plane parallel to the longitudinal vertical median plane going through the outermost side of the vehicle at the driver's side;
- (d) A longitudinal vertical plane parallel to the longitudinal vertical median plane 2,000 mm outside the outermost side of the vehicle opposite to the driver's side.





Class V & VI Camera Monitor System(CMS)

Class V & Class VI camera monitor system (camera + monitor) is designed to replace traditional Class V and VI physical rearview mirrors, to assist drivers in eliminating class V and class VI blindspots, increasing driving safety.



MSV25



TF108





Camera Specification

Model	MSV25
Image Sensor	1/2.8"
TV System	PAL/NTSC (optional)
Effective Pixel	1920 (H) x 1080 (V)
Sensitivity	0.01 Lux/F1.2
Scanning System	Progressive scan RGB CMOS
Synchronization	Internal
Auto Gain Control (AGC)	Auto
Electronic Shutter	Auto
BLC	Auto
Video Output	1 Vp-p, 75Ω, AHD
Noise Reduction	3D
Lens	f1.8mm Megapixel
Power Supply	12V DC±10%
Power Consumption	130mA (Max)
Weatherproof/Water Proof	IP69K
Operating Temperature	-30° C ~ +70 ° C



MSV25



Monitor Specification

Model	TF108
Screen Size	10.1 inch
Resolution	1024(H) ×600(V)
Brightness	600cd/m ²
Contrast	800 : 1
Power Supply	DC12 V -32 V
Power Consumption	MAX 7W
Video Input	AHD 1080P/720P/CVBS
TV System	PAL/NTSC/AUTO
Menu Language	Chinese/English
Operation Mode	Button/remote control
CDS	Auto dimming
Operating Temperature	- 3 0 ~ 7 0 °C



