Bedienungsanleitung

USER MANUAL

AVS 360 BS05

360° Rundumsicht-System

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

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

10/2025 EN Version: 1.00 Änderungen und Irrtum vorbehalten.

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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

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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:

The system provides the following in detail:

- 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

Installation

Installation manual

This manual contains all the information required for calibrating and operating the around view system. The separate installation instructions for the system components are included with the product. They can also be downloaded:

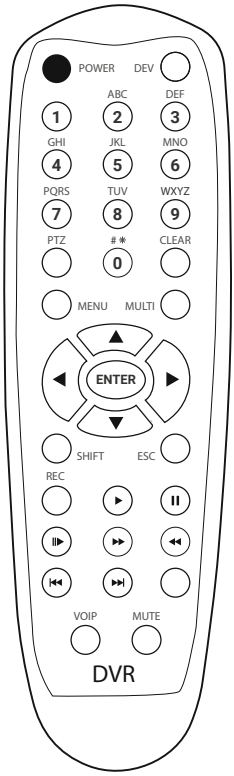
The installation manual is available for download here:
(Scan the QR code or click the button to download the file)

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

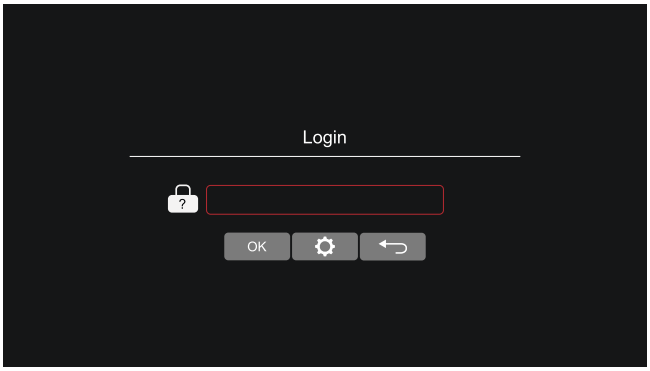


* The other buttons on the remote control have no function for the system.

USB Pointing Device

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

User Login



The user login appears after pressing the ENTER key on the remote control or double-clicking the left button on a USB pointing device.

Change password

The initial password is: 88888888

↳ The password can be changed using the ☼ Numbers and letters are permitted.
The maximum length is 16 characters.

Setup and Calibration

Most important Setup Steps

The around view system with its supplied cameras is ready for calibration and configuration. Prerequisite for calibration is the proper installation of the system components. An AHD or PAL/NTSC compatible monitor may be used.
The typical configuration and calibration steps are:

1. **Automatic and manual calibration**
   ↳ Menu / AVS / Automatic Calibration /
2. **Select the general display mode (2D/3D, horizontal, or vertical)**
   ↳ Menu / User Setup / Display /
3. **Select the default view on the monitor**
   ↳ Menu / User Setup / Display / Default View /
4. **Activate fisheye correction for single camera views (if desired)**
   ↳ Menu / User Setup / View Adjust /
5. **Set the system time**
   ↳ Menu / User Setup / Time /
6. **Configure views for individual trigger signals (if used)**
   ↳ Menu / User Setup / Trigger /
7. **Configure DVR recording to SD card (if desired)**
   ↳ Menu / User Setup / DVR /

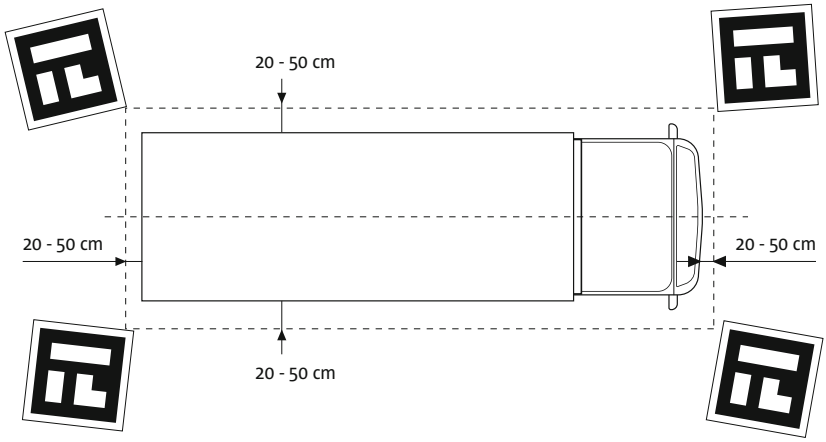
In addition, further configuration options are available to customize the system.

Automatic Calibration

The around view system supports automatic calibration. For this purpose, calibration mats with a black and white block pattern are laid out at each outer corner of the vehicle. The mats are positioned at a distance of 20 to 50 cm from each of the two edges of the vehicle.

For successful automatic calibration, the mats must lie taut on the floor. Strong light reflections are to be avoided. Sufficient ambient light is necessary to capture the black-and-white pattern.

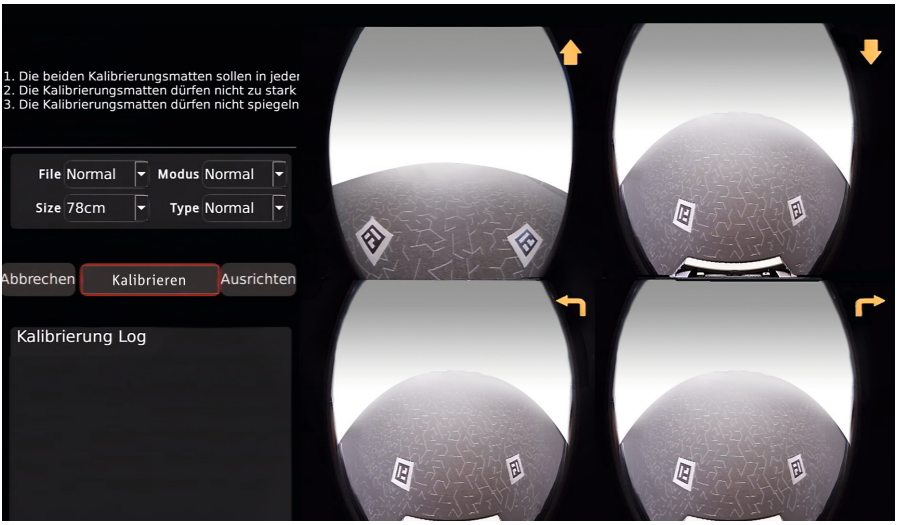
Note: The mats do not necessarily have to be aligned along the edges of the vehicle, and may be rotated in orientation. However, in order to fine-tune the displayed vehicle model to the real vehicle edges, it is helpful if the calibration mats are positioned with approximately equal distances to the vehicle and a perpendicular orientation.



