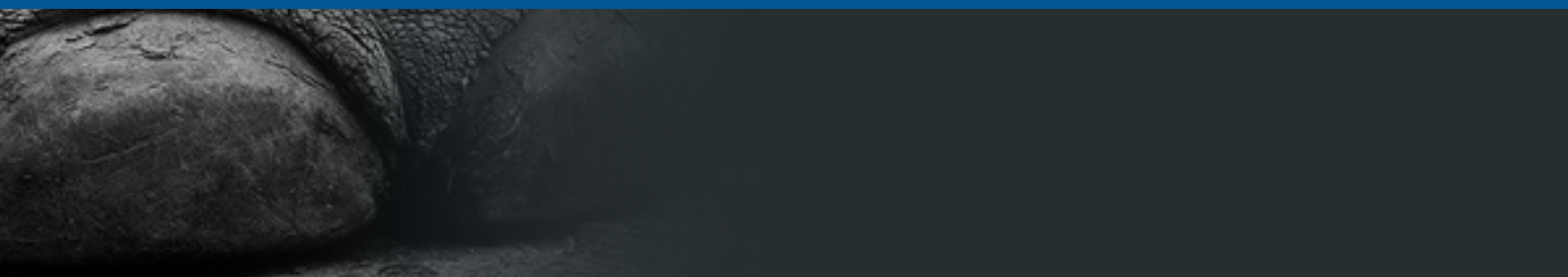


Motec Camera Monitor Systems
for Transport and Municipal Vehicles
More safety, fewer accidents



Motec: Heavy-duty camera monitoring solutions

Whether in the sector of transport and municipal vehicles, in rail traffic, construction machinery, in the industry, logistics or agriculture – Motec has been one of the leading manufacturers of high-quality and intelligent camera monitoring systems for mobile applications for 25 years.

Our strong points: Camera monitor systems that meet requirements for heavy-duty vehicles in the automotive industry. The systems guarantee a long service life, even in harsh conditions and their flexibility allows the adaptation to a variety of vehicles and associated visual problems. The open interfaces allow a comprehensive integration into the vehicle's electronic system and in-

terconnection with currently installed sensors. Quality "Made in Germany".

When it comes to original parts, Motec is a flexible and reliable partner. Our development, production, and service procedures are at OEM level and are compliant with current industry standards. Renowned international vehicle, machine, and system manufacturers have been relying on our systems and components for years and trust in our expertise to finding always a solution.

This brochure contains a presentation of our selection of possible system solutions for your applications.



Motec camera monitoring systems for the vehicle industry

Motec camera monitoring systems support the operator of large and complex vehicles to move them safely and more efficiently, regardless of the vehicle's size. With the assistance of extremely resilient heavy-duty cameras, the operator can detect people and objects within the machine's danger zone before it is too late. This way, Motec systems save lives, make working conditions easier, and save costs.

Technical Service - Guaranteed Fast Support

Top quality means also top service. You have technical questions or face challenges? We will assist you. Our sales and engineering departments work hand in hand. Your benefit: Efficient communication and no red tape. Our service engineers know what you need. They understand your processes, They find a solution quickly.

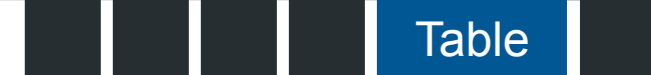
Hotline

Phone +49 6433 9145-9888
Fax: +49 6433 9145-9877
service@motec-cameras.com



Robust modular hardware and intelligent software

- . High housing protection class
- . Shock- and vibration-resistant
- . High temperature range
- . Modular components
- . In-house cable production
- . Digital technology for superior image quality
- . Development, validation and integration of algorithms
- . Real-time image processing
- . Top view projections 270°/360°
- . Sensor fusion (ultrasound/radar)
- . Stereo cameras (object detection)
- . Driver assistance system (collision warning)



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MVS system with 360° birdseye view Rigid lorry example

The Motec Mobile Vicinity Scout (MVS) is a camera system designed especially for utility vehicles. It provides the driver with a clear, seamless 270° or 360° view around his vehicle.

The MVS system complies with the requirements demanded in the area of municipal transport and goods traffic. The rugged design guarantees a long service life and a high degree of flexibility that allows the adaptation to a variety of vehicles and associated visual problems.

The open interfaces allow a comprehensive integration into the vehicle's electronic system and interconnection with currently installed sensors.

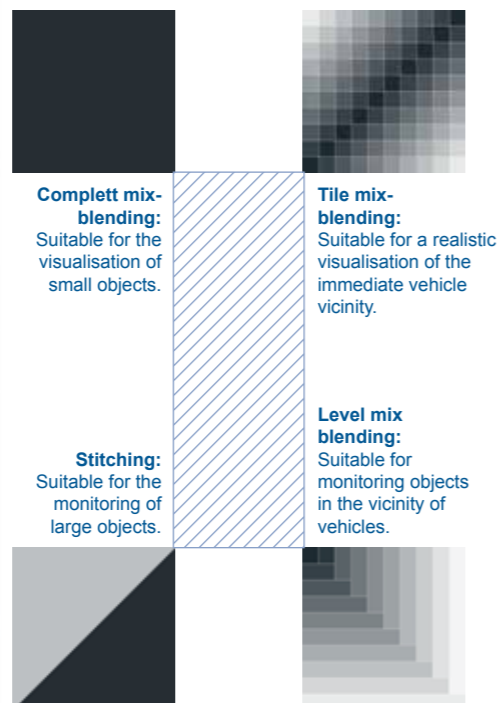


Installation positions of the MVS cameras. Front, sides, and rear for 360° birdseye view.

4 5



Monitor view with overlay.

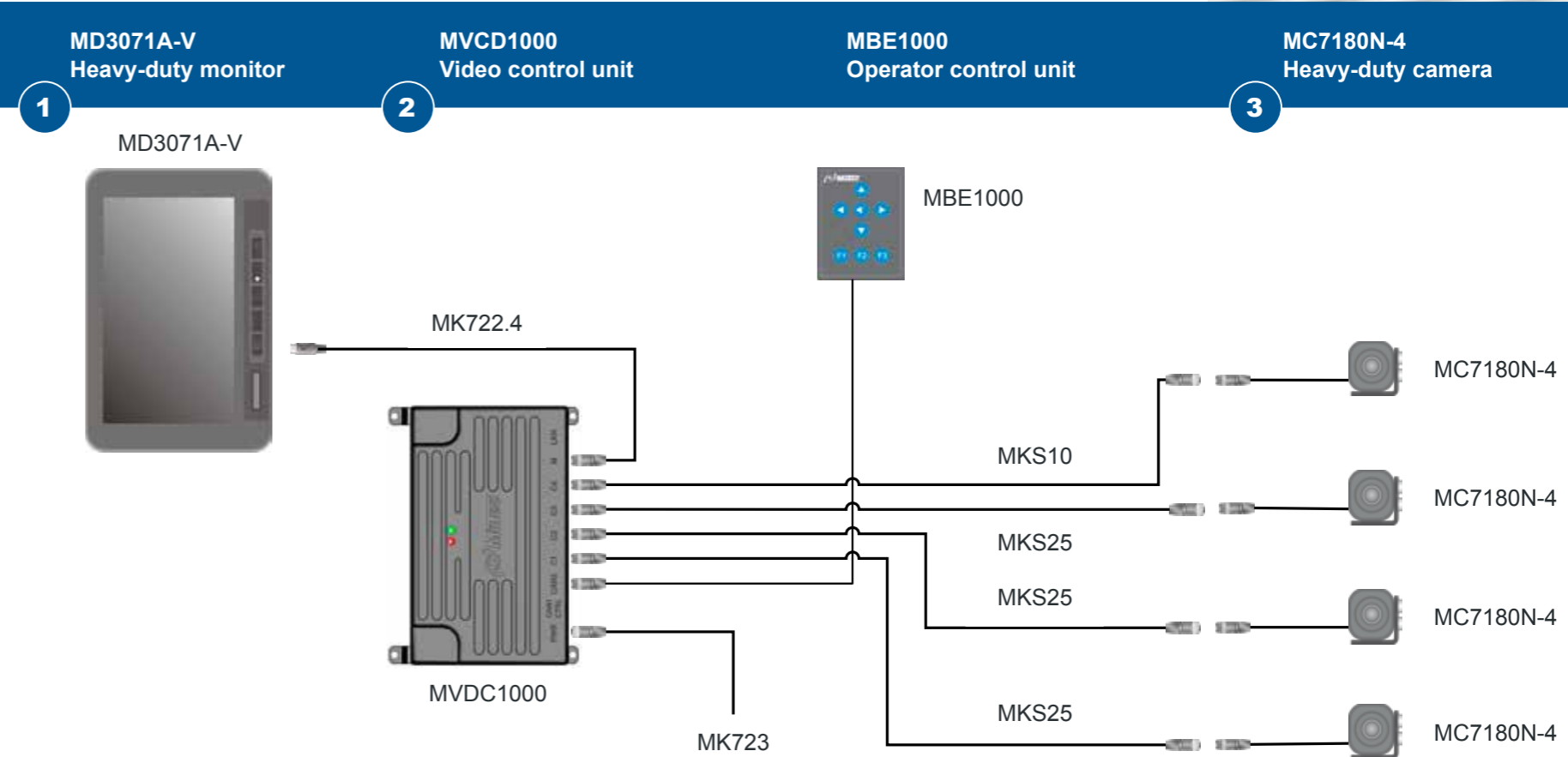


Blending method

The blending process joins the video images of 4 individual cameras to create a 360° view, without losing image information at the vehicle's corners.

The Motec MVS system is serially equipped with 4 separate blending processes, which can be selected via the device menu in order to adapt to individual view requirements. The MVS also offers user-specific blending settings.

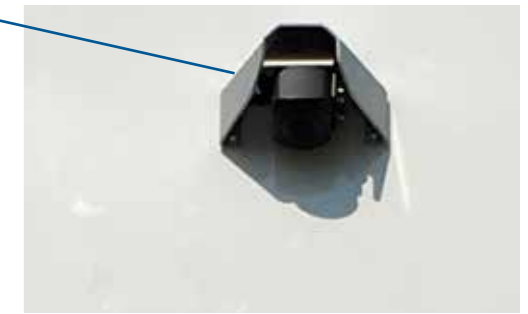
EXAMPLE: Rigid lorry



MVS system with 270° view Semi-trailer truck example

A semi-trailer truck or an articulated lorry are equipped with 6 mirrors. However, the surrounding area of the combination vehicle can only be observed if the tractor vehicle is aligned with the trailer. When manoeuvring through a corner, the mirrors provide only limited assistance. Furthermore, the rear of the trailer is not visible to the driver.

When using a camera that provides a 270° view around the rear of the trailer unit, a bird's eye view around the articulated lorry or semi-trailer truck allows the driver to see any obstacle in this area. This ensures that accidents and hazardous situations can be avoided.

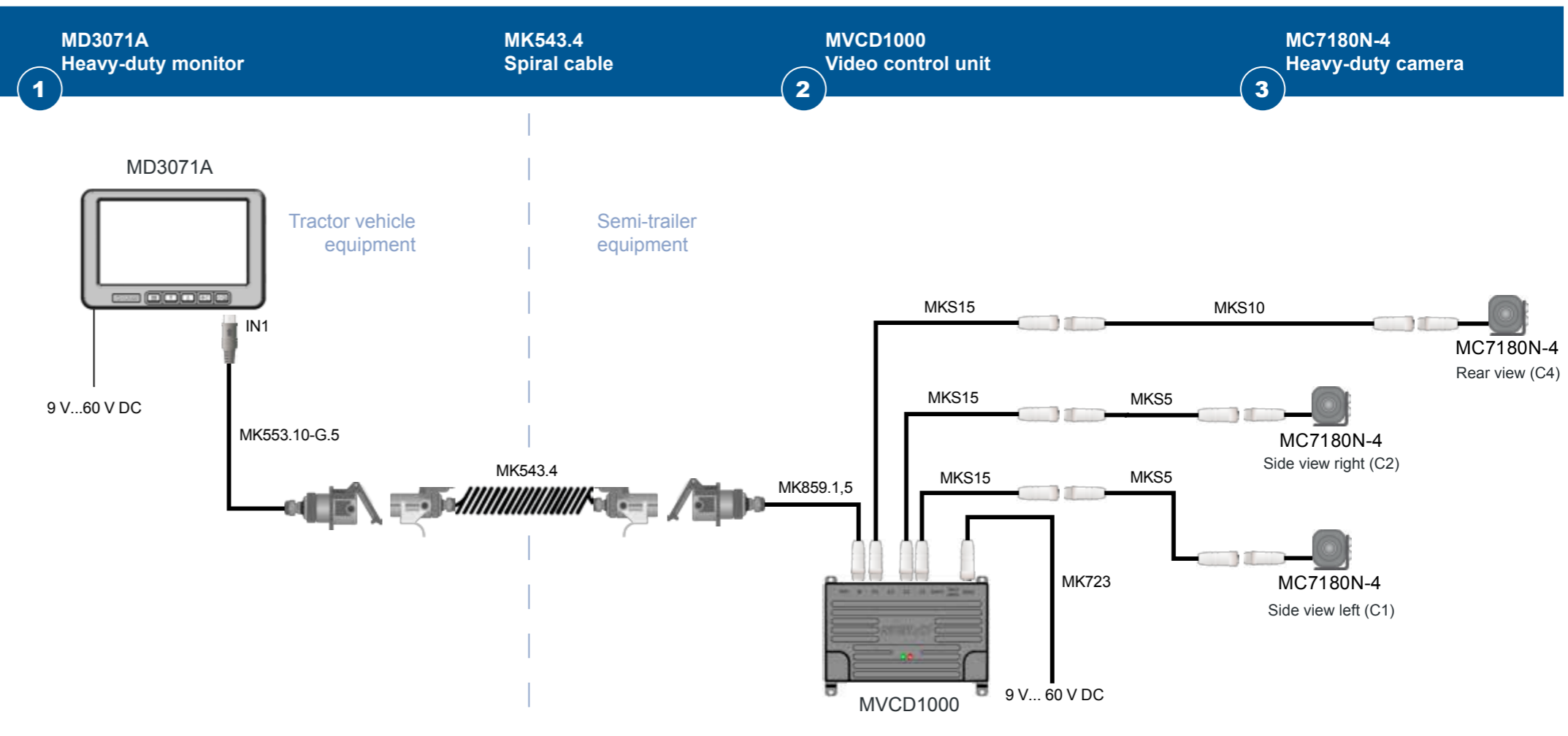


Installation positions of the MVS cameras.
Sides and rear for 270° birdseye view.



