



Bedienungsanleitung

USER MANUAL

AVS 360 BS05

360° Rundumsicht-System



Die AXION Kamera-Monitor Systeme entsprechen den aktuellen CE- und EMV-Bestimmungen.

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The AXION camera monitor systems comply with the current CE and EMC regulations.

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General notes

**The manufacturer accepts no liability for damage in the following cases:**

- Assembly or connection errors
- Mechanical damage to the product
- Damage due to reverse polarity or incorrect connection voltage
- Modifications to the product not approved by the manufacturer
- Use for purposes not described in this manual

Disclaimer





AXION AG makes no representations or warranties with respect to this manual and, to the extent permitted by law, limits its liability for breach of any implied warranty to the substitution of this manual for another. In addition, AXION AG reserves the right to revise this publication at any time without notice to anyone.

The information provided in this documentation includes general descriptions and/or technical characteristics regarding the performance of the equipment described herein. This documentation cannot serve as a proper evaluation of the suitability or reliability of the equipment for any specific application by any user and should not be relied upon as a substitute for such evaluation.

It is the responsibility of each such user or installer to perform an adequate and complete risk assessment, evaluation and testing of the equipment with respect to their specific application. Neither AXION AG nor any of its affiliates or subsidiaries shall be held responsible or liable for any misuse of the information contained herein.

All pertinent state, regional and local safety regulations must be observed at all times when installing and using this equipment. For safety reasons and to ensure compliance with documented system data, the manufacturer alone is authorized to perform repairs on components. Failure to follow this information may result in injury or damage to the equipment.

Explanation of the safety instructions

	"Danger" indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.
	"Warning" indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	"Caution" indicates a hazard that, if not avoided, may result in minor or moderate injury.
	Indicates information that is important but not related to potentially dangerous situations.

Storage instructions

Make sure you have read and understood the complete instructions and all safety information before installing and using this product. Failure to follow these instructions may result in minor or serious injury.

The manufacturer is not liable for damage to property or injury resulting from incorrect handling or non-compliance with the safety instructions. In such cases, the warranty becomes void.

Keep all safety information and instructions for future reference and pass them on to subsequent users of the product.

A current version of the documentation is available on the following website:
www.axionag.de.

Documentation, user instructions and technical information can be requested by mail at **service@axionag.de**.

Product Description

Intended Use

The AVS-360-BS05 around vision system is designed exclusively for use in closed vehicles with a 12V/24V power supply. Combined with a monitor, the system shows the driver the area around the vehicle, in a wide variety of views. The camera system is used to monitor the immediate surroundings of the vehicle,

e.g. when parking, manoeuvring and also while driving. Proper calibration of the system is a prerequisite for a correct view of the current environment. The camera-monitor system is only a support for the driver. It does not release the driver from the special duty of care.

Functional Description

The around vision camera system consists of four wide-angle cameras and a control unit. The cameras are mounted at the front, rear, left, and right of the vehicle at the highest possible position. The system displays the vehicle's surroundings on a suitable monitor

in a bird's-eye view, in 3D views, or via direct 2D single-camera views. This provides the driver with a complete overview of people, vehicles and other objects in the entire vehicle environment.

In detail, the system offers:

- Panoramic view from a bird's eye view
- Combined 2D and 3D view types
- Configurable triggers for defined views, e.g. rear camera when in reverse or side cameras when indicating
- Control via remote control
- Video Recording to SD Card
- Event-driven video recording
- Download of records to USB storage device
- Wide selection of 2D and 3D vehicle models
- Easy automatic calibration

Scope of delivery

Around Vision System Set

Quantity	Description	Article
1	control box	AVS-360-B05
4	camera	DBC 1240205 M
1	camera extension cable – length 5 m	WPC 6-5
2	camera extension cable – length 10 m	WPC 6-10
1	camera extension cable – length 15 m	WPC 6-15
1	remote control	AVS-05-RC
1	video output cable	AVS-05-VC
1	camera input cable	AVS-05-CC
1	cable power supply	AVS-05-PC
1	GPS receiver	AVS-05-GPSM

Accessories

Quantity	Description	Article
1	calibration mats small size 4x	AVS-CMSS
1	calibration mats large size 4x	AVS-CMSL
1	DVI HDMI adapter 1 m	CA-AVS-HDMI1

Around vision systems with the AVS-360-B05 control box can be operated with AHD or PAL/NTSC compatible monitors.