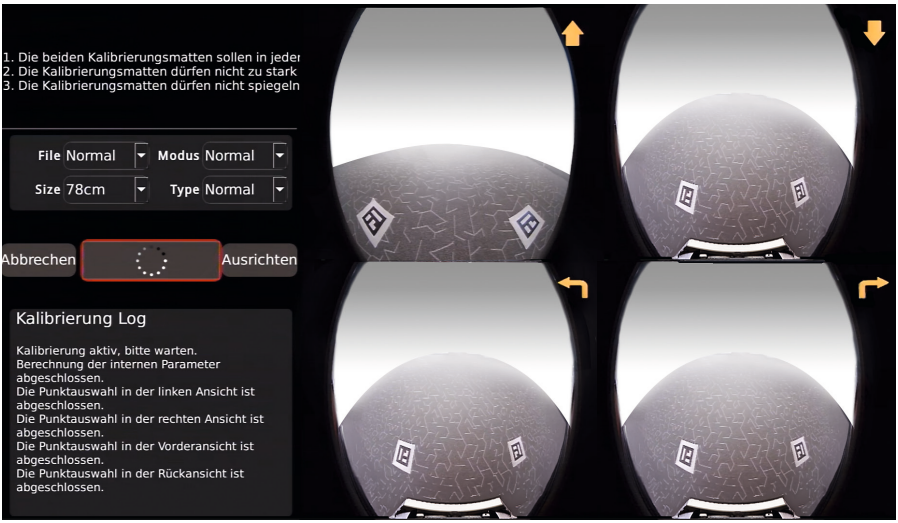
Important: For calibration, the around vision system must have the "horizontal" display mode enabled. Otherwise, the menu for automatic calibration is not accessible. The "vertical" display mode can also be enabled to use the system after calibration and view adjustment.

Calibration and Aligment
/AVS/Automatic Calibration

1. Select the menu /AVS/Automatic Calibration/
2. Set the parameter **<Size>** according to the correct size of the calibration mats (78 cm or 135 cm).
3. In each single camera fisheye view, verify that the calibration mats are fully and clearly visible at the corners of the vehicle. If necessary, correct mat display or lighting.
4. Start the automatic calibration by clicking the **<Calibrate>** button.



↳ As soon as all reference points in all four views have been successfully determined by the system, the corresponding status message appears in the calibration log for each view.



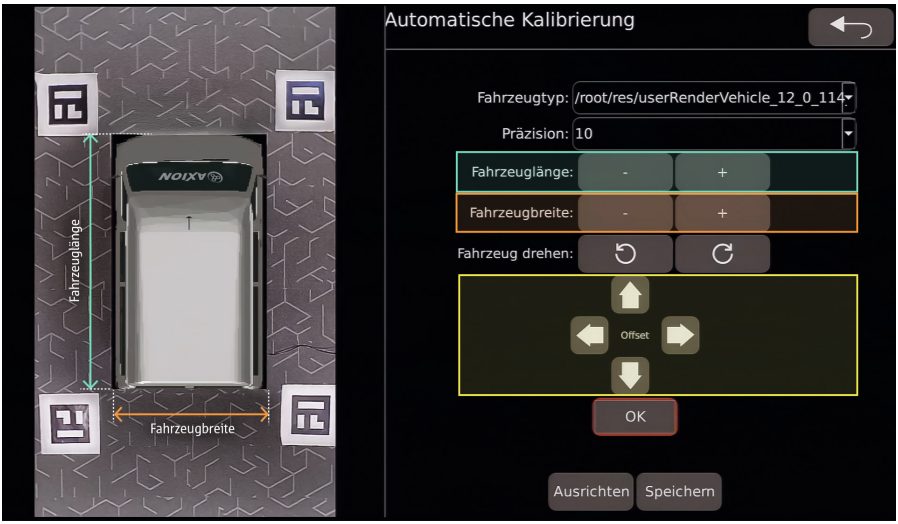
↳ If the automatic calibration run is successful, the infobox "Calibration successful" appears.

If the calibration run is not successful, the automatic calibration can be repeated. Alternatively, for the calibration mats that are not sufficiently determined, the vertices of the patterns can be set **manually** (see section for "Manual Calibration").

After a successful calibration run, the menu automatically appears:

/AVM/Automatic Calibration/Align

5. Use **<Vehicle type>** to select a suitable vehicle model from the vehicle model list.
6. Set **<Precision>** to e.g. "10". This allows you to change the model dimensions and position with just a few clicks using the switching elements. For fine adjustment, a smaller value such as "1" can be selected for **<Precision>**.
7. Use the elements for **<Vehicle Length>** and **<Vehicle Width>** to change the dimensions of the vehicle model. If vehicle edges being visible in a bird's-eye view are not covered by the model, they can be covered model widening or extension.
8. Use the arrow switching elements for **<Offset>** to slide the vehicle model in a bird's-eye view, so that the model edges cover the real vehicle edges as well as possible.
9. Complete calibration via **<OK>** and **<Save>**.
   The system reboots.



Note: A symmetrical and right-angled arrangement of the calibration mats will help align the vehicle model. Alternatively, a marking tape can be placed on the ground around the vehicle at a uniform distance to help align the model.

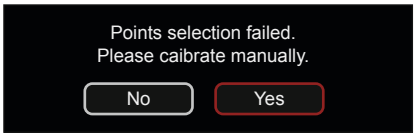
The following example illustrates a successful calibration process, showing that the mats do not need to be arranged in a standard rectangular pattern.

Automatic calibration captures the patterns on the calibration mats at different orientations and distances from the vehicle edges. Regardless of the exact location of the calibration mats, the vehicle model is automatically aligned appropriately on each side. The **<Adjust>** functions are used for further fine adjustment.

↳ This example illustrates multiple calibration mats arranged in a non-rectangular configuration.

Manual Calibration

If the all-round vision system cannot fully recognize all calibration mats during the automatic calibration run, the following dialog appears:

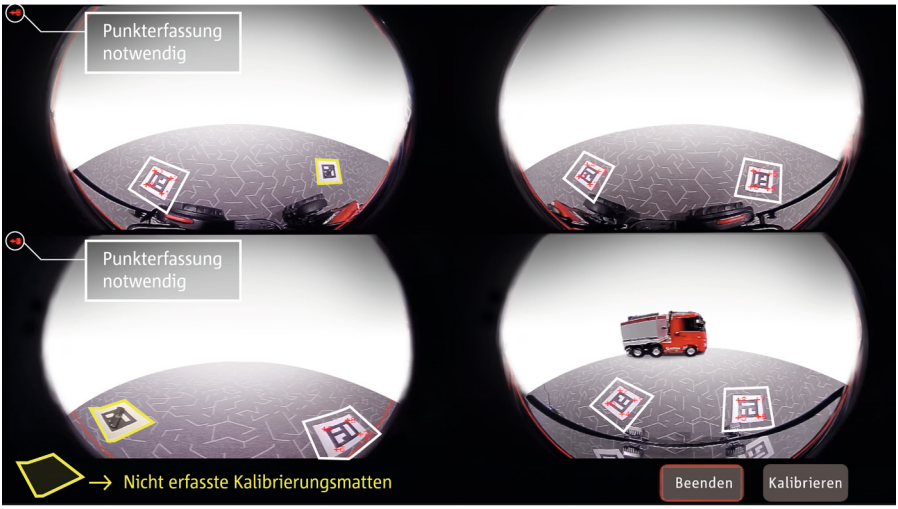


If repeated automatic calibration is also unsuccessful, there is the possibility of manually capture unrecognized calibration mats. The vertices of the calibration patterns are recorded with manual point positioning in the respective camera views.