View of monitor during calibration process.

EXAMPLE: Semi-trailer truck



Rigid lorry, dumper truck

Monitoring the rear and sides of the truck

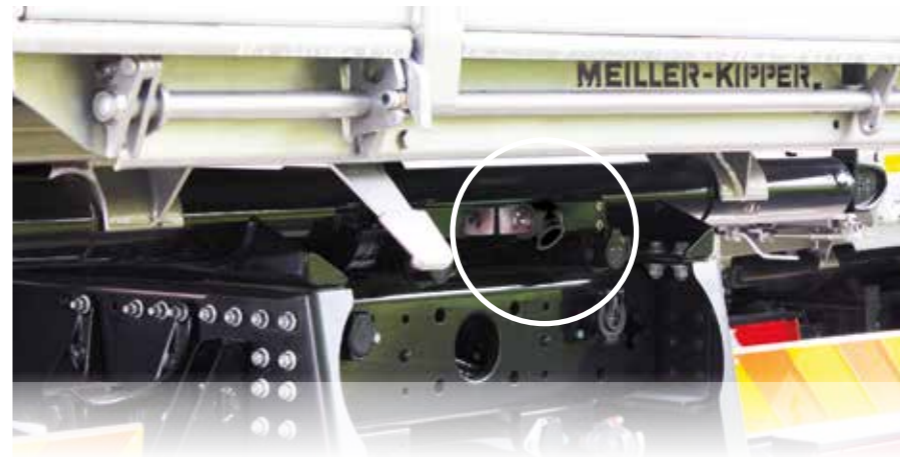
Reversing, manoeuvring or making a right-hand turn can create potentially dangerous situations. In spite of all available mirrors, the truck operator does not have the necessary view into all dangerous zones.

Camera monitoring systems support the driver and indicate obstacles and persons and make the approach to loading and unloading areas easier.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.



Protecting lives, helping people, and saving money.



Dump truck with heavy-duty camera to monitor the vehicle's rear area.

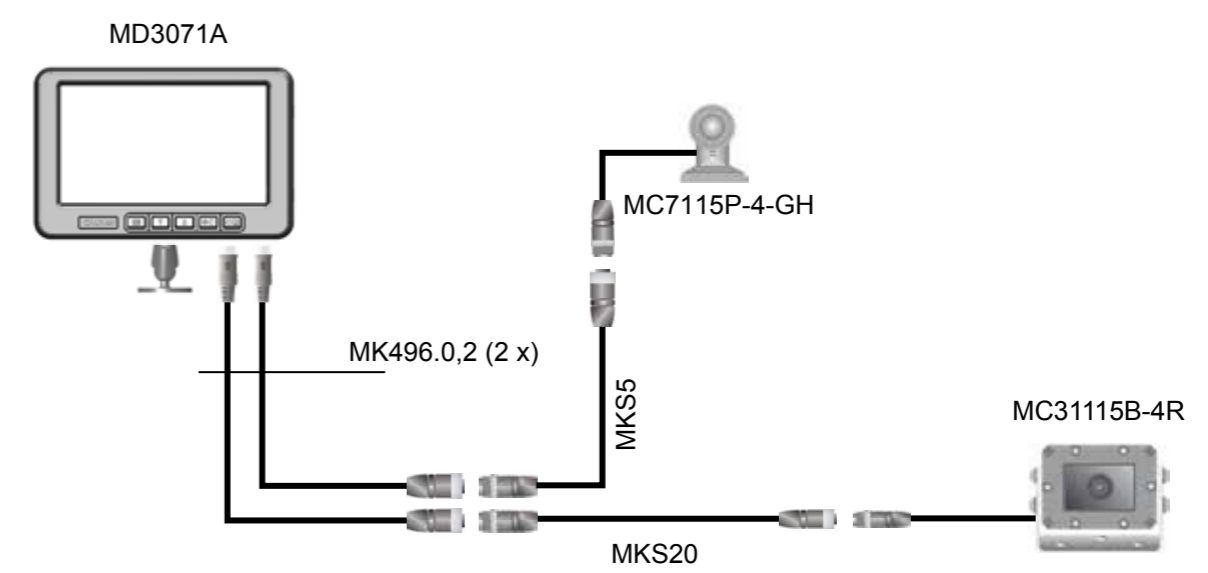
8 9



EXAMPLE:
Rigid lorry



- 1
MD3071A
Heavy-duty monitor
- 2
MC7115P-4-GH
Heavy-duty camera
- 3
MC3115B-4R
Heavy-duty camera



Articulated lorry

Monitoring the rear of a vehicle using automatic camera switching

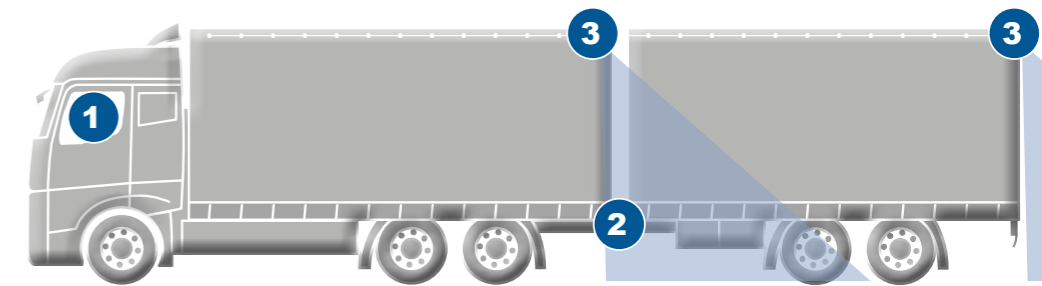
Reversing, manoeuvring or making a right-hand turn can create potentially dangerous situations. In spite of all available mirrors, the truck operator does not have the necessary view into all dangerous zones. When using articulated lorries, this applies in particular to the tow bar area when hitching the trailer to the towing vehicle.

Camera monitoring systems support the driver and indicate obstacles, persons in the danger zones. They make it easy to approach loading and unloading areas and to monitor the trailer tow bar area during the hitching process.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.

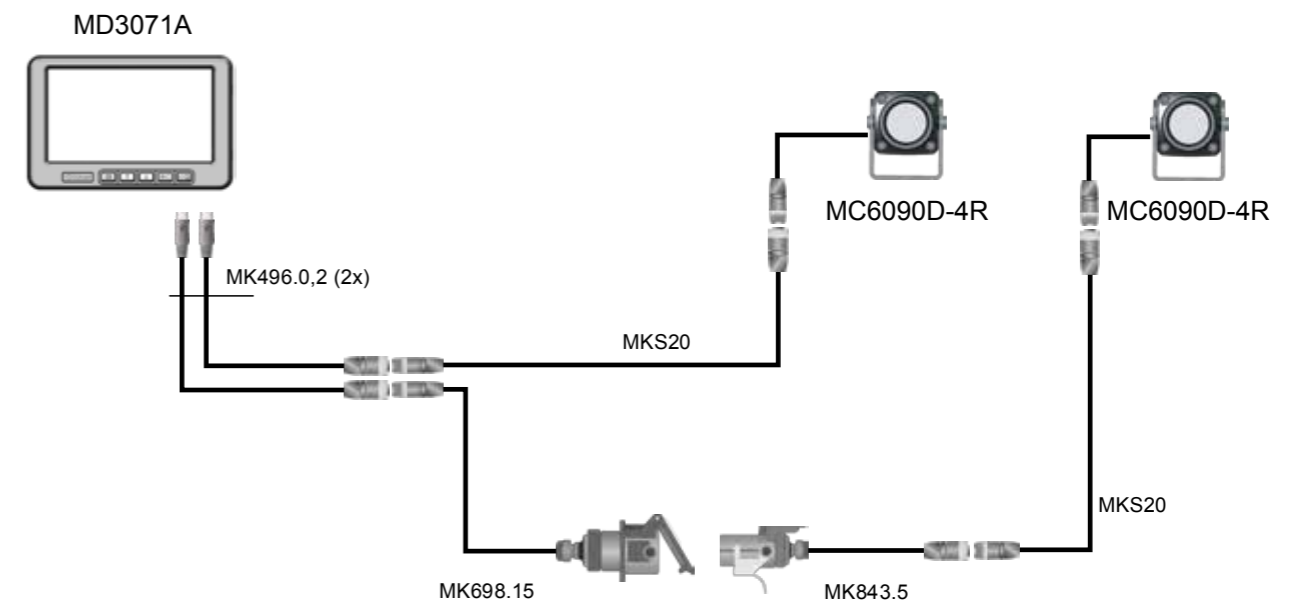


Motec heavy-duty cameras are used in a variety of articulated vehicles. In this example, for instance, a box truck and tipper truck



EXAMPLE:
Articulated lorry

- 1**
MD3071A
Heavy-duty monitor
- 2**
MK843.5
Tow bar cables
- 3**
MC6090D-4R
Heavy-duty camera



Semi-trailer truck

Monitoring the rear and sides of the truck

Reversing, manoeuvring or making a right-hand turn can create potentially dangerous situations. In spite of all available mirrors, the truck operator does not have the necessary view into all dangerous zones.

Camera monitoring systems support the driver and indicate obstacles and persons and make the approach to loading and unloading areas easier.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.

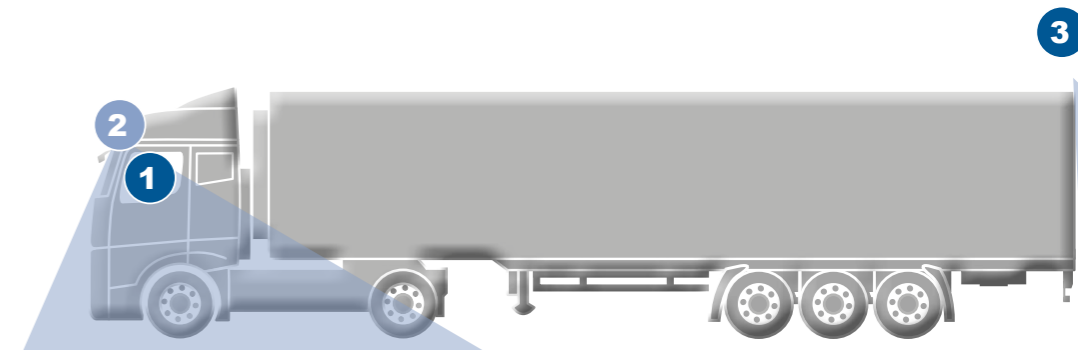


Protecting lives, helping people, and saving money.

Semi-trailer truck with heavy-duty camera above the portal to monitor the rear area of the vehicle.

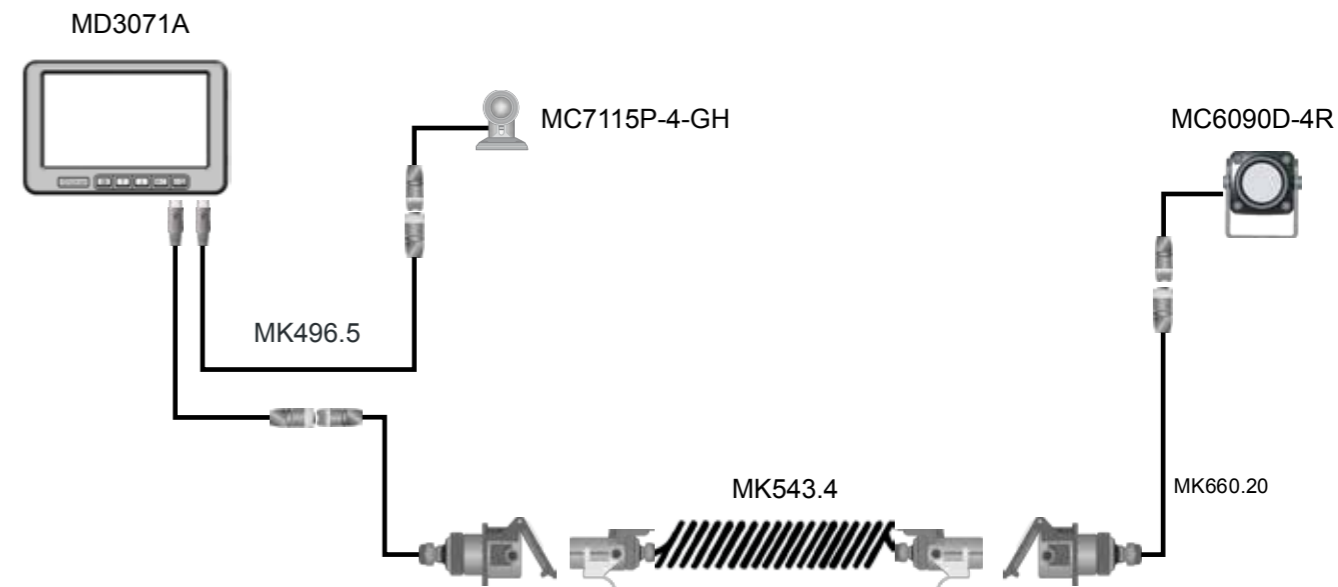


Heavy-duty camera installed on the tractor unit to increase visibility when making turns.



EXAMPLE:
Semi-trailer truck

- 1
MD3071A
Heavy-duty monitor
- 2
MC7115P-4-GH
Heavy-duty camera
- 3
MC6090D-4R
Heavy-duty camera



Petrol tanker

Visual solutions for ADR vehicles

Reversing, manoeuvring or making a right-hand turn can create potentially dangerous situations. In spite of all available mirrors, the truck operator does not have the necessary view into all dangerous zones.