As an alternative to operation with AHD monitors, HDMI devices can also be connected for display. The DVI HDMI adapter is used here. As long as a HDMI device is operated, the AHD video output is deactivated.

Technical Data

Around Vision System / Control Box




Parameter		Value
Video	Camera Input	4 channels 1080p 25/30 fps
	AHD Video Output	1080p 30 fps
	SD Video Output	D1 25/30 fps
Video Recording	Memory Size	Max. 2x 512Gbyte SD card
	Encoding	Max. 4 channels, 1080p H.264
	Data Rate	1 / 2 / 4 Mbit/s
Operating Voltage		10 – 32 V
Voltage Trigger-Signals		10 – 32 V
Power Consumption		< 2 A / 12 V
Operating Temperature Range		-20 °C to +70 °C
Storage Temperature Range		-40 °C to +85 °C
Operation Humidity		+10% to +95% non-condensing





Cameras

Parameter	Value
Image Sensor	1/2.9" CMOS 2 Megapixel
Viewing Angle	200°
Frame Rate	25 fps
Resolution	1920 (H) x 1080 (V)
Pixel Size	2.8 µm x 2.8 µm
Video Signal Output	1.0 V p-p / 75 Ω
White Balance	automatic
Minimal ambient Illumination	0.1 Lux
Operating Voltage	12 V
Power Consumption	< 140 mA / 12 A
Operating Temperature Range	-20 °C to +70 °C
Storage Temperature Range	-30 °C to +80 °C
Humidity Operation/Storage	+10% to +95% non-condensing
Protection Class / IP Rating	IP69K (waterproof)

Safety and installation instructions

Observe the safety instructions and requirements stipulated by the vehicle manufacturer and the automotive trade!

	<p>Make sure you have read and understood the instructions and all safety information before using this product. Failure to follow these instructions can result in serious injury or death.</p>
	<ul style="list-style-type: none"> • Always disconnect the negative terminal on the battery before working on the vehicle electrical system to prevent damage to the electrical system. • On vehicles with an auxiliary battery, this must also be disconnected. • Insufficiently insulated or improperly connected cables can lead to malfunctions and short circuits in the vehicle electrical system.
	<p>Especially when working on the following lines, make sure that all connections are made properly and that all cables and connections are sufficiently insulated:</p> <ul style="list-style-type: none"> • Terminal 15 (battery plus, switched) • Terminal 30 (continuous positive, battery positive). • Terminal 31 (vehicle ground, battery minus) <p>Use only a diode test lamp or voltmeter to test voltage in electrical leads. Use a crimping tool to connect the wires or solder the wires professionally. When routing electrical connections or lines, make sure that they are not kinked or twisted, do not rub on corners or edges, and do not route them through sharp-edged penetrations without protection. Do not pull on the lines and connections. Secure installed cables against mechanical stress by taking appropriate protective measures and insulate all connections and terminals.</p> <p>For any connections to terminal 31 (ground), connect the cable with a cable lug and toothed lock washer to a suitable ground screw or with a cable lug and self-tapping screw directly to the body. Ensure good ground transfer here.</p>