Note: Even for manual calibration, the patterns on the calibration mats must be sufficiently clearly visible across the individual cameras, so that manual point positioning is possible.

1. After automatic point selection fails, start the manual calibration using the **<Yes>** button.

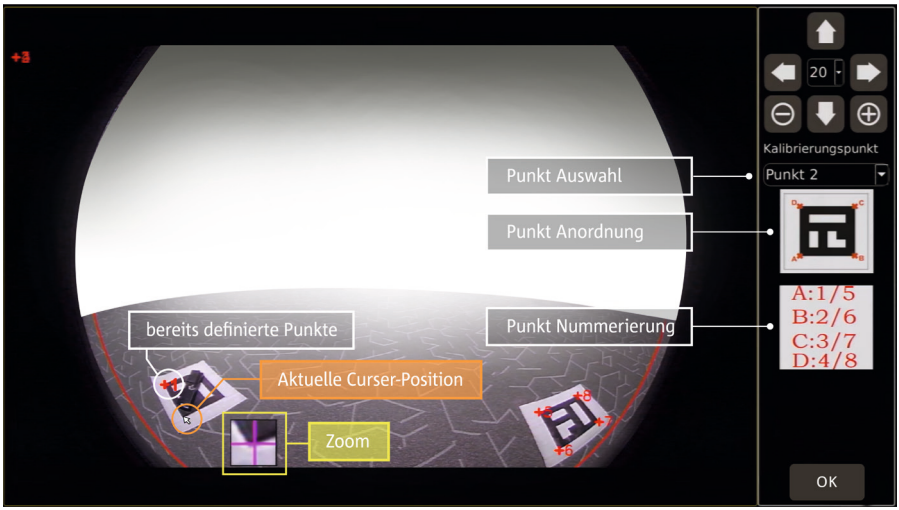
A quad view appears with all 4 camera images. For all successfully determined samples from the automatic calibration run, the pattern vertices are marked in red and numbered.
For patterns that are not recognized, the red vertices are missing. The camera views in which manual point recording is necessary have a red mark in the upper left corner.



2. Select a camera view with a red mark.

The single view of this camera appears, which was saved at the start of calibration. The corner point of each calibration pattern are labeled A/B/C/D. The corner points of both patterns in the camera view in total are numbered from 1 to 8.
For both calibration mats, there is a clear assignment of each individual corner point to a number 1 to 8. The corner points of the left calibration pattern are labeled 1 to 4. The corner points of the right calibration pattern are labeled 5 to 8.

3. For the calibration mat for which corner points are to be determined:
   Select the relevant point via **<Calibration Point>**.
4. Select the camera view.
5. Move the small white cursor to the corresponding corner of the calibration pattern.
6. By using **<Enter>** on the remote control or clicking left mouse button, the point with its position is saved.
7. Repeat this procedure for all points of the calibration pattern to be captured.
   All 4 calibration points must be correctly assigned to pattern corner points.
8. After capturing of all missing corner points, select **<OK>**.



When you leave the single camera view, the quad view is displayed with all captured pattern corner points. Once all missing points in all views have been captured, the calibration can be continued.

9. Start the manual calibration run via the **<Calibrate>** button.

If the calibration is successful, the infobox "Calibration Succed" appears.
In case of unsuccessful calibration, please check and improve the following points:

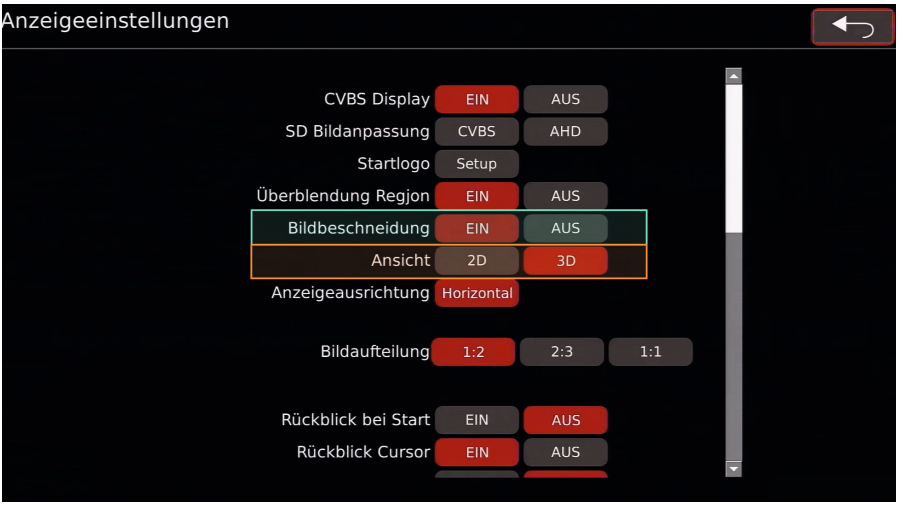
- Are all calibration mats are positioned at the corners of the vehicle?
- Are the cameras mounted to the vehicle in such a way that all 4 sides of the vehicle can be captured?
- Are the calibration mats positioned within the maximum vehicle dimensions?
- Is the point numbering correct according to the mapping to the calibration mat pattern?
- Are all points 1 to 8 recorded for each calibration mats?
- Are the calibration mats lying taut and flat on the floor?
- Is the ground around the vehicle basically flat?

General Display Settings

Display Modes

/User Setup/Display

1. Select the menu /User Setup/Display
2. Choose the general **<Display Direction>**:
   Horizontal: AHD or CVBS video signals regular in landscape mode
   Vertical: AHD or CVBS video signals rotated by 90°, in portrait mode
3. Choose for **<View Mode>**:
   <2D>: for bird's eye view, single camera views, quad view
   ↳ 2D views are possible for horizontal and vertical display modes
   <3D>: for bird's eye view, single camera views, quad view, 3D views around the vehicle
   ↳ 3D views are only possible in horizontal display mode.



Standard Views - Examples

View 1
Horizontal Screen

View 2
Vertical Screen

4. Select as **<Default View>** one of the available views.
   This view is always displayed after the around vision system is started, as long as no other view is activated via trigger signals.
5. Change other display settings if required.
6. Complete the display settings by clicking **<Save>**.

Single Camera Display Setting

Following calibration, each individual 2D camera view is initially shown in its distorted fisheye form. Distortion correction, precise selection of the displayed image area, and horizontal mirroring can all be adjusted through the view settings.