Camera monitoring systems approved for the transportation of hazardous materials, assist the driver and indicate obstacles and persons and make the approach to loading and unloading areas easier.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.

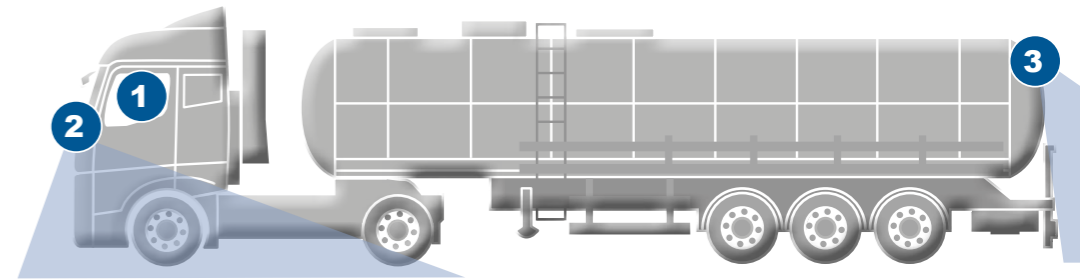


Protecting lives, helping people, and saving money.

Tankers with heavy-duty camera to monitor the rear area of the vehicle.

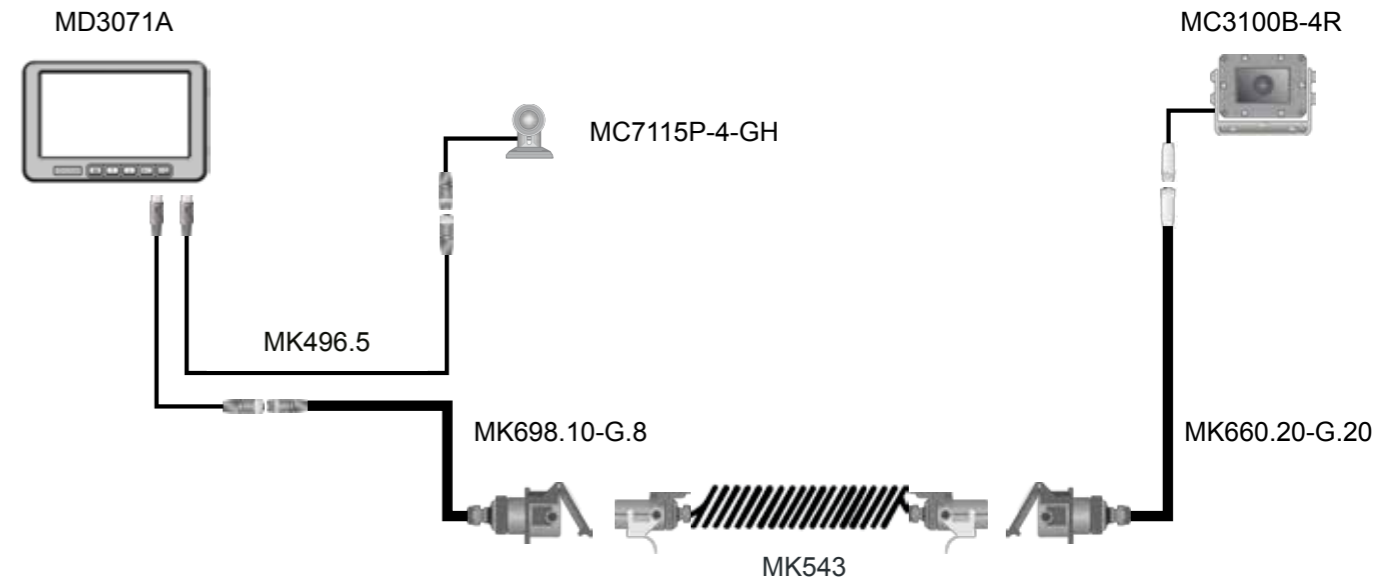


Tractor units with heavy-duty camera to increase the safety when making turns.



EXAMPLE:
Petrol tanker

- 1
MD3071A
Heavy-duty monitor
- 2
MC7115P-4-GH
Heavy-duty camera
- 3
MC3100B-4R
Heavy-duty camera



Aircraft refueling vehicle

Multiple camera systems to monitor the operating and manoeuvring areas

The fuelling of aircraft must always be completed within a short time, and the number of personnel during the preparation of the aircraft clearly increases the risk of personal injuries and material damage.

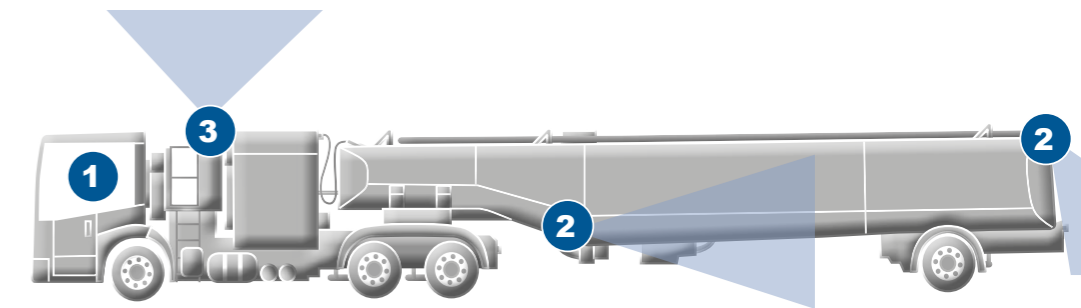
Camera monitoring systems approved for the transportation of hazardous materials make the positioning of the vehicle easier and faster and allow to observe the entire surroundings of the vehicle.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.



Mounting positions for the side camera.

Camera-assisted aircraft fuelling process.



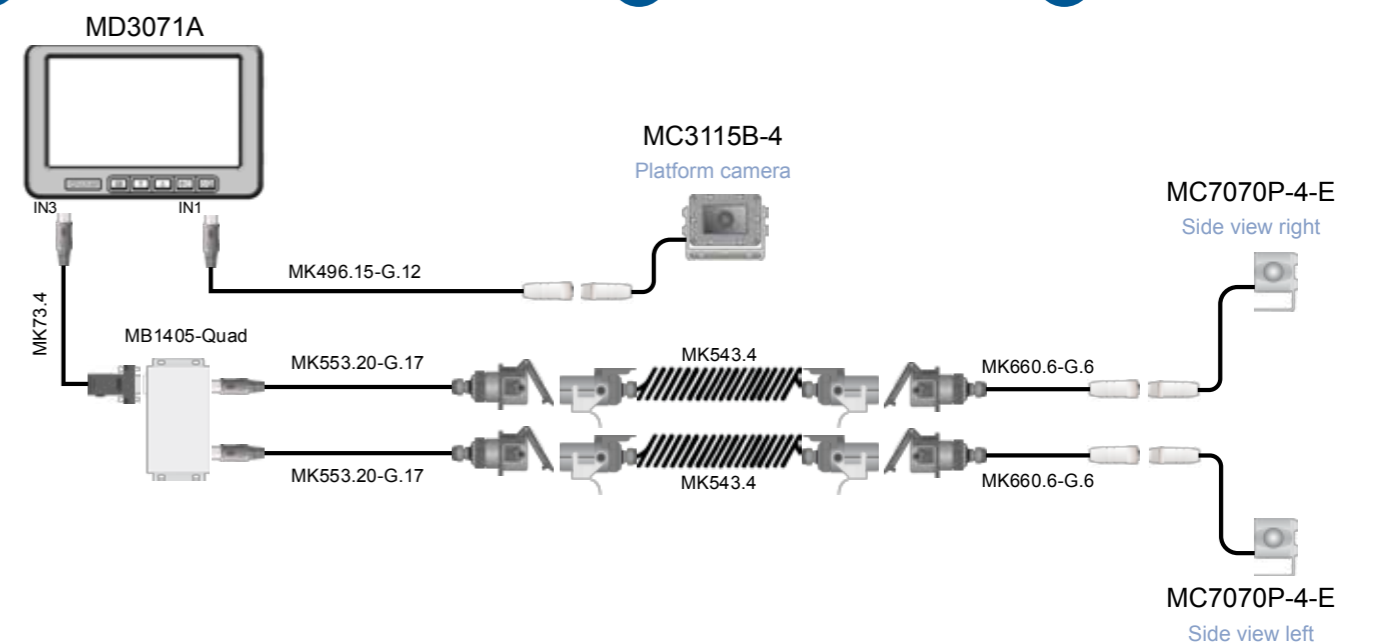
EXAMPLE:
Airfield tanker

- 1

MD3071A
Heavy-duty monitor
- 2

MC3115B-4
Heavy-duty camera
- 3

MC7070P-4-E
Heavy-duty camera



Heavy haulage vehicle Digital wireless system

For instance, when using self-steering trailers during the transport of excessively long and heavy goods, the use of camera systems with permanently installed cables is hardly possible.

The digital wireless system with ECE approval is the optimum solution to transmit image signals between trailer and tractor vehicle to a distance of up to 120 m.

This allows for the purposeful monitoring of hazardous areas and the freight, and thus, preventing personal injuries and material damage.



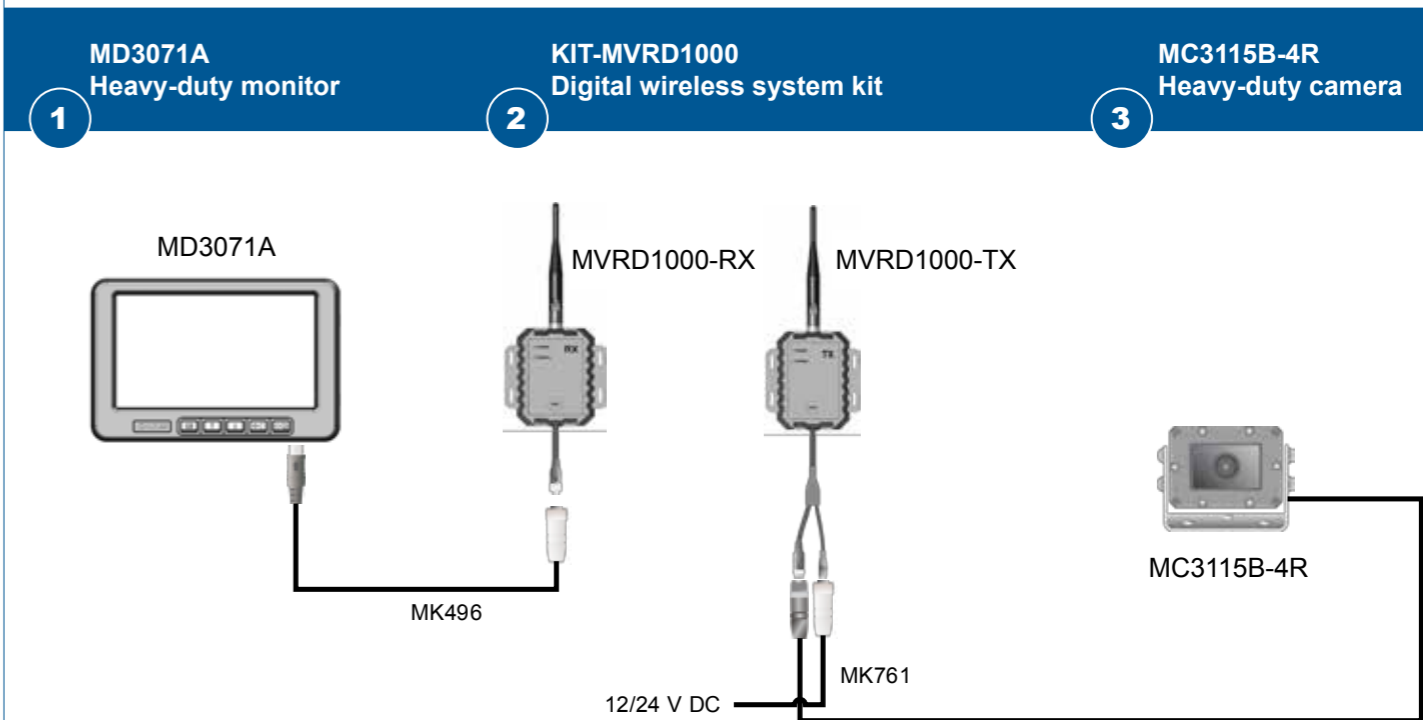
Digital wireless system with a maximum range of 120 meters.



18 19



EXAMPLE: Heavy transporters



Refuse collection vehicle with MVS system

360° birdseye view with monitoring of the vehicle's rear area and running boards

The Motec Mobile Vicinity Scout (MVS) is a camera system designed especially for utility vehicles. It provides the driver with a clear, seamless 270° or 360° view around his vehicle.

The MVS system complies with the requirements demanded in the area of municipal transport and goods traffic. The rugged design guarantees a long service life and a high degree of flexibility that allows the adaptation to a variety of vehicles and associated visual problems.

The open interfaces allow a comprehensive integration into the vehicle's electronic system and interconnection with currently installed sensors.



Protecting lives, helping people, and saving money.

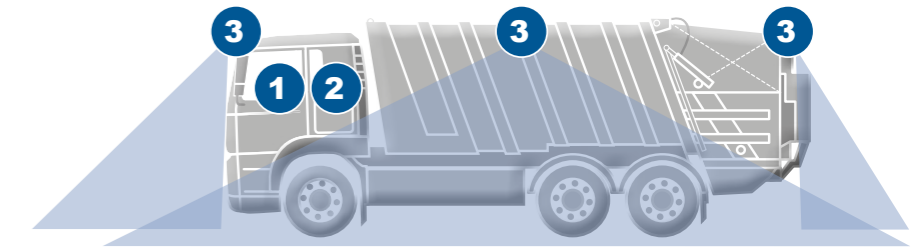
Heavy-duty cameras for monitoring the vehicle's rear and operating area as well as the vehicle's sides.