	<p>When disconnecting the negative terminal of the battery, all volatile memories of the comfort electronics may lose their stored data. In this case, please have the data required for resetting (e.g. radio code) ready.</p>
	<ul style="list-style-type: none"> • Never use the device outside the specified temperature range. • Do not use the device if the relative humidity is above the specified limit. • Do not use the device if it interferes with the safe driving of the vehicle. • Make sure that the device, as well as all components connected to it, are not damaged. • Check the operating environment.
	<ul style="list-style-type: none"> • Ensure the correct connection voltage of the device. • Do not open the housing of the device. • Do not make any modifications to the device. • Take the device out of operation immediately in case of visible damage. • Persons who are not capable of operating or installing the device safely due to their physical, sensory or mental abilities should only operate or install this product under supervision.
	<p>Installation and commissioning must be carried out by a suitably qualified and trained fitter in compliance with the applicable regulations and laws. The installer is responsible for employing experienced and qualified personnel.</p>

Product Installation

Checking the Articles

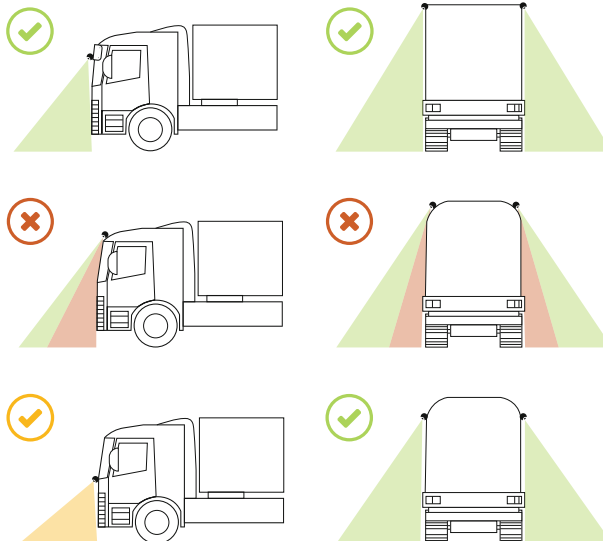
Before starting the installation, make sure that all the items listed in the scope of delivery are present and inspect them for damage. In case of any visible damage, do not install the product and contact the manufacturer.

Assembly

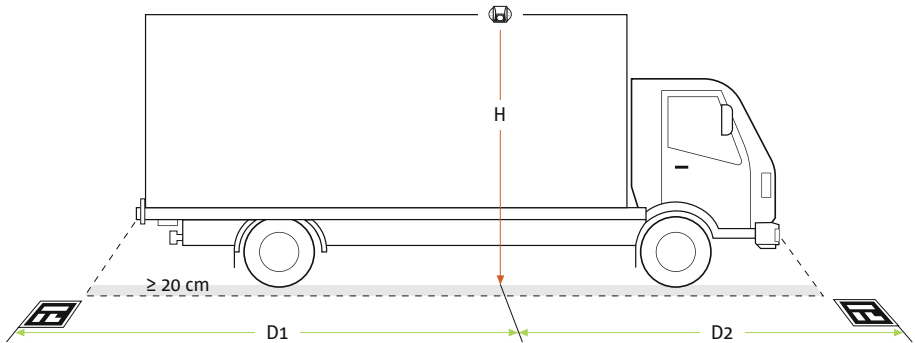
Mounting of the Cameras

The large number of different vehicles results in different attachment options.

- The cameras must be mounted as high as possible and as centrally as possible on each side.
- Both side cameras should be mounted at the same height.
- The front and rear cameras can be mounted at different heights if necessary.
- The cameras must be mounted horizontally.
- There should be no attachments in the camera's field of view that could restrict the view.
- If curved vehicle body surfaces prevent the cameras from being mounted, suitable brackets should be manufactured.
- Inappropriate mounting positions can create blind spots.



The system limits listed below apply to the mounting positions of the cameras for each side of the vehicle. For calibration, four mats with a geometric pattern are laid out on the floor near the corners of the vehicle. Depending on the camera's mounting height, there is a maximum distance to the outer edge of the calibration mats. Maintaining the maximum lateral distances between the camera and the calibration mats is a prerequisite for successful calibration.