Fisheye Correction

/User Setup/View Adjust

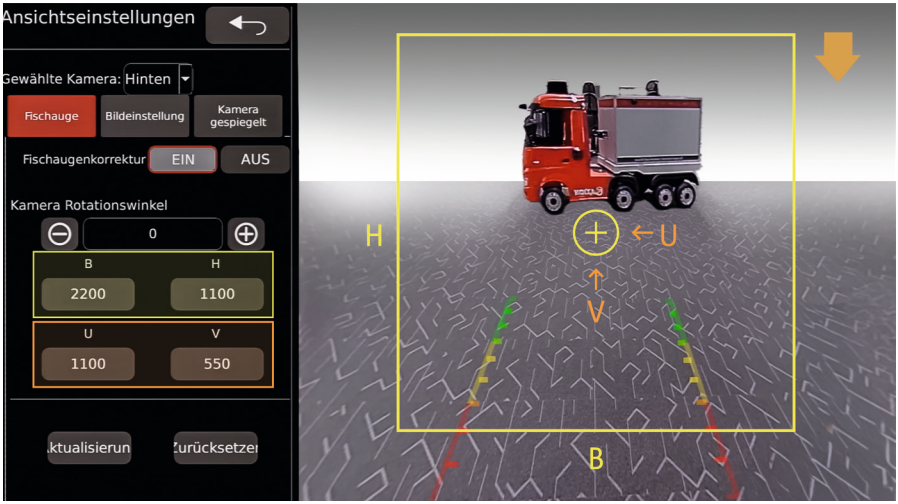
1. Select the menu /User Setup/View Adjust.
2. Select one of the 4 camera vies with **<Select Camera>**.
3. Select the sub-menu **<Fish Eye Rect>**.

↳ View of the selected camera without fisheye correction.

4. Set **<Fisheye Rectify>** → **<ON>**

The camera image now appears almost undistorted.
The image has a central viewing angle by factory settings.

5. If necessary, you can change the size of the image section and the ratio of width to height using the parameters **<W>** and **<H>**.
   This allows you to change the focus and distortions width-to-height.
6. If necessary, you can change the angle of view of the camera view using the parameters **<U>** and **<V>**. The following applies:
   <U> = 0 → extreme view to the right
   <V> = 0 → extreme view downward
   This allows the camera angle of view to be adjusted horizontally and vertically.
7. Update the settings with **<Update>**.



Camera View Mirroring

Enable or disable horizontal mirroring of the selected camera:

1. Select the sub-menu **<Camera Mirror>.**
2. To enable camera mirroring, set view **<ON>**.
   To deactivate camera mirroring, set **<OFF>**.

Setting the Around Views (AVM)

Around View Modes
/AVM/Surround View

For all bird's eye view modes in the 2D or 3D views , the position of the overlap angles and the lateral distances from the graphical vehicle model to the edge of the image can be adjusted.

1. Select the menu /AVM/Surround View

Overlap Angles

2. If necessary, change the values of the overlap angles for the respective vehicle corner.

The overlap angle defines for bird's-eye views the edge at which the image data from one camera merges into the data from the camera around the corner.

Note: The overlap angles are preset to 30°. In case of special vehicle conditions, such as an exceptional length or protruding attachments, changing the values can improve the display at the respective vehicle corner.

Lateral Distances

3. Select the desired **<Unit Setup>**: inches or meters
4. If necessary, change the preset values for **<Left View>, <Right View>, <Front View>,** and **<Back View>.**
5. Leave the menu to continue using the settings.

Note: By changing the values Left View to Right View and Front View to Rear View, the aspect ratio display for the vehicle model can be changed. Stretching and compressing in length and width is thus possible.

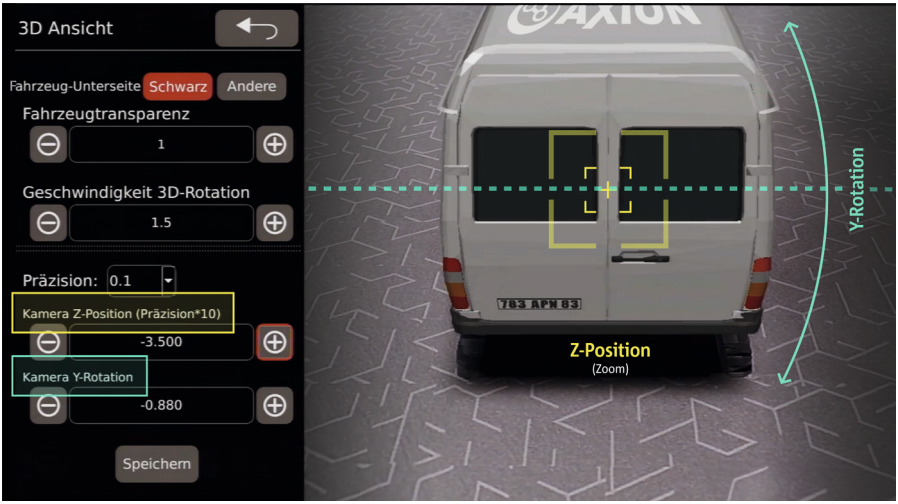
3D-Perspective (only in 3D display mode)

/AVM/3D-Ansicht

The perspective of the 3D views to the front and around the vehicle can be changed.
In the 3D views, a camera is virtually aligned towards the center of the 3D vehicle model.

1. Select the menu /AVM/3D Perspective/
2. To make the 3D vehicle model appear partially transparent, reduce the **<Vehicle Transparency>** value to a value less than one.
3. For the rotation speed of the vehicle model in the 3D Scan Loop view, the value for **<Speed 3D Rotate>** is changed. Value range: 0.5 to 2.
4. Set the **<Precision>** value to 0.1.
5. Increase or decrease the distance of the camera from the center of the model using the value **<Camera Z-Position>.**
   A value of 0 corresponds to a camera position in the center of the vehicle. The value must be a negative number. The larger the absolute value, the further away the camera is from the center of the vehicle and thus the image section appears larger.

6. Pan the camera position around the vehicle transverse axis using the value **<Camera Y-Rotate>**.
   Value 0: Camera is upright to the vehicle
   Value -1.4: Camera is flat behind/next to the vehicle
7. Complete the settings via <Save>.

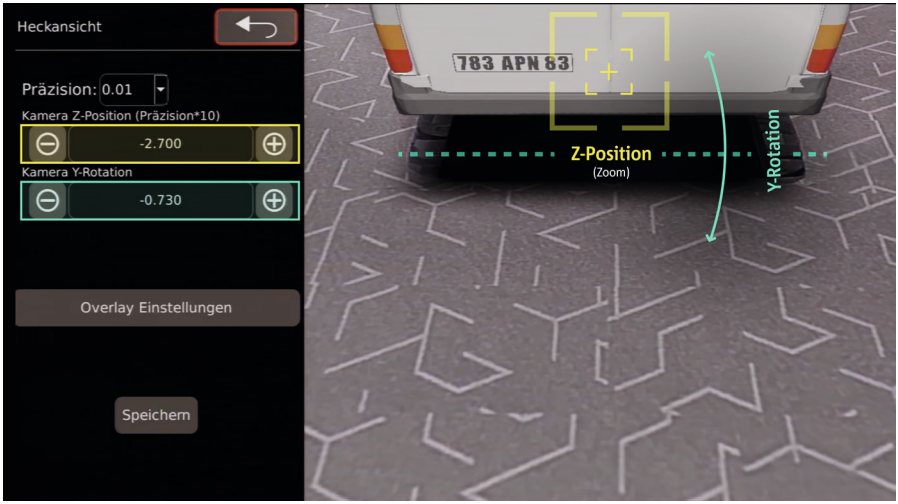


3D Back View Perspective (only in 3D display mode)

/AVM/Back View Perspective/

The perspective of the 3D view at the rear of the vehicle can be changed. In the 3D views, a camera is virtually aligned to the rear side of the 3D vehicle model.