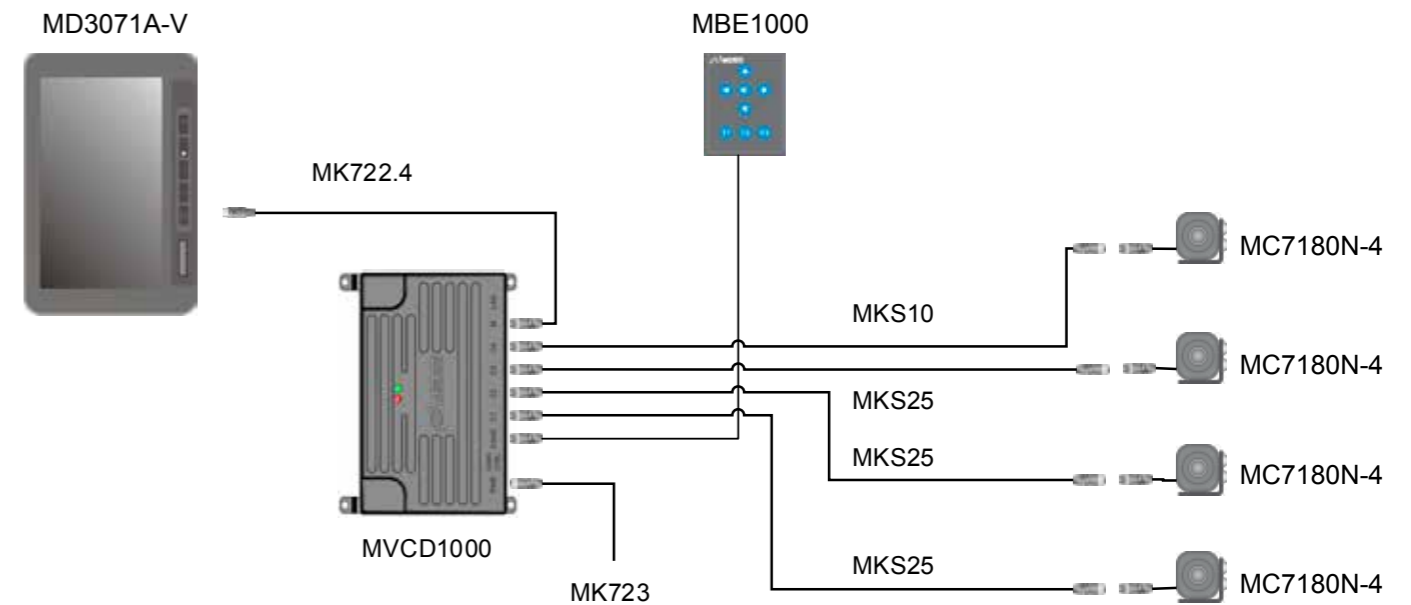
20 21



EXAMPLE:
Refuse collection vehicle



- 1 **MD3071A-V**
Heavy-duty monitor
- 2 **MVCD1000**
Video control unit
- 3 **MBE1000**
Operator control unit
- 3 **MC7180N-4**
Heavy-duty camera



Refuse collection vehicle side loaders

Monitoring of multiple operating zones and hazardous areas

Vehicles with only the driver demand special requirements regarding safety while reversing the truck.

A system consisting of a combination of cameras and radar sensors warn the driver visually and acoustically of persons and objects in the danger zone behind the vehicle.

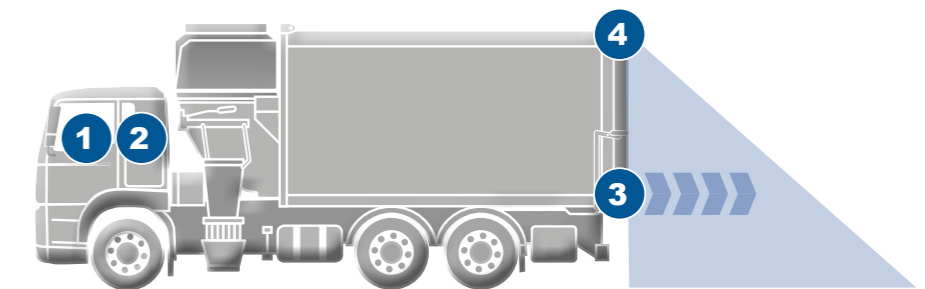
The radar detects object outside of the camera's range of view at a distance of up to 50 m and can graphically display the direction as well as the distance.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.



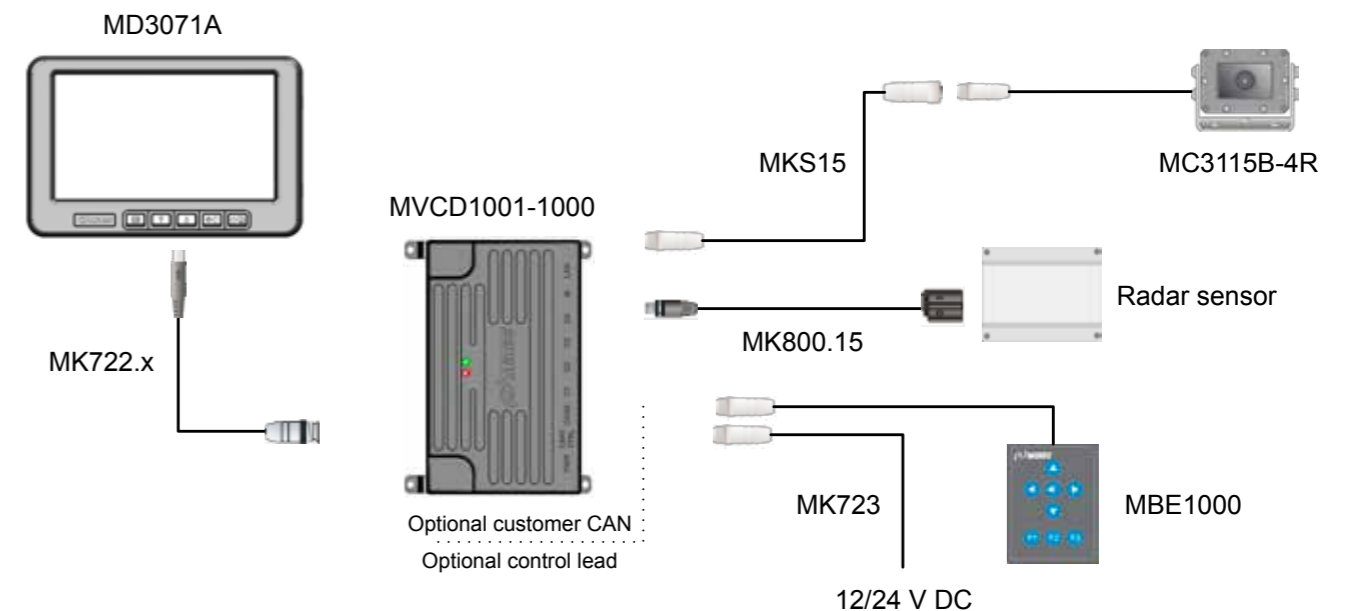
Camera for monitoring the side or operating area.

Refuse collection vehicle with a radar sensor at the rear.



EXAMPLE: Refuse collection vehicle side loaders

- 1
MD3071A
Heavy-duty monitor
- 2
MVCD1001-1000
Video control unit
- 3
MRS
Radar sensor
- 4
MC3115B-4
Heavy-duty camera



Refuse collection vehicle front loader Cameras replacing mirrors of group VI

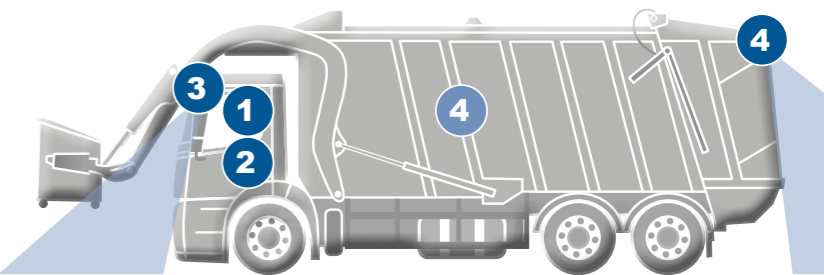
Drivers of heavy trucks cannot view the immediate area in front of the vehicle. However, the Motec camera systems provide the driver with this option. This system is certified and compliant with EC Guideline 2003/67 (ECE 46).

The driver sees pedestrians and cyclists as well as obstacles in the danger zones when making right-hand turns.



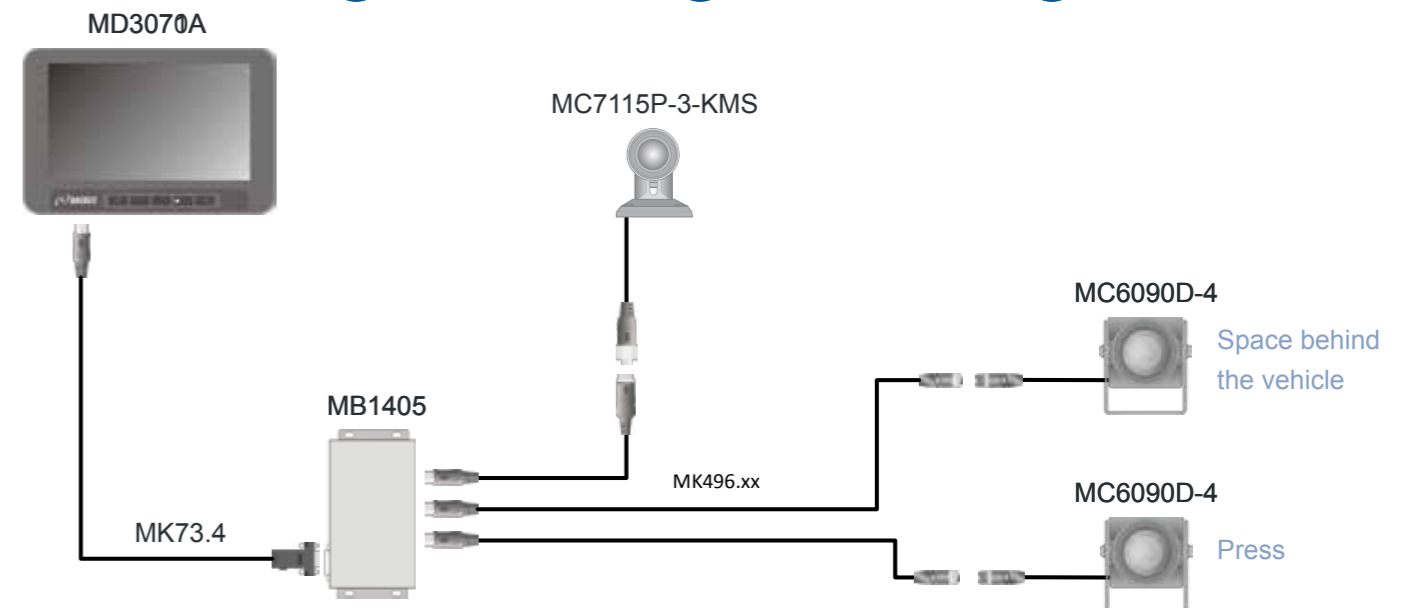
Protecting lives, helping people, and saving money.

Refuse collection vehicles with camera for monitoring the front area of the vehicle.
Heavy-duty camera for monitoring the rear and operating areas.



EXAMPLE: Refuse collection vehicle front loader

- | | | | | | | | |
|---|-------------------------------|---|---------------------------------|---|------------------------------------|---|--------------------------------|
| 1 | MD3071A
Heavy-duty monitor | 2 | MB1405.24
Video control unit | 3 | MC7115P-3-KMS
Heavy-duty camera | 4 | MC6090D-4
Heavy-duty camera |
|---|-------------------------------|---|---------------------------------|---|------------------------------------|---|--------------------------------|



Suction flushing vehicle

MVS – 360° birdseye view with graphic display

Manoeuvring of complex vehicles and pinpoint positioning at the job site is the challenge.

The Mobile Vicinity Scout (MVS) offers the driver 100% birdseye view for the safe manoeuvring of his vehicle. Graphic displays of operating areas, for example, support the driver to position his vehicle rapidly and accurately.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.

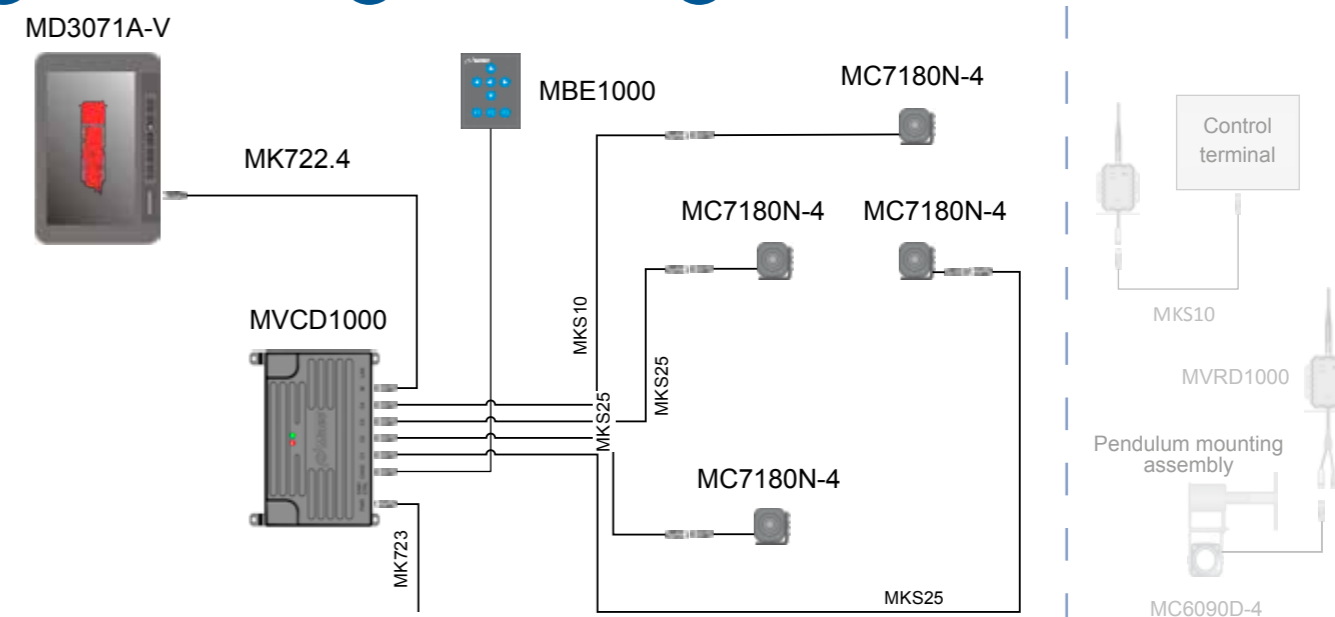


There are 4 cameras installed around the vehicle allow for a 360° birdseye view.