Calibration Mats	SMALL (0,78 m)
Height H	Distance D1,D2
0,50 m	3,50 m
1,00 m	4,50 m
2,00 m	6,00 m
3,50 m	9,00 m

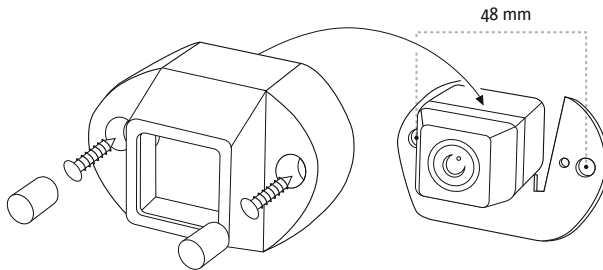
↳ Minimum Height: 0,50 m

Calibration Mats	LARGE (1,35 m)
Height H	Distance D1,D2
1,00 m	6,00 m
3,00 m	10,00 m
4,00 m	11,50 m
5,00 m	13,00 m

↳ Minimum Height: 1,00 m

Maximum vehicle length: 15 m

Mounting



- Drill a hole at the installation location to pass through the camera cable with the voltage limiting module inserted.
- Drill two suitable holes at the installation location, spaced 48 mm apart.
- Use the enclosed drilling template for this purpose.
- Attach the camera with the two supplied mounting screws.
- Seal the camera cable feedthrough appropriately.

Mounting the Control Box

- Install the control unit in a water-protected location, e.g., under the dashboard or under the driver's seat.
- Attach the control unit with the supplied screws.
- Mount the infrared receiver in a location where there is a line of sight to the remote control.
- Attach the GPS antenna so that a sufficiently strong signal is received to record the vehicle speed. The quality of the GPS signal is shown by an icon in the user interface.

Connection and Wiring

Electrical Connection

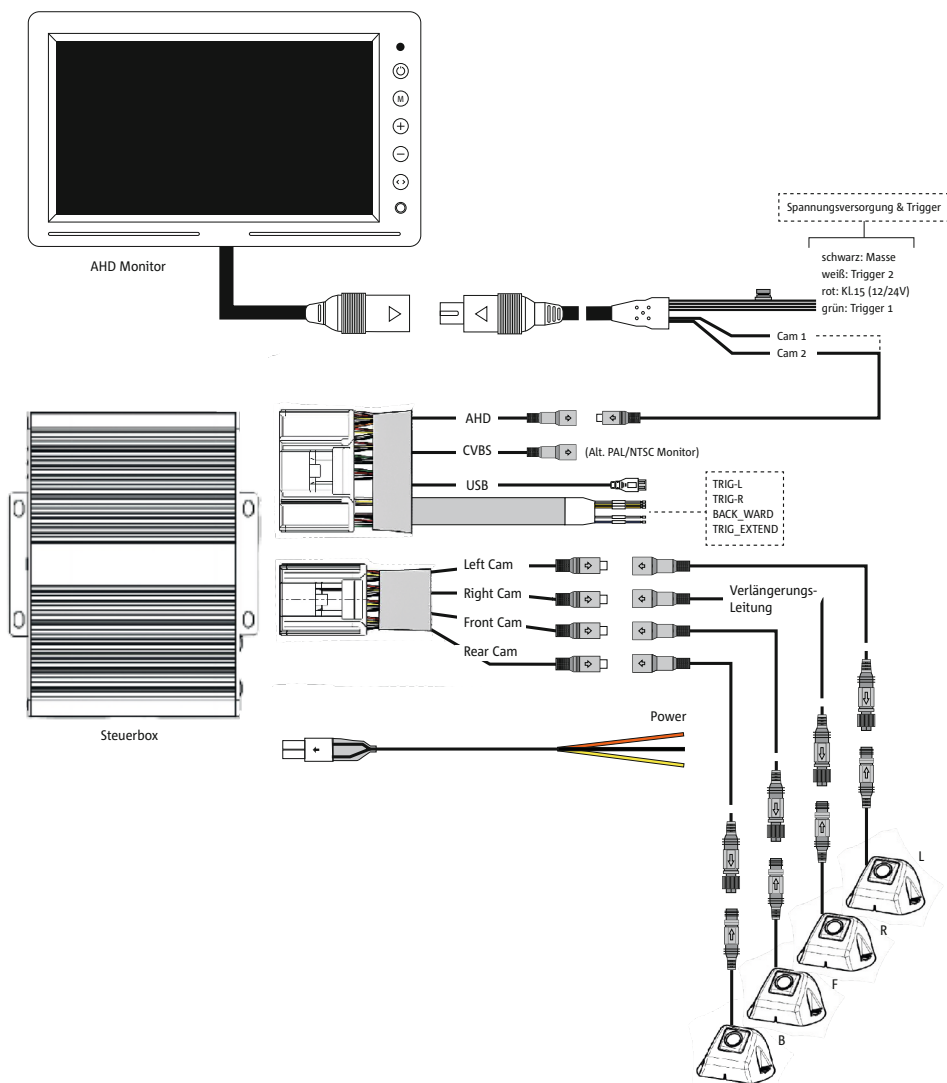
- Route the AHD or CVBS connection cable to the monitor
- Connect the monitor plug to the socket on the wiring harness
- Connect the red DC10-32V wire to terminal 15 (ignition)
- Connect the yellow ACC wire to terminal 30 (battery positive)
- Connect the black wire to ground
- Connect all cameras to the cable harness with the camera inputs
- Connect the trigger signals if necessary
- Connect the GPS receiver
- Connect the infrared sensor