1. Select the menu /AVM/Back View Perspective/
2. Set the **<Precision>** value to 0.1.
3. Increase or decrease the distance between the camera and the rear of the vehicle using the value **<Camera Z-Position>**.
   A value of 0 corresponds to a camera position in the rear of the vehicle. The value must be a negative number. The larger the absolute value, the further away the camera is from the rear of the vehicle and thus the image section appears larger.
4. Pan the camera position around the transverse axis at the rear of the vehicle using the value **<Camera Y-Rotate>**.
   Value 0: Camera is vertical above the rear of the vehicle
   Value -1.4: Camera is flat behind the vehicle
5. Complete the settings via **<Save>**.



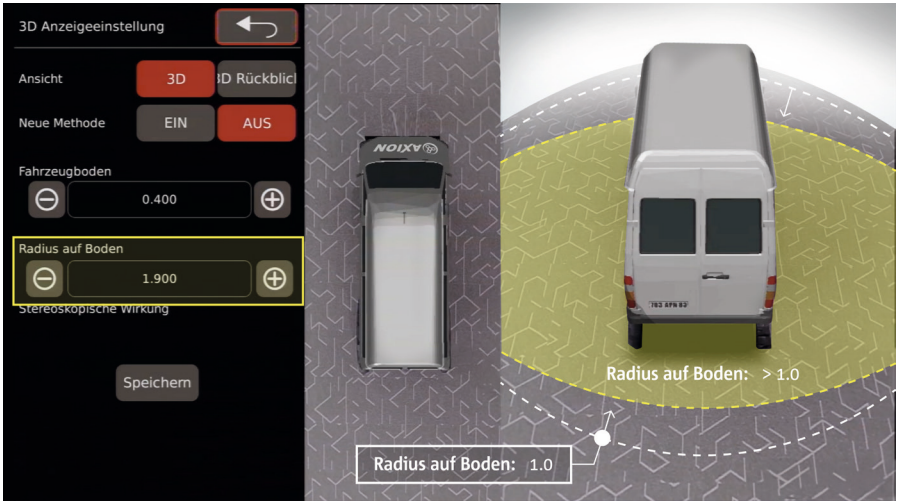
3D Display Settings (only in 3D display mode)

/AVM/3D Display Adjust/

Further adjustments for 3D views. Usually there are no adjustments necessary.

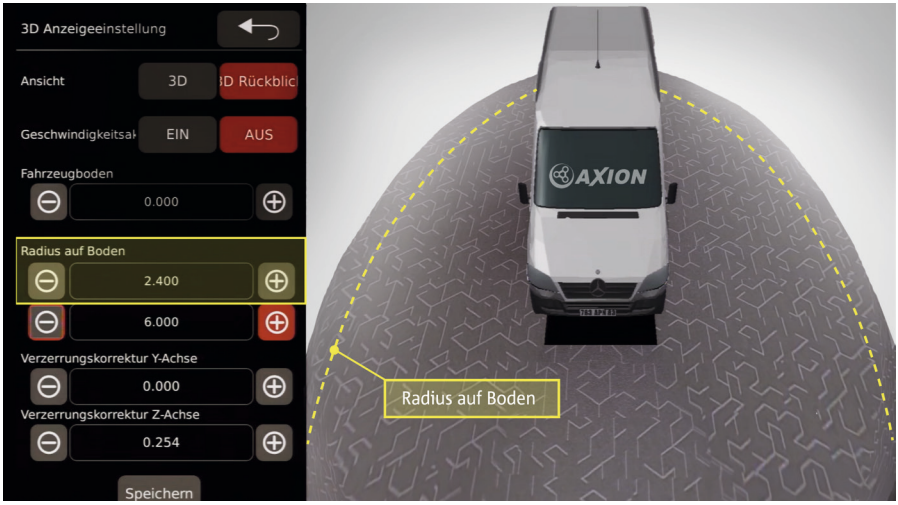
3D Views

1. Select the menu /AVM/3D Display Adjust/
2. Set **<Display Mode**> → **<3D>**
3. Set **<New Method>** → **<OFF>**
4. Use the value **<Vehicle Floor Region>** to increase or decrease the colored floor area below the vehicle model.
   Value range: 0 - 1
5. Use the value **<Plane Radius>** to change the scale of the 3D display around the vehicle model. The smaller the value, the larger the field of view, but also the distortion. The larger the value, the smaller the field of view and also the distortion.
   Value rangeh: 0 – 10
6. Comple the settings via **<Save>**.



3D Super View

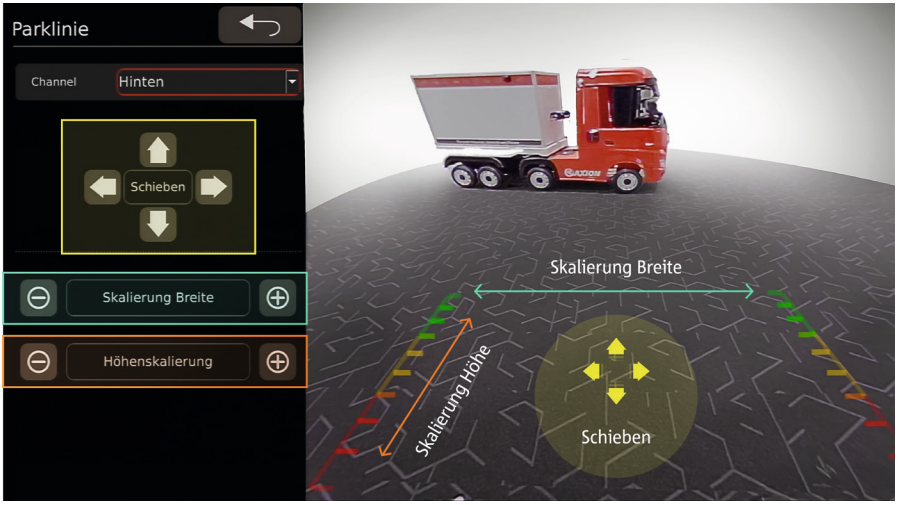
1. Select the menu /AVM/3D Display Adjust/
2. Set the **<Display Mode>** → **<Super>**
3. Use the value **<Vehicle Floor Region**> to increase or decrease the colored floor area below the vehicle model.
   Value range: 0 - 1
4. The value **<Plane Radius>** changes the scale of the 3D display and the stereoscopic effect around the vehicle model. The smaller the value, the larger the field of view, but also the distortion. The larger the value, the smaller the field of view and also the distortion.
   Value range: 0 – 10
5. The value below **<Plane Radius>** changes the vertical scale and the stereoscopic effect in the backward view.
6. The other parameters do not need to be changed.
7. Complete the settings via **<Save>**.