TF108

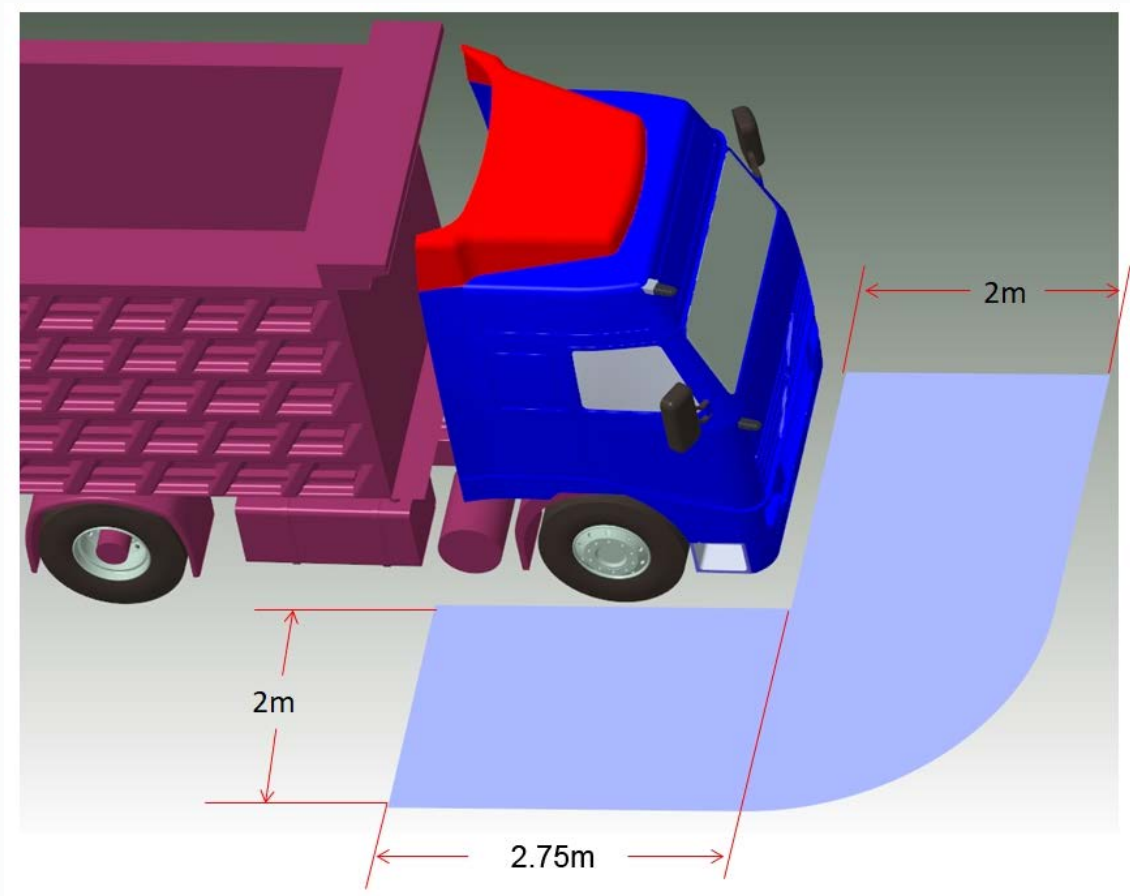


Ceiling-mounted bracket

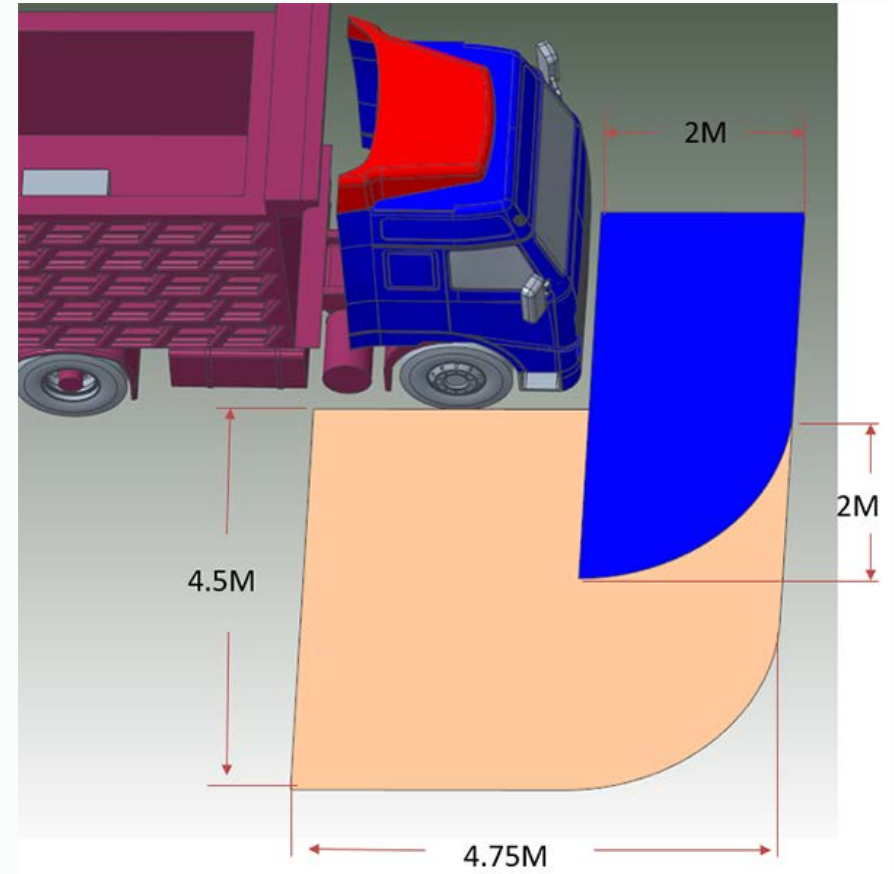
Desktop-mounted bracket



Camera Installation Position



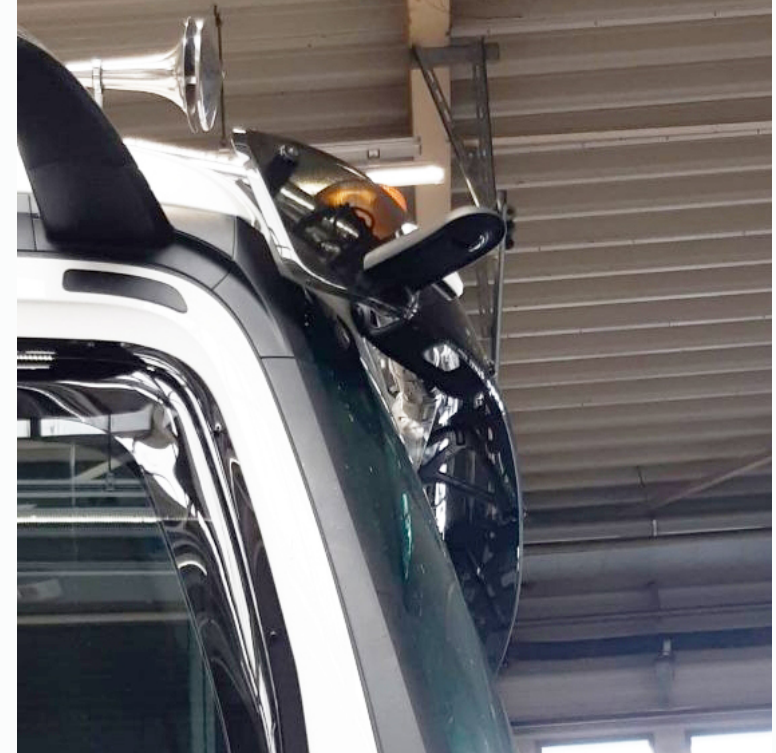
Mounting height: $< 2.4\text{M}$



Mounting height: $2.4\text{M} - 3.3\text{M}$



Camera Installation Position





Monitor Installation Position





Thank you!