Cable Routing

When laying the cables, keep the following points in mind:

- Do not bend or twist excessively
- Do not lay on edges or feedthroughs without a protective hose
- Do not pull on the cables excessively
- Attach them with cable ties at sufficient intervals
- Do not overtighten cable ties
- Do not route cables under tension
- Route cables away from hot or moving parts
- Use existing cable grommets if possible

Connection Scheme



Connections on the Wiring Harness

Cable Set – Video Output + Interfaces

Trigger signals

Wire	Color	Description
TRIG_L	white	Trigger signal when turn signal left
TRIG-R	yellow	Trigger signal when turn signal right
BACK_WARD	brown	Trigger signal when reverse gear engaged
TRIG_EXTENDED	blue	additional trigger signal

Power Cord

Wire	Color	Description
DC10-32V	red	Battery power supply
ACC-In	yellow	Power supply 10-32V, on ignition
GND	black	Ground connection

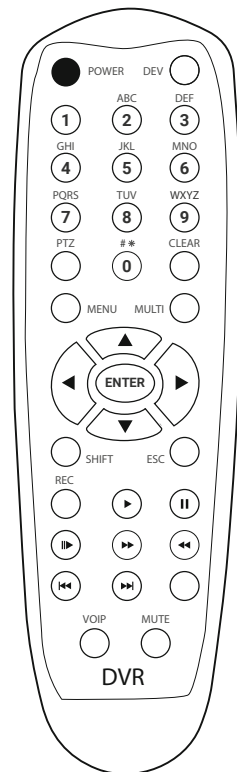
Operation

Remote Control

For configuration and use in the vehicle, the around view system can be controlled using the supplied remote control. For the remote control to function, there must be a line of sight between the remote control and the control box or the connected infrared sensor.

POWER	Turn on / off video display
ENTER	Enter into main menu or confirm menu selection
ESC	Exit main menu interface / return to main menu interface
◀▶	Activate and rotate the 3D view in the main interface or navigate in the current menu
▲▼	Activate front or rear view in the main interface or navigate in the current menu
SHIFT	Quad view in the main interface or navigation in the current menu
CLEAR	Delete the last character being entered
MULTI	Activation of the 3D scan view in the main interface
PTZ	Entering the decimal point in a number field
0 - 9	Select different views in the main interface or enter digits in the current menu

The other buttons on the remote control have no function for the system.



USB Pointing Device

To operate the menu, a USB pointing device (e.g. mouse) can also be used on the USB interface.