Other Settings

Parking Lines
/AVM/Parking Line/

1. Select the menu /AVM/Parking Line/
2. Set **<Channel>** → **<Back>.**
3. If necessary, change the scaling of the distance between the parking lines via **<Width Scale>**.
4. If necessary, change the stretch away from the vehicle via **<Height Scale>**.
5. If necessary, move both parking lines by using the arrow buttons.
6. When leaving the menu, the settings are applied.



Time Setting

/User Setup/Time/

1. Select the menu /User Setup/Time/

Manual Time Setting

2. If necessary, use the **<Time>** field to set the current date and time, and
3. confirm via **<Set Time>**
4. In the <UTC> field, select the difference between the current standard time and the UTC time. Example: Central European Standard Time: UTC+1
5. To enable daylight saving time switching, set **<Synchronization>** → **<ON>**.
6. Select difference to regular time by value **<Offset>**.
7. Configure the calendar days of the time changes.
8. Complete the settings via **<Save>**.

GPS Time Synchronization

If the GPS antenna is used in the vehicle, the system time can be synchronized automatically.

Prerequisite: GPS antenna connected / signal available

1. For GPS time synchronization, set **<Switch>** → **<ON>**.

Note: If GPS time synchronization is activated, the relevant time zone and the daylight saving time setting are automatically taken into account for the system time. This works depending on the position determined via GPS.

Trigger Setting
/User Setup/Trigger/

Configuring the Assignment of Trigger Signals to available views.

1. Select the Menu /User Setup/Trigger/.
2. If necessary, set a suitable corresponding view for the trigger inputs **<Left/Right/Back/ Extern>**.
3. If necessary, set a value for the **<Trigger Priority>**. One trigger input can be configured to have a higher priority than all other triggers.
4. Completee the settings via **<Save>**.

DVR Recording
/User Setup/DVR/

The around view system can record either the 4 camera images in fisheye view or the image displayed on the monitor. Recording requires at least one SD card inserted into the control box. Once activated, the recording is generally continuous as long as the system is in operation. Once the SD space is exhausted, the oldest video files will be deleted.

If a recording is configured to include eventss such as exceeding speed limits or the occurrence of strong shocks, the associated video files are saved with a different file name. This allows video files to be identified based on the start time and on the event type.

DVR Basic Configuration
/User Setup/DVR/Basic Setup/

1. Select the menu /User Setup/DVR/Basic Setup/
2. For **<Vehicle ID>** field, enter an identifier for your vehicle.
3. Select the compression rate using selectinon for **<Compression>**.
4. Set **<Auto Record>** → **ON**.
5. Set for **<Duration>** the duration of each individual video file.
6. Choose the recording type **<Single>** or **<Full-Screen>**.
7. Set **<Record Osd>** to choose whether the displayed symbols and time information are recorded.
8. Complete the settings via **<Save>.**

DVR Event Settings
/User Setup/DVR/DVR Setup/

1. Select the menu /User Setup/DVR/DVR Setup/
2. To detect shock events when recording, set **<G-SensorSetup>** → **<ON>** and select a level of sensitivity.
3. To record the exceeding of speed limits, set **<GPS-Setup>** auf **<ON>** and select a value for the speed limit.

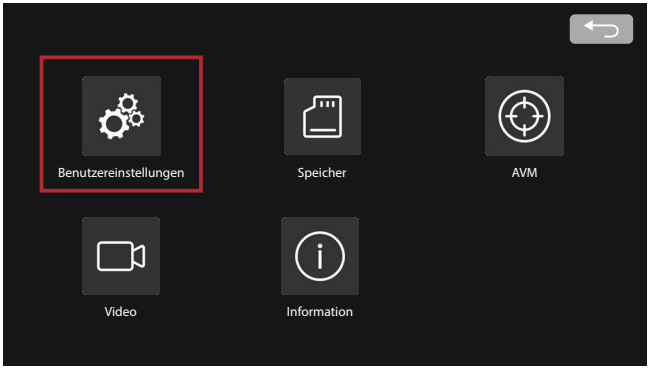
Parking
/User Setup/DVR/Parking Record/

1. Select the menu /User Setup/DVR/Parking Record/
2. To record after the ignition is turned off, set **<Switch>** → **<ON>**.
3. Set a value for **<Voltage>**, after which recording will be stopped if the voltage supply for the system falls below.
4. Set a value for **<Delay shutdown>** for the maximum time delay to stop recording after vehicle has been switched off.
   Value range: 1 – 90 minutes
5. Complete the settings via **<Save>**.

User Interface Reference

Main Menu

This section describes all available menu functions for your reference.



Menu Item	Description
User Setup	User settings, DVR settings, display settings, and trigger configuration
Storage	Memory management for SD cards and USB devices
AVM	Calibration and configuration of the different views
Video	Access to recorded videos
Information	Information about software versions Upgrade system software Reset user configuration

Menu Items

Note: If the system is intended to be used with the "Vertical" display orientation, it is recommended that you first calibrate and configure the system in the "Horizontal" display orientation. When all relevant settings have been made, the display orientation is then changed to "Vertical".

User Settings
/User Setup/

General configuration of the around vision system

Basic Settings
/User Setup/Basic Setup/

Menu Item	Description
AV	Configuration of the CVBS output **Pal:** CVBS video output according to PAL standard **NTSC:** CVBS video output according NTSC standard
Display Icon	Display of the screen icons and date/time in the main interface
Speed Control View	System switches from default view to the configured view above the set speed. When reaching a lower speed than the set speed again, default view is activated again.
Standby Delay	System switches to standby mode above the set speed. The video display will be switched off.
Standby Setting	System switches to standby mode after the set time (3 – 30 s) if there is no active trigger signal. **Note:** To enable Speed Control Wakeup, set a value of at least 3 seconds. Otherwise, speed-based view activation remains disabled.
Language	User interface language

Time Settings

/User Setup/Time/

Menu Item	Description
Time	Display and manual setting of the current system time
GPS Time Synchronization	System time is synchronized with the GPS time signal. The time zone and daylight saving is automatically set. Central European Standard Time: UTC+1 Prerequesite: GPS antenna connected
Daylight Saving Time Setup	Automatic activation/deactivation of daylight saving time according to the start and end dates

Display Settings

/User Setup/Display/

Menu Item	Description
CVBS Display	Activation of video output via CVBS output
SD Screen Asjustment	Screen parameter correction for the CVBS video signal
Logo Setup	Selection of an alternative start logo in horizontal and vertical orientation. 1920x1080 / 24bit BMP file format
Blending Region	Overlapping of the camera images in the loop views.
View Mode	General display mode **2D:** bird's eye view, single camera views, quad **3D:** bird's eye view, single camera views, quad, 3D views around the vehicle
Display Direction	Orientation of the video display. **Horizontal:** 2D and 3D views (default) **Vertical:** only 2D views possible. For monitors used in portrait mode.
View Ratio	Split ratio between bird's-eye view and second 2D/3D view on the monitor

Menu Item	Description
Instant Rear View	Rear camera image is displayed immediately after the launch logos. The display is in fisheye view.
Back Cursor	Parking lines in the rear camera view
Vahicle Model Offset	When the left/right trigger inputs are activated, the vehicle model is displayed offset in a bird's eye view so that a larger area is visible on the corresponding turning side.
Set Video Mode	Camera resolution and refresh rate adjustment **OFF:** Camera resolution is automatically detected (default) **ON:** the configured camera resolution is fixed
Svm Color Balance	Color balance of the screen display. Usually, no modification is necessary.
Color Balance Osd	
Color Balance Optimize	
Color Balance Frame	
3D Vehicle Contour	Instead of the 3D model, only the vehicle contour close to the ground is displayed.
Default View	Selection of the view type if no trigger is activated. The possible view types are described in section "Available Views".