EXAMPLE: Suction flushing vehicle

- | | | | |
|--|---|---|---|
| 1 MD3071A-V
Heavy-duty monitor | 2 MVCD1000
Video control unit | 3 MC7180N-4
Heavy-duty camera | MC6090D-4 with pendulum mounting assembly |
|--|---|---|---|



Small road sweeper

MVS – Obstacles in the area of city cleaning

The operator of a small road sweeper must be aware of the general traffic and equipment around him, and, in particular, he must watch for posts, street lights, public lawn areas as well as pedestrians and bicyclists.

The Motec Mobile Vicinity Scout (MVS) is a camera system designed especially for utility vehicles. It provides the driver with a clear, seamless 270° or 360° view around his vehicle.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.



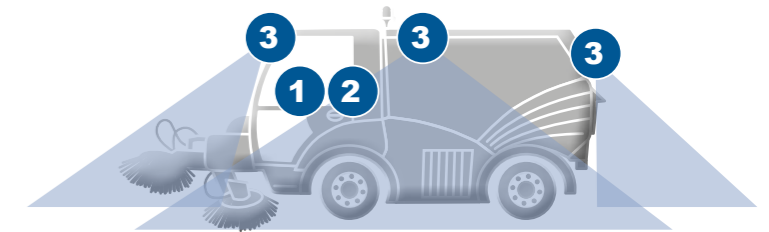
Protecting lives, helping people, and saving money.



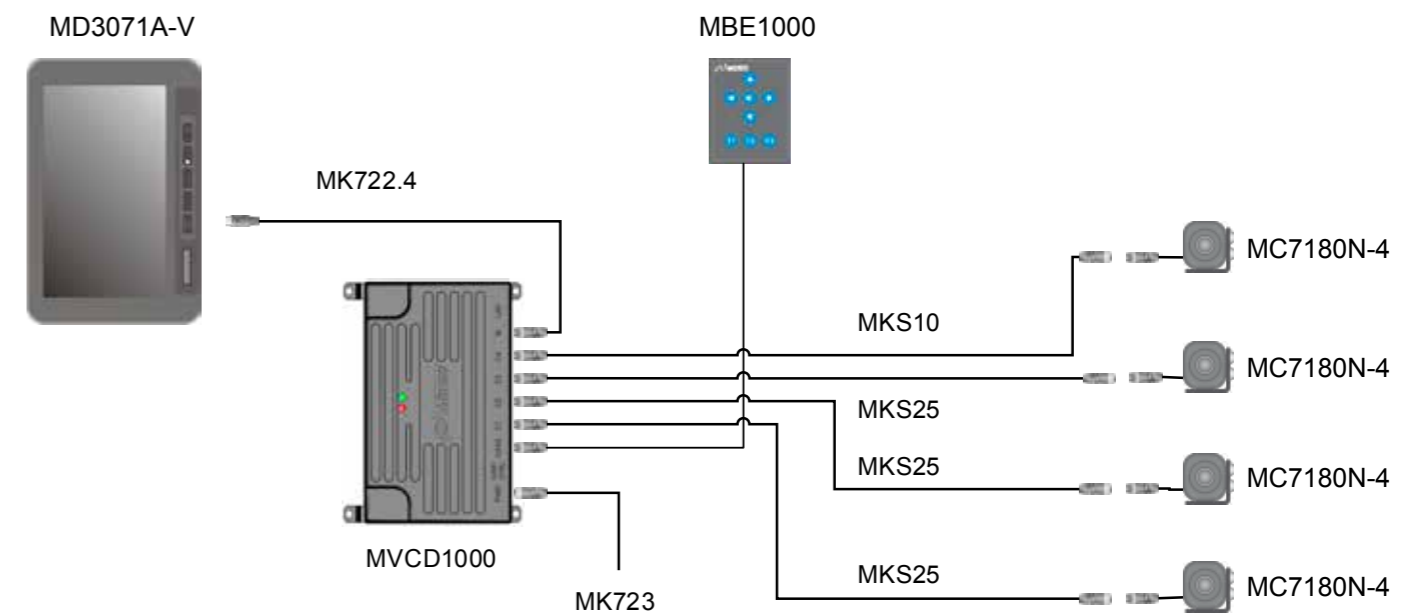
There are 4 cameras installed around the vehicle allow for a 360° birdseye view.



EXAMPLE: Small road sweeper



- 1 **MD3071A-V**
Heavy-duty monitor
- 2 **MVCD1000-1**
Video control unit
- 3 **MBE1000**
Operator control unit
- 3 **MC7180N-4**
Heavy-duty camera



Large street sweepers

Monitoring of several operating areas

The operator of the large road sweepers most observe simultaneously the traffic around him and the rotating brushes of his vehicle. Motec camera solutions provide the operator with the right camera image at any situation.

The operator can monitor the area behind the machine, the brushes and the vacuum intake during the sweeping operation.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.



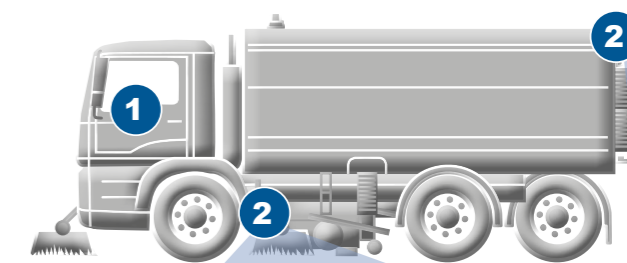
Protecting lives, helping people, and saving money.

Heavy-duty camera at the rear of a road sweeper.



Using a camera to monitor the road sweeper's brushes.

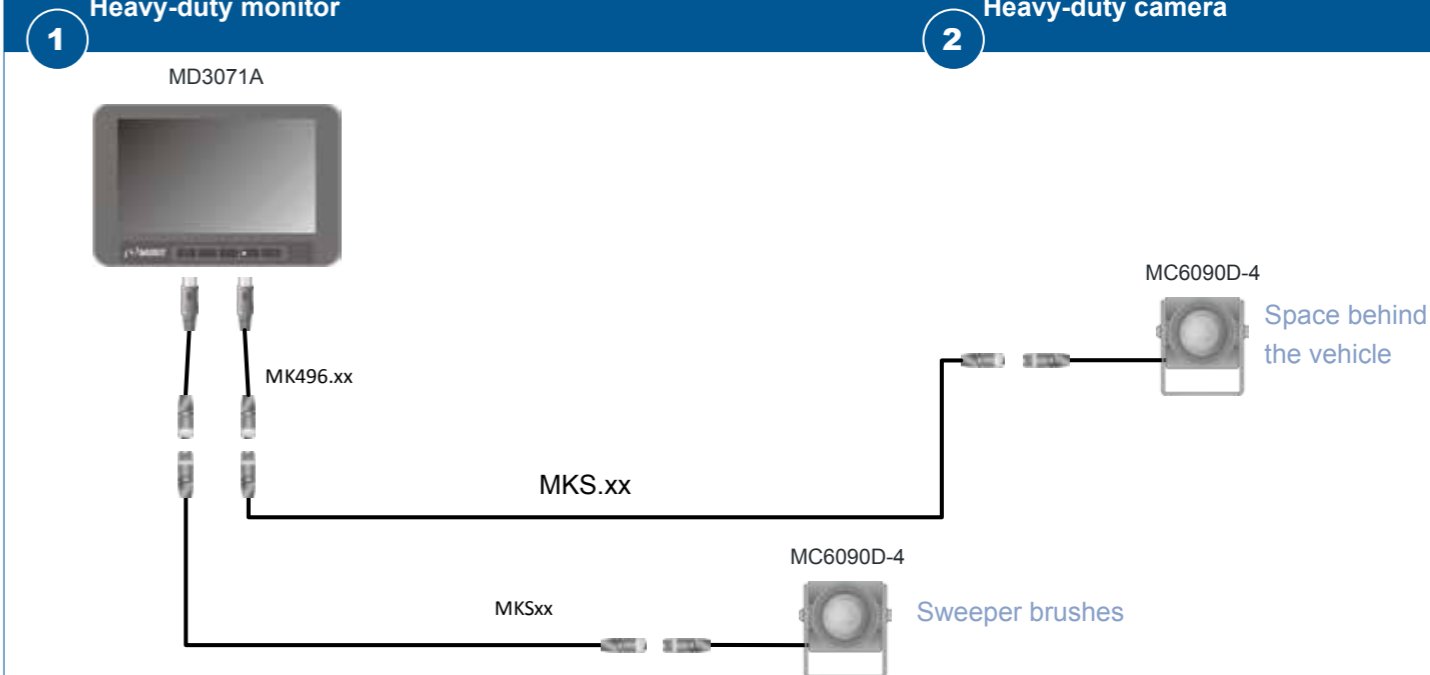
30 31



EXAMPLE: Large street sweepers

MD3071A
Heavy-duty monitor

MC6090D-4
Heavy-duty camera



Municipal vehicles for summer and winter road maintenance

Monitoring the operating and rear area of a vehicle

Motec cameras are mounted above the gritting unit, allowing the driver to watch the traffic, the gritting table and the grit distribution.

During the manoeuvring of this vehicle, the driver will see persons in the danger zones while entering the salt storage hall, he can observe the grit pattern and see the result of the clearing operation while driving.

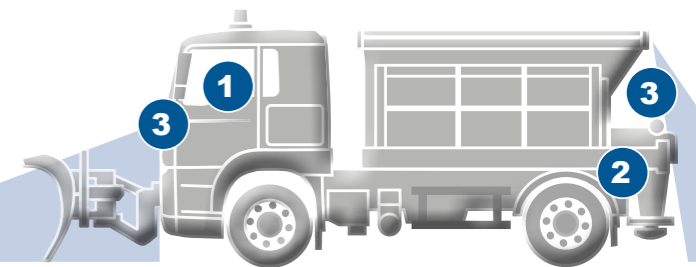
Different add-on installations make it possible to employ the equipment carrier all year round. It only requires a few quick steps to change the reverse view camera between the fast-change brackets.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.



Side camera for monitoring the clearing blade (top left).
Heavy duty rear view camera with cleaning system (bottom left).

32 33

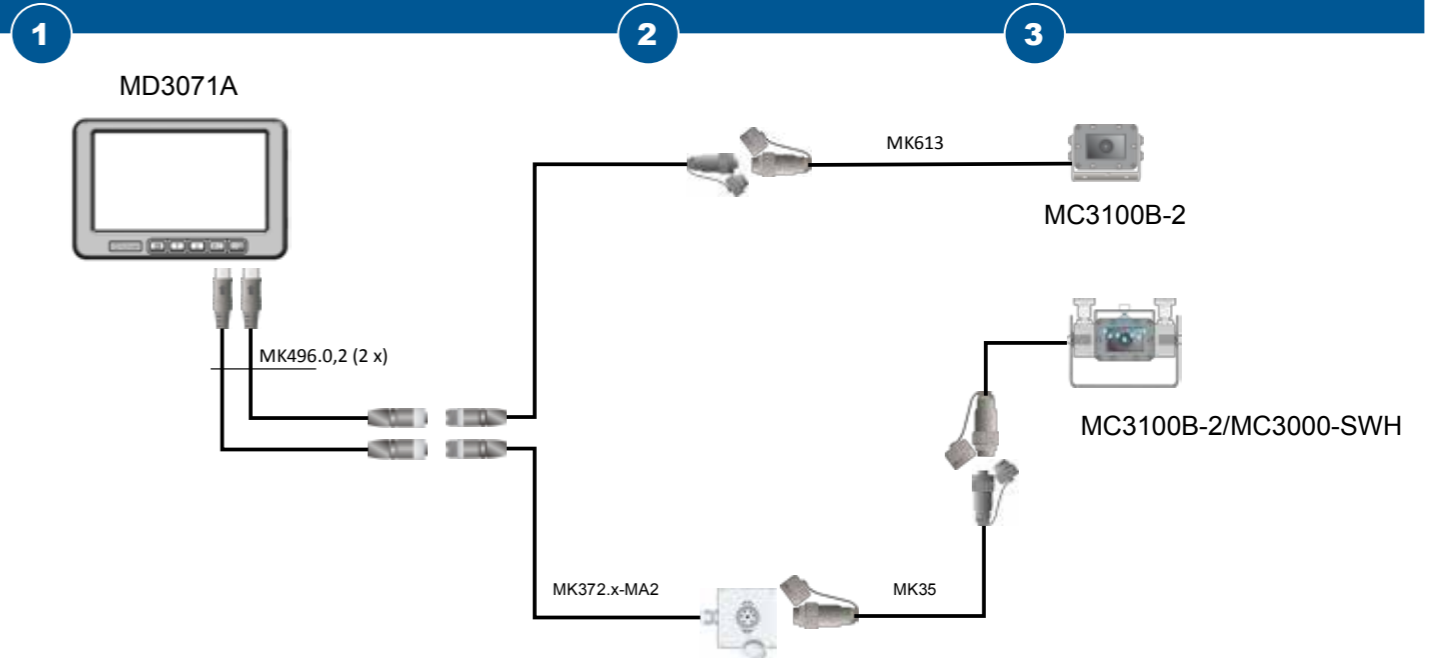


EXAMPLE: Winter road maintenance vehicle

MD3071A
Heavy-duty monitor

MK372
Disconnecting locations

MC3100B-2
Heavy-duty camera



Fire brigade appliances, civil defence and rescue vehicles

Manoeuvring assistance at the job site

Drivers of utility vehicles must be able to manoeuvre and reverse their trucks safely in locations that are difficult to access.