Setup and Calibration

The around view system is configured and calibrated via a user menu. The menu is controlled via the remote control or a connected USB pointing device.

Instructions for login, setup, and calibration, as well as an overview of all available menus, can be downloaded from the following link:

Click here to download the calibration instructions:



Troubleshooting and Fixing

Troubleshooting

Issue	Possible Solution
Irregularities after commissioning	<ul style="list-style-type: none"> Check that all components are connected correctly and make sure that the camera lens is not dirty.
Abnormalities in the power supply	<ul style="list-style-type: none"> Check the supply voltage; the standard operating voltage is 12-24 V. Check that the power supply is correctly connected (including the ground connection).
The system continues to work after the engine is switched off	<ul style="list-style-type: none"> Check whether the DC10-32V wire is connected to battery supply instead of ignition.
No remote control function	<ul style="list-style-type: none"> Make sure that there is a direct line of sight to the infrared sensor. Check the condition of the battery in the remote control.
Bird's eye and 3D views are (partially) displayed in black	<ul style="list-style-type: none"> Check that all cameras are properly connected.
Bird's eye and 3D views are displayed extremely distorted	<ul style="list-style-type: none"> Re-calibrate the system. <p>Note: Due to the system, the bird's eye and 3D views always appear slightly distorted. However, if the distortions appear to be extreme, this is an indication of missing or incorrect calibration.</p>

If the above steps do not help, please contact the manufacturer's service or your dealer.

Disposal of Packaging Waste

The packaging is made from environmentally friendly materials that may be disposed of through your local recycling facilities. By properly disposing of the packaging and packaging waste, you will help prevent potential hazards to the environment and public health.

Entsorgung von Elektronikgeräten

Das Symbol auf dem Produkt, dem Zubehör oder der Verpackung zeigt an, dass dieses Gerät nicht als unsortierter Abfall entsorgt werden darf, sondern an einer speziellen Sammelstelle abgegeben werden muss! Entsorgen Sie das Gerät an einer Sammelstelle für Recycling und Entsorgung von elektrischen und elektronischen Altgeräten, die über Systeme zur getrennten Sammlung von Elektro und Elektronikgeräten verfügen, wenn Sie innerhalb der EU und in anderen europäischen Ländern leben. Mit der korrekten Entsorgung des Geräts helfen Sie, mögliche Gefahren für die Umwelt und die Gesundheit zu vermeiden, die durch einen unsachgemäßen Umgang mit Altgeräten verursacht werden können. Die Wiederverwertung von Materialien trägt zur Erhaltung der natürlichen Ressourcen bei.

Vereinfachte EU-Konformitätserklärung

Hiermit erklärt die AXION AG, dass das Rundumsicht-System AVS 360 BS05 der EU-Richtlinie 2014/53/EU entspricht. Den vollständigen Text der EU-Konformitätserklärung unter folgender Mail: **service@axionag.de**

Kontakt Herstellerservice

Sie haben noch Fragen zum Produkt oder benötigen technische Unterstützung, dann erreichen Sie unseren Kundendienst unter folgender Rufnummer: **+49 7309 4288 188** oder per Mail: **service@axionag.de**

Electronic Equipment Disposal

The symbol on the product, accessories or packaging indicates that this device must not be disposed of as unsorted waste but must be taken to a special collection point! Dispose of the device at a collection point for recycling and disposal of waste electrical and electronic equipment that has systems for separate collection of electrical and electronic equipment if you live within the EU and other European countries. By disposing of the equipment correctly, you will help to avoid potential hazards to the environment and health that may be caused by inappropriate handling of waste equipment. Recycling materials helps to conserve natural resources.

Simplified EU Declaration of Conformity

AXION AG hereby declares that the System AVS 360 BS05 is in compliance with EU Directive 2014/53/EU. The full text of the EU Declaration of Conformity at the following mail: **service@axionag.de**

Contact Manufacturer Service

If you have questions about the product or need technical support, you can reach our customer service at the following phone number: **+49 7309 4288 188** or by mail: **service@axionag.de**

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