Single View Adjustments
/User Setup/View Adjust

Fisheye correction and image correction for the individual camera views

Menu Item	Description
Select Camera	Selecting the camera to adjust
Fish Eye Rect	
Fish Eye Rectify	Correction of the fisheye view to a flat 2D display
Camera Rotate Angle	Rotation of the camera view
W, H	Captured width and height from the overall camera image
U, V	Offset of the camera image horizontally and vertically. The focus point of the captured camera image can be changed by U and V values.
Broader View	
Radius	For front and back camera view, the "Broader View" is an alternative correction algorithm instead of Fish Eye Rectify. It an be alternatively activated and configured for these both views.
Height	
Altitude Offset	
Image Adjust	
Dual	Display bird's eye view to check settings
Single	Display of the individual camera views to check the settings
Brightness	Correction of the brightness for the image of the selected camera
Saturation	Correction ot the saturation for the image of the selected camera
Contrast	Correction of the contrast for the image of the selected camera
Sharpness	Correction of the sharpness for the image of the selected camera
Hue	Correction of the color tone for the image of the selected camera
Camera Mirror	
ON/OFF	**ON:** The image of the camera is mirrored horizontally. **OFF:** The image from the camera is not mirrored.

Color Adjustments

/User Setup/Color Adjust/

Adjusting the color scheme on the monitor

Menu Item	Description
Brightness, Saturation, Cb, Cr	Adjusting the color scheme on the monitor.

Calibration and Around View Settings

/AVM

This menu contains all settings for automatic calibration and for the display of the bird's eye views and 3D views.

Automatic Calibration

/AVS/Automatic Calibration/

The around vision system supports automatic calibration. In each camera view, 2 calibration mats must be fully visible. The mats must lie taut on the floor. Strong light reflections are to be avoided.

Menu Item	Description
Calibrate 4CH	The automatic calibration is started
Size	Mat size used for calibration: 78 cm oder 135 cm
File	Default setting: "Normal"
Adjust	Alignment of size and position of the vehicle model in the bird's-eye view

Note: For calibration, the around vision system must have the "horizontal" display mode enabled. Otherwise, the menu for automatic calibration is not accessible.

Calibration Import/Export
/AVS/Calibration File/

Export and import of the calibration of the around vision system via USB storage device
Importing calibration files is useful for users who frequently install the system for vehicles of the same type.

Menu Item	Description
Export	Export of current calibration settings (.XML file) and actual camera images
Export History	Export of last calibration results and associated stored camera images
Import	Import of selected calibration file (.XML file)

Note: The calibration file for import can be stored in any directory on the USB storage device.

Vehicle Model Selection
/AVS/Vehicle Type/

Configuration of the vehicle model to be displayed in 2D and 3D views.

Menu item	Description
Vehicle Type List	Selected type of vehicle to display **2D Display Mode:** Selecting a 2D image file with the vehicle top view **3D Display Mode:** Selection of a 3D vehicle model

Note: Using an USB storage device, the user can select their own 2D image files (.PNG format, color depth 32 bit, direction of travel facing upwards, vehicle environment transparent) and use them for display. The image file must be located in the USB storage device at the file system top-level.

Bird Eye View Settings
/AVS/Surround View/

Setting the bird eye view.

Menu Item	Description
Blending Angle Setup	Setting the angle for each corner of the vehicle, where the intersection of the respective camera images should be displayed. Value range: 0 - 90°
Bird Eye View Setup	Setting the lateral distances of the area to be displayed in front, next to and behind the vehicle. If the left/right and front/rear values are different, the vehicle is displayed off-center of the bird eye view display area. Value range: 0 – 3000 cm

Note: The overlap angles are preset to 30°. For special vehicle conditions such as an exceptional length or outstanding attachments, changing the values can improve the display at the respective vehicle corner.

Parking Lines
/AVM/Parking Line/

Configuration of parking lines for the camera views to the rear.

Menu Item	Description
Move	Change the display position of the parking lines
Width Scale	Distance of parking lines
Height Scale	Length spacing of parking lines

3D Perspective Settings (only 3D display mode)
/AVM/3D Perspective/

Perspective adjustments for the 3D display mode (from the back to front and loop).

Menu Item	Description
Vehicle Bottom	Color of the area below the vehicle model **Black:** Area under the vehicle in black **Other:** Area under the vehicle in a similar color than the environment
Vehicle Transparency	Transparency of the vehicle model Value range: 0.1 - 1
Speed 3D-Rotate	Rotation speed in rotating 3D view Value range: 0.5 – 2
Precision	Step size for setting camera zoom and rotation values
Camera Z-Position	Virtual camera distance to vehicle model center point. Value has to be negative.
Camera Y-Position	Rotation of virtual camera position around vehicle's transverse axis

Back View Perspective Settings (only 3D display mode)
/AVM/Back View Perspective/

Perspective adjustment for the 3D vehicle back view.

Menu Item	Description
Precision	Step size for setting camera zoom and rotation values
Camera Z-Position	Virtual camera distance to vehicle model rear edge. Value has to be negative.
Camera Y-Position	Rotation of virtual camera position around vehicle's transverse axis

3D Views Adjustment (only 3D display mode)
/AVM/3D Display Adjust/

Adjustments for 3D views

Menu Item	Description
Display Mode	Selecting the view to configure **3D:** Bird eye view and 3D view from back to front **Super:** 3D View from front to back
Vehicle Floor Region	Size of the colored floor area under the vehicle
Plane Radius	Scaling of the 3D field around the vehicle. The larger the value, the smaller the 3D field of view, and also the smaller the distorion. Value range: 1 - 10

Note: The other parameters in this menu usually do not require any adjustment.

Trigger Settings
/User Setup/Trigger/

Konfiguration der Zuordnung von Triggersignalen zu Anzeigearten

Menu Item	Description
Trigger Priorität	Priority of trigger inputs in case of multiple signal activation. **None:** the first view activated via a trigger input is displayed **Other values:** the associated view of the set trigger input has a higher priority than the other triggerable views
Links / Rechts / Zurück / Extern	An available view can be assigned for each trigger input. This view is shown after the trigger signal has been activated.

Note: In 2D display mode, all views with 3D vehicle models are not available. If desired, the 3D display mode has to be be activated.

DVR Settings
/User Setup/DVR/

In this menu, all settings for video recordings with the around vision system are done.