Motec cameras make it easier for the driver to manoeuvre his vehicle in impassable terrain and operate the truck in obscure driving situations at the job site. 4 cameras capture the entire danger zone around the vehicle.

By using thermal imaging devices built into the front of the vehicle, the job site is reached safely and quickly, even if the weather conditions are poor or excessive smoke developed around the area.

Consequently, it effectively prevents accidents and saves costs through simple and fast operating procedures.

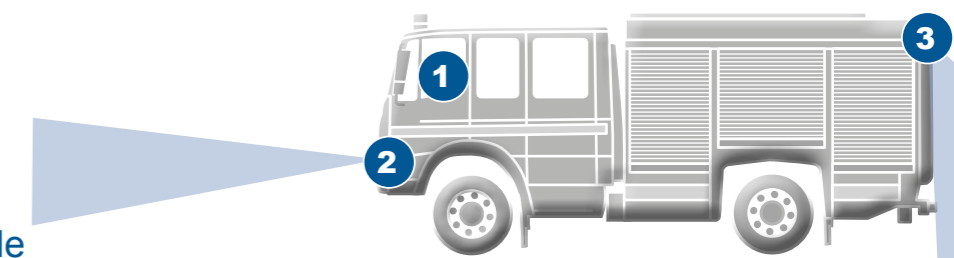


Heavy-duty camera for monitoring the rear area of the vehicle (left).

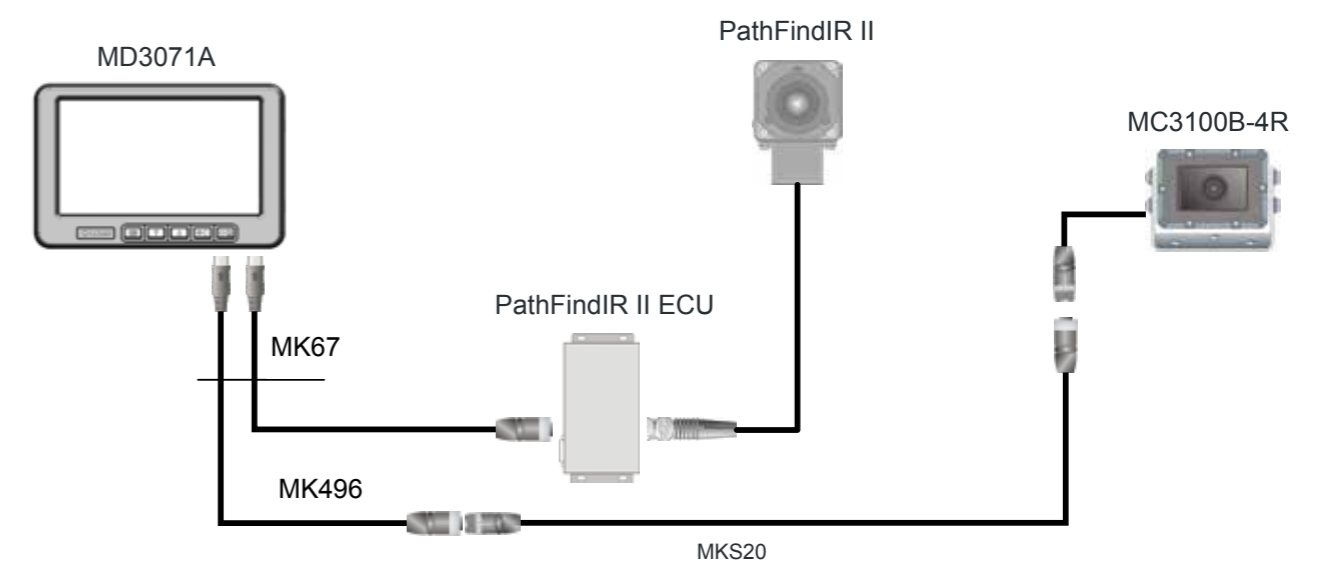
Tractor units with heavy-duty camera increase the safety when making turns (below).



EXAMPLE:
Airfield fire fighting vehicle



- 1
MD3071A
Heavy-duty monitor
- 2
PathFindIR
Thermal imaging camera
- 3
MC3100B-4R
Heavy-duty camera



Camera systems for logistic military vehicles

More protection and safety during deployment

Reversing, manoeuvring or working with add-on equipment are potentially dangerous situations. This applies in particular during deployment when stress levels are elevated.

The camera monitoring systems support the vehicle crew by alerting them of obstacles or persons in the danger zones around the vehicle. The systems enable the crew to proceed with their tasks while providing protection to others.

This effectively prevents accidents, increases the safety of the crew, and accelerates the process sequences.

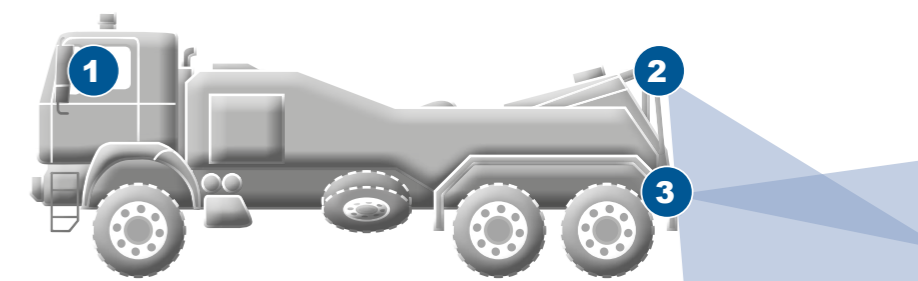


Protecting lives, helping people, and saving money.



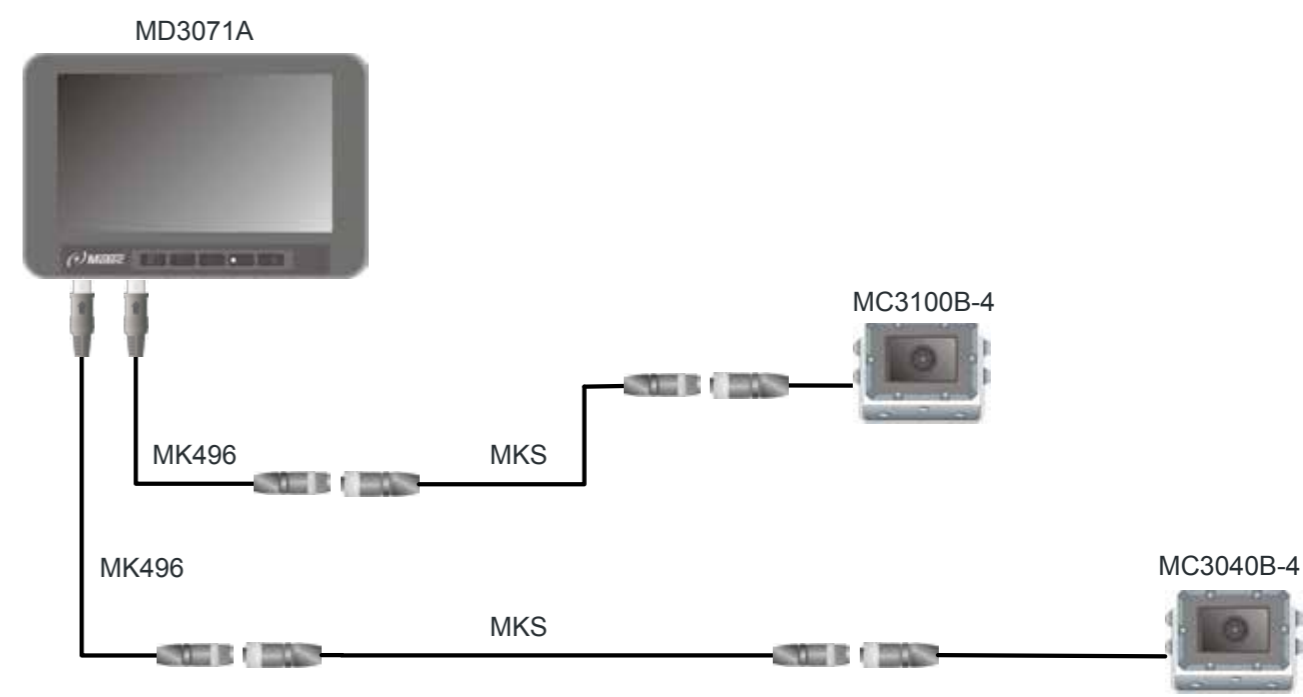
Heavy-duty camera on a rescue vehicle to operate and observe the underlift units.

36 37



EXAMPLE:
Transporter

- 1
MD3071A
Heavy-duty monitor
- 2
MC3100B-4
Heavy-duty camera
- 3
MC3040B-4
Heavy-duty camera



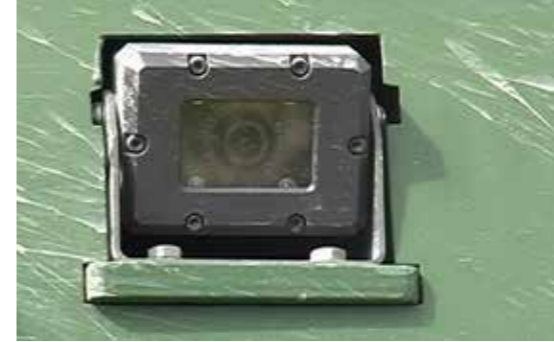
Reinforced systems for tactical vehicles

More protection and safety under extreme conditions

Moving a protected vehicle offers only a limited view and presents a challenge to the entire crew. This applies in particular during deployment when stress levels are elevated.

Camera monitoring systems support the driver, commander and other crew members by providing imagery about obstacles and persons in the vicinity of the vehicle. The systems allow to evaluate the situation of the surroundings faster and more precise, even while the vehicle is providing protection to others.

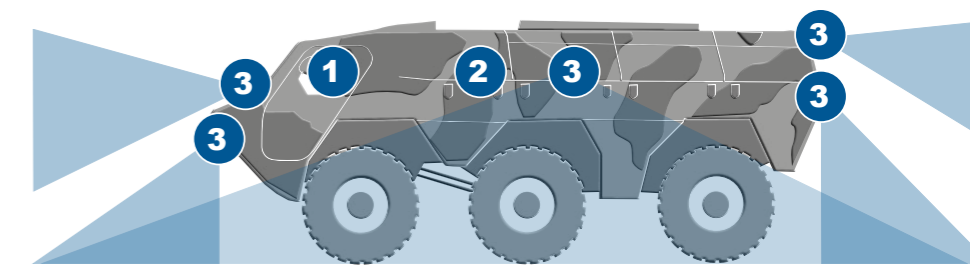
This effectively prevents accidents, increases the safety of the crew, and accelerates the process sequences.



Heavy-duty cameras integrated into the vehicle's chassis to monitor the sides of the vehicle.

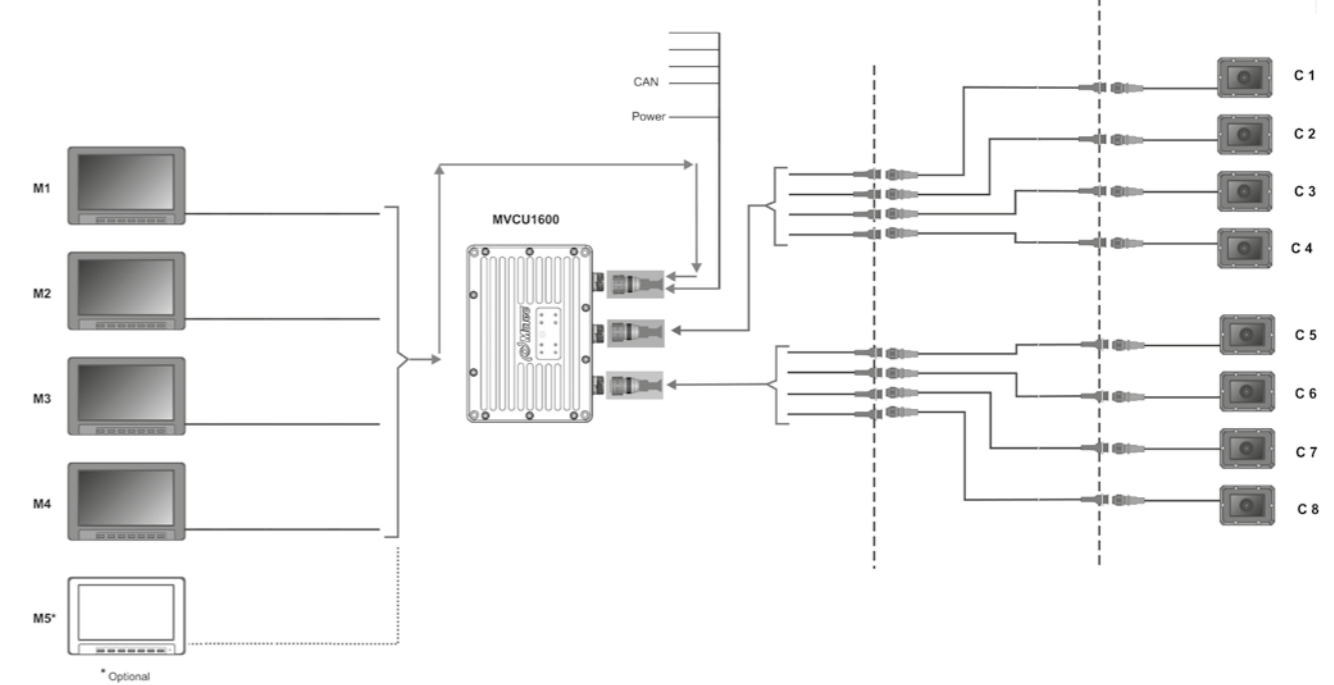


38 39



EXAMPLE:
Armoured personnel carrier

- 1** MD3100 Heavy-duty monitor
- 2** MVCU1600 Video control unit
- 3** MC4000A Heavy-duty camera



* Optional

Terminal connection

Connectivity – quick and easy retrofitting

Vehicles that were equipped at the factory with a video operator terminal or combination instrument, can be easily and quickly connected to a reverse camera system by using individually configurable connecting adapters.