DVR Basic Setup
/User Setup/DVR/Basic Setup/

Menu Item	Description
Vehicle ID	Name of the vehicle, e.g. license plate (max. 10 characters)
Compression	Data rate for the recording (in recording type "Single") **4 Mbps:** low compression, data rate 4 Mbps **2 Mbps:** medium compression, data rate 2 Mbps **1 Mbps:** high compression, data rate 1 Mbps
Auto Record	**ON:** Video recording starts after the system is turned on, if a SD card is inserted **OFF:** no video recording.For any video recording configuration, this switch has to be set to ON.
Duration	Recording time per single video file. Value range: 3 - 30 minutes. When the maximum duration of a video file is reached, the recording is resumed in a new file.
Record Type	Configuration of the content to be recorded **Single:** The image from 4 individual cameras is recorded. **Full-Screen:** The video image displayed at the monitor is recorded.
Record Format	File format for video recording. **AVI:** Video format AVI (default) / **(MSV):** audio data only (no current use)
Record OSD	**ON:** At Single recording format, a timestamp and the corresponding channel are recorded for each camera. **OFF:** no additional information recorded
Record Alarm	Notify users when a recording is stopped unsceduled.

DVR Event Settings
/User Setup/DVR/DVR Setup/

Setting the trigger actions to start an event-based video recording

Menu Item	Description
G-Sensor Setup	The built-in accelerometer triggeres an individual video recording in case of shock events.
Sensitivity	Sensitivity to trigger a video recording
GPS Setup	If the driving speed exceeds the set value for Speed, an individual video recording is created and stored. The driving speed is determined based the GPS position data. **Prerequisite:** Recording type is "Full-Screen".
Speed	Value of the driving speed above which a speed-dependent video recording is triggered.

Record while Praking
/User Setup/DVR/Parking Rercord/

Menu Item	Description
ON/OFF	**ON:** The system will enter standby mode after the Delay Shutdown time. Any activated video recording will continue until then. **OFF:** The system switches to standby mode immediately after the vehicle is switched off. Recording is stopped.
Voltage	If the measured supply voltage falls below this value, the system will go into standby mode. This means that the vehicle battery is not further stressed at low voltages. Value range: 9 – 24 V
Delay Shutdown	Recording period after switching off the vehicle Value range: 1 – 90 minutes

Storage Information
/Storage

Overview of inserted SD cards and connected USB devices.

Information
/Information

Menu Item	Description
Current Version	Software version for the elements CPU, MCU, Linux
Upgrade	Upgrade of the Systemsoftware
System Setup	Import/export of user configuration settings **Reset:** Resume to default setting **Import:** Import a configuration file **Export:** Export the configuration to a file The calibration information is not included in this configuration file. The calibration is exported separately via menu / AVS/Calibration File.
Upgrade Configure	Currently not used

Software updates and import of configuration data may only be carried out by qualified personnel.

Available Views

The around view vision system offers numerous types of views.
The different views can be activated via:

- Setting the default view in the display settings
- Configured trigger inputs
- Remote control

Note: Not all views can be activated using all activation options. The description of the views and associated activation options are provided in the following table.

View	Description	Activated by
Display Type:	2D and 3D	
Dual+2D_Left	bird's-eye view + camera left side	- default view - trigger - remote control <6> / ←
Dual+2D_Right	bird's-eye view + camera right side	- default view - trigger - remote control <7> / →
Dual+2D_Front	bird's-eye view + camera front side	- default view - trigger - remote control <8> / ↑
Dual+2D_Back	bird's-eye view + camera rear view	- default view - trigger - remote control <9> / ↓
Full Dual	bird's-eye view, vehicle vertically oriented	- default view - trigger
Horizontal Full Dual	bird's-eye view, vehicle horizontally oriented	- default view - trigger - remote control <multi>

View	Description	Activated by
Display Type	2D and 3D	
Quad	all 4 camera views in fisheye mode	- default view - trigger - remote control <5>
Dual+Quad	bird's-eye view plus all 4 camera views in fisheye mode	- default view - trigger
Single_Left	camera left side	- trigger - remote control <1>
Single_Right	camera right side	- trigger - remote control <2>
Single_Front	camera front side	- trigger - remote control <3>
Single_Back	camera rear view	- trigger - remote control <4>
Display Type	only 3D	
Dual+3D_Left	bird's eye view + 3D view from the back left	- default view - trigger
Dual+3D_Right	bird's eye view + 3D view from the back right	- default view - trigger
Dual+3D_Front	bird's eye view + 3D view from the back to front	- a default view - trigger - remote control ↑
Dual+3D_Back	bird's eye view + 3D view to the rear of the vehicle	- a default view - trigger - remote control ↓
3D Full View	3D view from back to front	- default view
Super Rear View	3D view from front to back	- default view - trigger - remote control <0>
any 3D views	rotate the 3D views ...	- remote control ←→
Scan Loop	bird's eye view + rotating 3D view	- default view - trigger

Main Interface Icons

Symbol	Description
	camera view front side
	camera view on the right
	camera view rear side
	camera view on the left
	USB storage device connected and working
	no USB storage device connected
	USB storage device does not work correctly
	SD card plugged in and working
	No SD card detected
	SD card not working correctly
	Video recording is active
	GPS signal quality: high
	GPS signal quality: medium
	GPS signal quality: low
	No GPS signal

Access to Video Recordings

Video Management
/Video

In this menu, recorded videos can be found sorted by date/time. They can either be viewed directly or downloaded to a USB storage device.

Element	Description
Date/Hours	When a video is recorded at a dedicated date or time, the numbers in the calender view are color-coded. These date and time fields can be selected in the interface.
Videos	List of available video files with recordings
All	Select/deselect all video files in the list
Delete	Delete the selected video files
Export	Save the selected video files
Play	Play the selected video file on the monitor

Troubleshooting and repairs

The product may only be repaired by a qualified and trained person.
Contact the manufacturer (see reverse) or your specialist dealer for repair specialist dealer.

Troubleshooting

Error screen	Procedure
Checks for irregularities after commissioning	• Check that all components are properly connected and make sure the camera lenses are not dirty.
Abnormalities in the power supply	• 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	• Check whether the ACC cable is permanently connected.
Remote control doesn't work	• Make sure there is a direct line of sight to the infrared sensor. • Check the battery status in the remote control.
Around view and 3D views are (partially) displayed in black	• Check that all cameras are connected properly.
Around view and 3D views are extremely distorted.	• Recalibrate the system. **Note:** Due to the system's inherent limitations, the around view and 3D views always appear slightly distorted. However, if the distortion appears extreme, this indicates a lack of or faulty calibration.

* If the above steps do not solve the problem, please contact the manufacturer's service department or your dealer.

Disposal of packaging waste

The packaging is made of 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.

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.

Vereinfachte EU-Konformitätserklärung

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

Simplified EU Declaration of Conformity

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

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**

AXION AG
Röntgenstraße 4 · 89264 Weißenhorn · Germany · **Tel.+49 7309 4288 188** · **www.axionag.de**