Based on the integration of the video image into the available display and information concept of the vehicle, the omission of additional display instruments takes a considerable load off the driver. Thus, the driver will now be able to quickly detect and precisely assess dangerous situations during the manoeuvring and reversing of his vehicle.

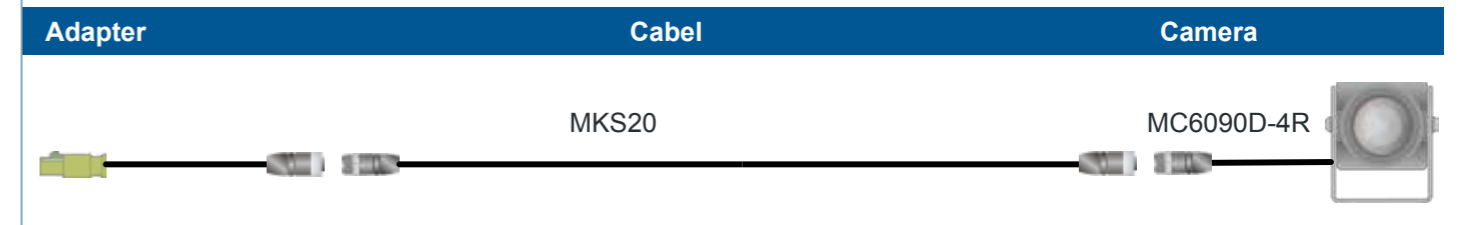
The driver sees persons behind the vehicle, and distances to obstacles and other parking vehicles is displayed.



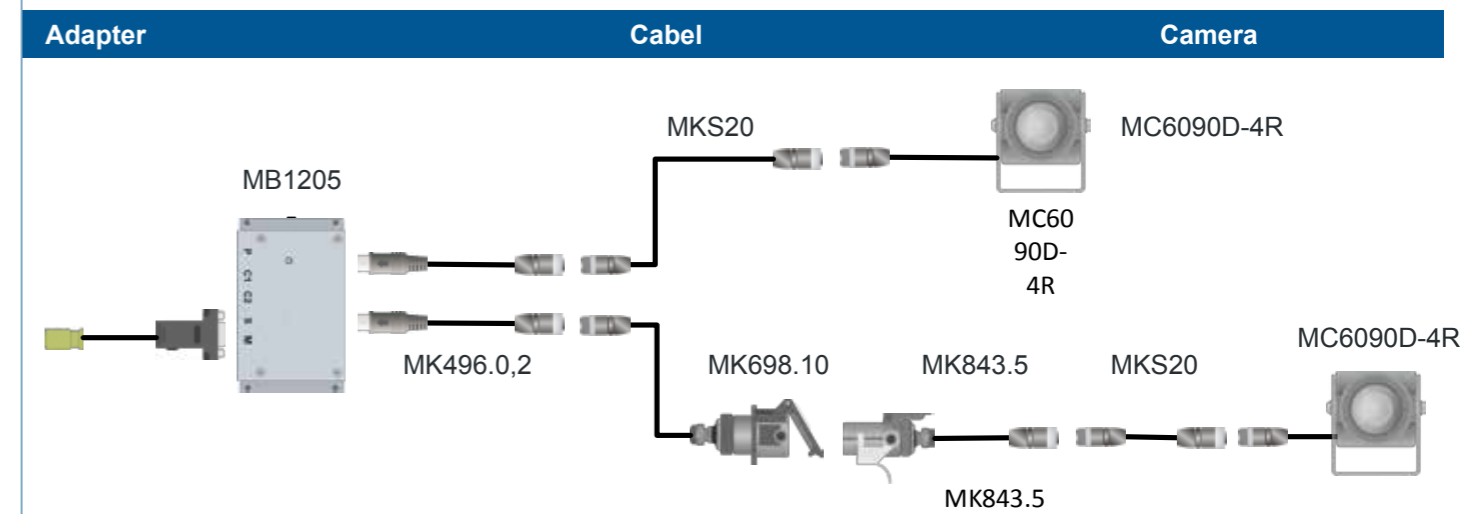
IVECO, Mercedes-Benz, MAN, etc.,... additional terminals upon request

- . Quick and easy retrofitting
- . Utilisation of the vehicle-specific display and information concept
- . Additional display devices inside the driver's cabin are omitted

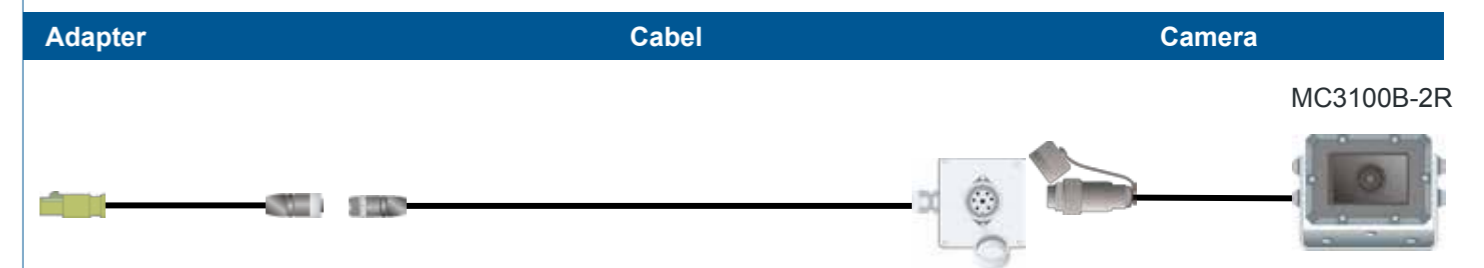
EXAMPLE: Terminal connection for rigid lorry



EXAMPLE: Terminal connection for articulated lorry



EXAMPLE: Terminal connection for winter road maintenance vehicle

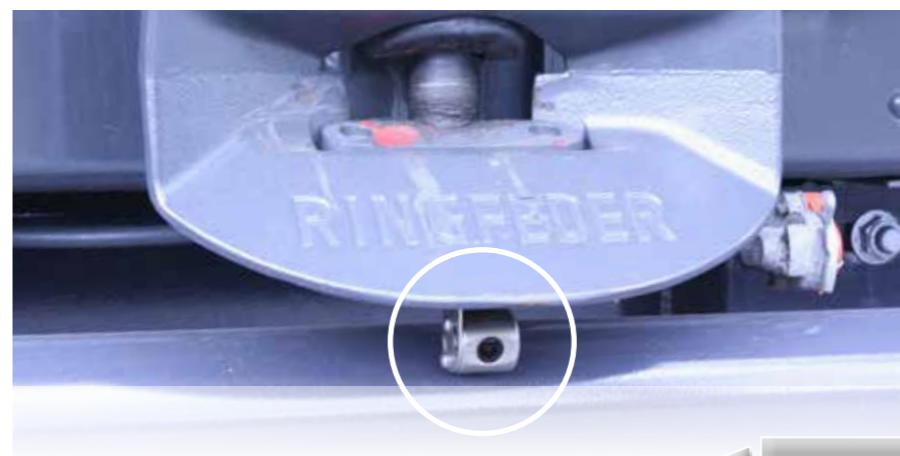


Palfinger system MBB Cabin Control

The MBB Cabin Control system uses a CAN bus to work hand-in-hand with the Motec control unit MVCU1400. It makes it faster and easier to control the loading ramp from the operator's cabin. The integrated rear-view mirrors provide a clear view of and underneath the loading ramp. This makes the approach onto the loading ramp faster and safer.

The system provides the option to save ramp positions and allows to recall these positions automatically in the future with the push of a button.

Safety certification with the „Berufsgenossenschaft Verkehr“ (German Social Accident Insurance Institution for "Transport & Traffic").



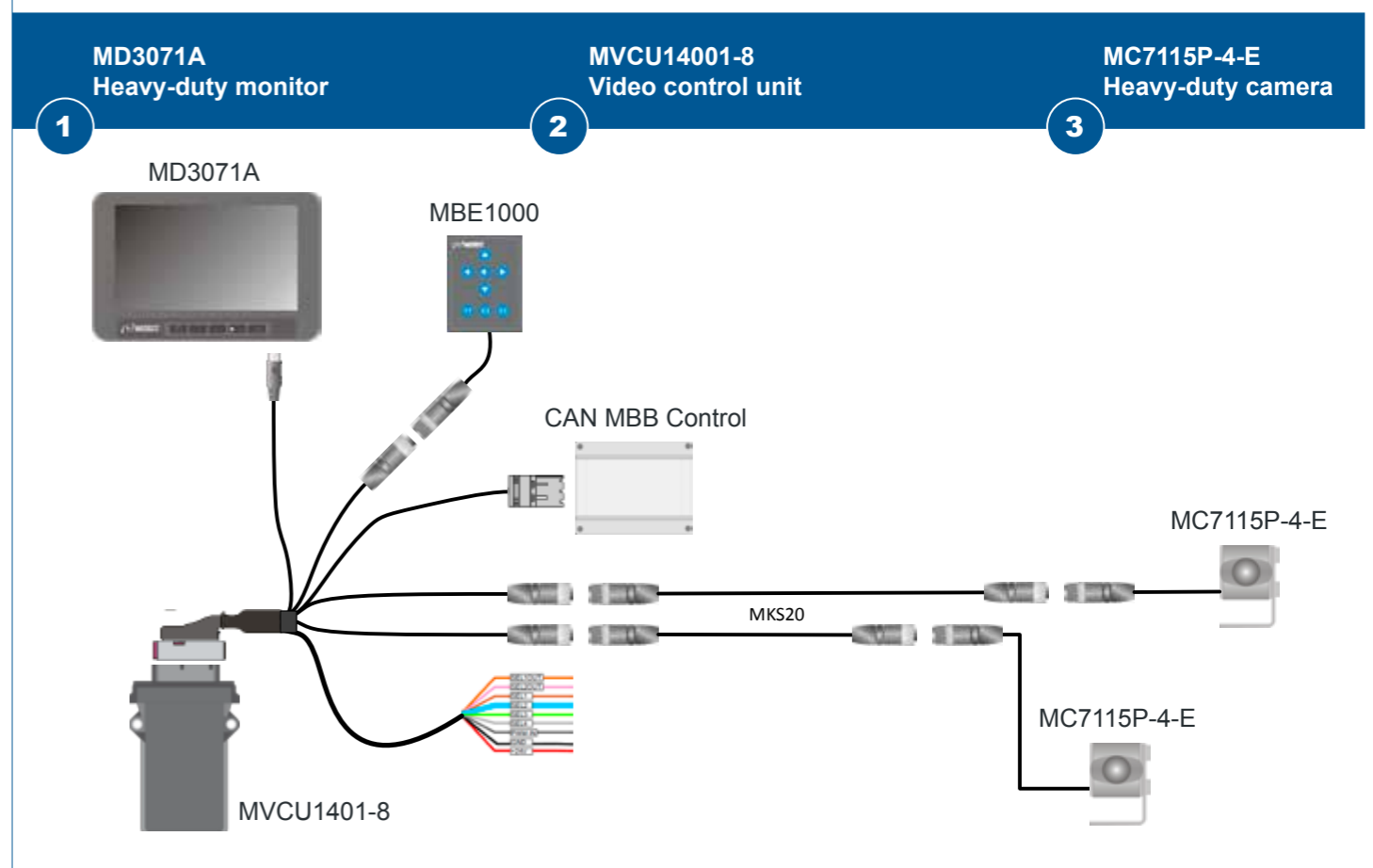
Camera positions for monitoring the vehicle's rear area and providing a clear view of and underneath the loading ramp.

Protecting lives, helping people, and saving money.

42 43



EXAMPLE:
Rigid lorry



Camera system with ultrasound sensors

Right turns with activated warning system

Making right turns with a large vehicle is inherently dangerous. In spite of a large exterior mirrors, the necessary overall view into the danger zone is not 100% possible. Furthermore, the operator must be aware of other users of the road, traffic lights and signage.

To warn the driver well in time and to increase the safety during right-hand turns, Motec uses cameras in combination with ultrasound sensors.

According to the customer's requirements, visual and acoustic warning signals can be implemented. The system can be combined with the Mobile Vicinity Scout (MVS) and, therefore, offers active and passive monitoring around the entire vehicle. The control unit MVCU1300 provides the option to use up to 12 ultrasound sensors.



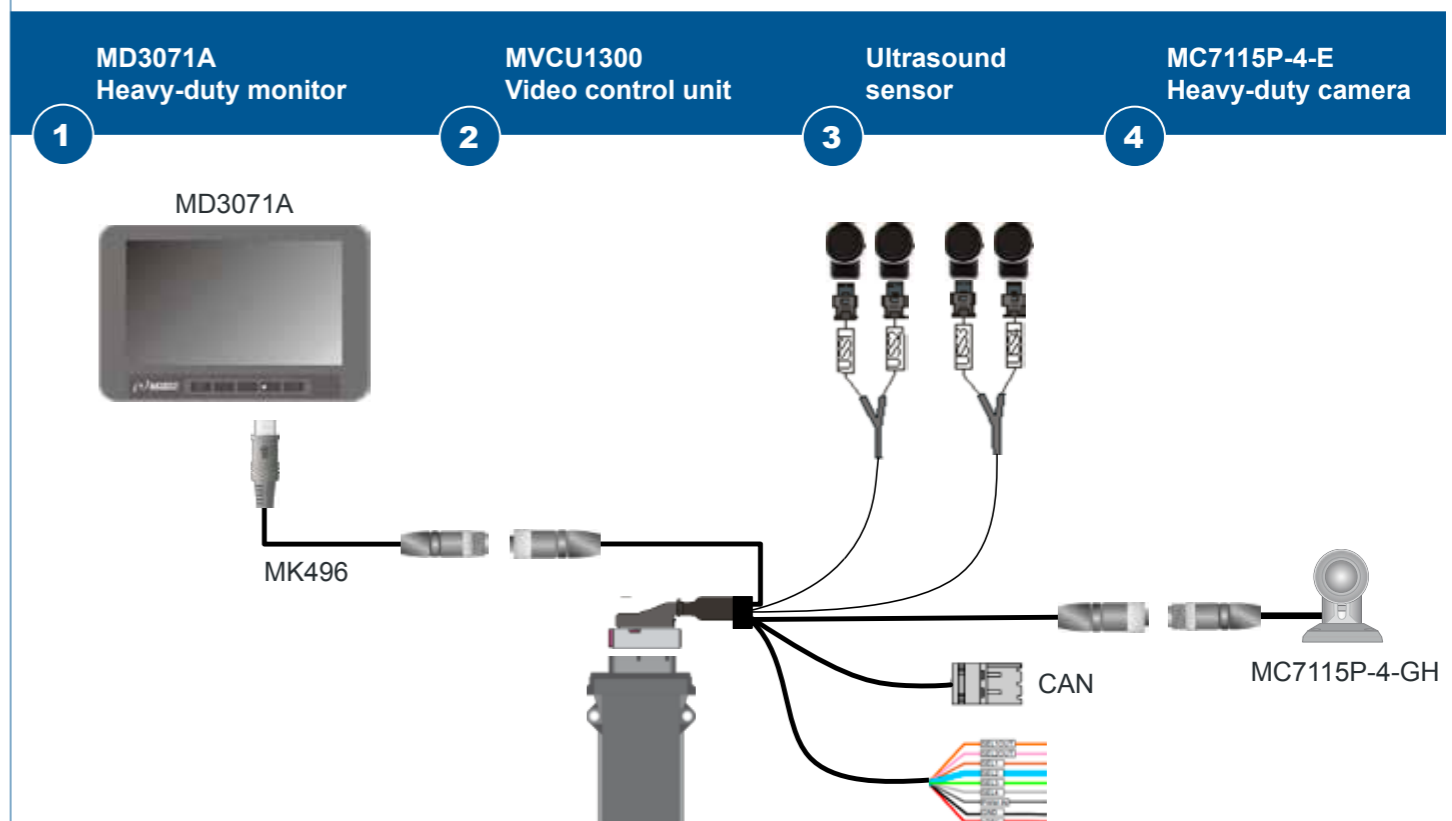
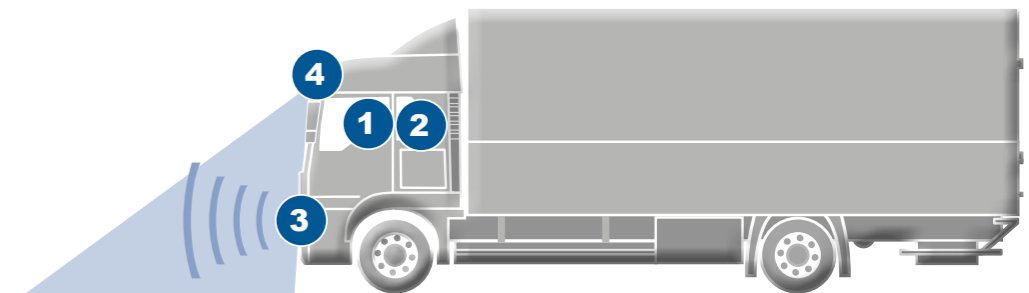
Installation positions of the ultrasound sensors in front and along the sides of the vehicle.



44 45



EXAMPLE:
Rigid lorry



Cables and cable harness production

High flexibility – certified quality



Cables and cable harnesses, cable accessories, cable protection systems and customer-specific solutions

Motec GmbH has more than 25 years of expertise in assembling high-quality, customised cable systems in Germany. At this point in time, we produce approximately 1.000 different cables in various lengths and designs.

Individually-customised solutions are our specialty: We use all standard plug-in connectors and can produce complex cable harnesses and cable sets.

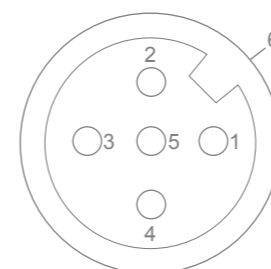
We process any type of wire or conductor, with diameters from 0.013 mm² (AWG36) to 107.2 mm² (AWG 4/0), without any limits in the number of conductors.



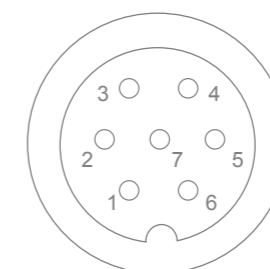
Certified quality for highest demands

- . Pull testing
- . Micrograph laboratory
- . Crimp height measuring
- . Automatic crimping force monitoring
- . 100 % semi-automatic, logged and functional end testing
- . EDP-supported merchandise management and production planning and control systems
- . Operational data recording via bar code
- . 100 % traceability (via batch and serial numbers)

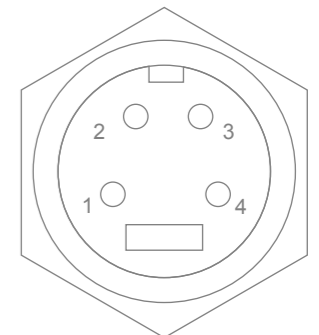
M12 plug connectors MKS cables



RD24 plug connectors MK35 cables



Mini DIN plug connectors MKW/MKWW cables



Cameras

Overview



MC3000B Heavy-duty camera

Based on its design and equipment, the MC3000B is a **heavy-duty camera** with many applications. Multiple angles of view and the robust aluminium housing makes this design the optimum camera for large view-obstructing machines that are subject to extreme weather and environmental conditions. The MC3000B is also available as EX 1 model.

Features:

- . Housing made of machined aluminium
- . Automatically controlled camera heating
- . Automatic brightness adjustment
- . Energy-efficient automotive CMOS sensor
- . Permafrost-capable to -60°C
- . Salt mist resistant
- . High degree of shock- and vibration-resistance
- . Waterproof if submerged in water or if subjected to high-pressure cleaners (IP68 and IP69K)
- . 20°, 40°, 70°, 90°, 100° and 115° horizontal angle of view (other angles upon request)

MC6000D Heavy-duty camera

Based on its the sign, the MC6000D is a very flexible **heavy-duty camera** that can be used for municipality purposes as well in the agriculture and transportation area. The camera's robust design and special surface treatment makes it suitable for use in inclement weather conditions.

Features:

- . Interference immune electrical design
- . Operating and storage temperature -40°C to +85°C
- . Thermally hardened, undistorted glass
- . 2.5 Watt window heating system
- . Automotive CMOS sensor
- . On-board power supply 9 V to 32 V DC
- . Waterproof if submerged in water or if subjected to high-pressure cleaners (IP68 und IP69K)
- . 90° or 70° horizontal angle of view

MC7000P Heavy-duty camera

Based on its **mini module design**, the MC7000P-GH is suitable for the installation in mobile machines with limited space available. The individually adjustable lens makes it possible to install the camera vertically, horizontally, at an angle, or overhead. Based on its robust elastomere or stainless steel housing the heavy-duty cameras can be used for a wide range of applications.

Features:

- . State-of-the-art image electronics (CMOS image sensor)
- . Fast adaptation to ambient lighting
- . Sharp, high-contrast images
- . High shock and vibration resistance
- . Highest protection class IP69K
- . 70°, 90° and 115° horizontal angle of view

MC7180N Heavy-duty camera

The MC7180N is a **heavy-duty wide angle camera**, suitable for 270°/360° viewing systems. The visible 180° angle of view and the small robust design guarantee a long service life under the roughest conditions. The high flexibility of the system allows the adaptation to different vehicles and visual problems.

Features:

- . CMOS 1/3, 6" image sensor with sensor resolution H 672 x V 492 pixels
- . Operating and storage temperature -40°C to +85°C
- . Resistant to high-pressure cleaners (IP69K)
- . 180° horizontal viewing angle

Monitors

Overview



MD3071A Heavy-duty monitor

Based on its design and accessories, the MD3071A is a **heavy-duty monitor** that can be used in all industry sectors. The images of the display are crystal clear, even under the most severe environmental conditions. The option to update the software ensures that the MD3071A can be updated any time and, therefore, makes the product future-proof. The vertical design is available as MD3071A-V.

Features:

- . 7" monitor (17.8 cm diagonal)
- . PAL/NTSC video system
- . Supply voltage 9 V to 60 V DC
- . Up to 2 cameras and an additional external video controller (for up to 4 additional cameras) can be connected
- . Auto dimmer function
- . Illuminated keyboard
- . Deep light protection cover (impact-protected) as standard
- . Made in Germany

MD3072B-Quad Heavy-duty monitor

The MD3072B-Quad is designed especially for mobile machines on which several cameras are mounted. When using the **integrated video monitoring unit**, the monitor can display 4 camera images simultaneously. The integrated menu function and control leads for the automatic control of the cameras ensure the quick change of images.

Features:

- . 7" monitor (17.8 cm diagonal)
- . Instant connection of up to 4 cameras
- . Split screen (up to 4 video sources simultaneously)
- . Manual or automatic camera selection
- . Image mirroring (by camera)
- . High shock and vibration resistance
- . Integrated Video control unite

MD3074A-Quad Heavy-duty monitor

The MD3074A-Quad is designed especially for mobile machines on which several cameras are mounted. When **using the integrated video monitoring unit**, the monitor can display 4 camera images simultaneously. Compliance with this protection types makes the monitor watertight and suitable for storage monitoring. The integrated menu function and control leads for the automatic control of the cameras ensure the quick change of images.

Features:

- . 7" monitor (17.8 cm diagonal)
- . Instant connection of up to 4 cameras
- . Image mirroring
- . Water-tight and suitable for cold storage monitoring
- . Split screen (up to 4 video sources simultaneously)
- . Horizontal image mirroring can be configured separately
- . Interval-controlled image feed change possible
- . Heated panel – smooth image display at low temperatures

MD3100 Heavy-duty monitor

The MD3100 is a **10" LCD monitor** for the industrial use with powder-coated metal housing. The front of the monitor complies with the regulations of the dust and spray water protection class.

Features:

- . 10" monitor (25.9 cm diagonal)
- . Picture in Picture display (PiP)
- . Sturdy metal housing
- . Front side compliant with protection class IP54
- . For ultra-severe environmental conditions
- . Power supply via MVCU

Video control units

Overview



MB1405-Quad Video control unit

The **video control unit** MB1405-Quad allows the display of up to 4 camera images simultaneously in what is referred to as quad split mode.

The supplied remote control is used to automatically control or manually switch between the different camera images.

Features:

- . Integrated quad split function:
 - Display of up to 4 camera images available
- . Selection of the camera to be activated via control leads or operator control unit
- . Power supply of TFT monitor and 4 heavy-duty cameras
- . Separate setting of image mirroring
- . Automatic trailer detection of articulated trains

MVCU1300 Video control unit

The MVCU1300 is an intelligent, CAN-controlled **video control unit** that combines additional sensor information (such as ultrasound distance information) and displays this data on up to 2 monitors.

Features:

- . Connection of up to 12 analogue or digital single-wire sensors
- . Connection of up to 10 sensors on CAN bus
- . Connection of one LASER (I/O) per control lead
- . Control via CAN bus (MSB 2.0) and/or 4 control leads
- . A CAN data bus is used to display the imported sensor data
- . MVCU acts as power supply

MVCU1400 Video control unit

The MVCU1400 is an intelligent, CAN-controlled **heavy-duty multi camera video control unit**, that processes up to 4 camera images and displays them on up to 2 monitors in a variety of modes.

Features:

- . Connection of up to 4 heavy-duty cameras or 3 heavy-duty cameras plus 1 motor zoom camera
- . Control via CAN bus (MSB 2.0), a monitor toggle lead and/or 4 control leads
- . Main monitor output as single, split, triple or PiP (freely configurable),
- . Quad and OSD in 4 colours
- . 2. Monitor output (single, split, quad)

MVCU1600 Video control unit

The MVCU1600 is an intelligent, CAN-controlled, **high end heavy-duty multi camera-video control unit**, that processes up to 8 camera images and distributes them to 5 monitors in a variety of modes and with individual overlays.

Features:

- . Connection of up to 8 heavy-duty cameras
- . Display on up to 5 monitors
- . Monitor output with flexible display options
- . Display of symbols, logos and images available

MVCD1000 Video control unit

The MVCD1000 is a **digital heavy-duty multi camera-video control unit**, that can process up to 4 camera images in parallel, can consolidate additional sensor data, and can display this data via an analogue monitor output or via an Ethernet video stream.

Features:

- . Video input up to 4 cameras (PAL/NTSC)
- . Integration in vehicle electronic via bidirectional control lead, CAN interface or Ethernet connection
- . System expandable with active sensors such as radar or ultrasound
- . Altera FPGA (SoC) with 925 MHz dual-core ARM Cortex-A9 MPCore processor, 1GB RAM, 4 GB flash (expandable)
- . Prepared for future requirements thanks to software updates

Wireless systems

Overview



MVRD1000

Digital wireless system

The digital wireless system MVRD1000 is a robust transmitter/receiver system that uses wireless image transmission. Using the compact wireless units, digital camera signals are quickly and without delay sent over long distances to the monitor.

Features:

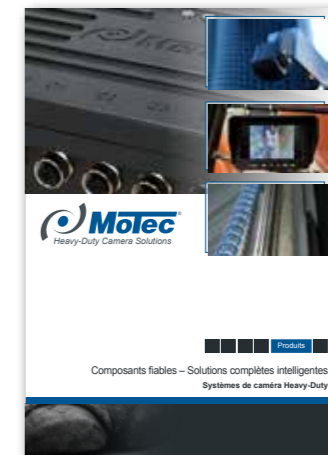
- . Range approx. 120 metres
- . Up to 10 parallel equipment pairs
- . Robust metal housing
- . Operation and status display
- . Small, compact design
- . Water- and dust-tight (IP69K)
- . Rugged plug-in connectors
- . Low power consumption

System solutions

Customised solutions for numerous other industries

- . Construction machines
- . Agricultural machines
- . Logistics
- . Rail
- . Defence
- . Off-shore

- . Product program





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