



Installation and operating instructions

USER MANUAL

ICA Turn-Assist XR45 Turning assistant

Blind Spot Information System



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General

General Notes





This document describes the function, installation, operation, maintenance and troubleshooting of the ICA Turn Assist XR45 bending system.

This document is aimed at professional workshops and specialist personnel with the appropriate background knowledge in dealing with vehicle electronics and electronic components. Installation must always be carried out by trained personnel.

Furthermore, the document is intended for instructed drivers who have the qualification and suitability to drive the motor vehicle. 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.

Explanation of the safety instructions

Please read and observe all warnings, notes and instructions in these operating instructions. The following types of warning symbols are used:

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

Storage instructions

These installation and operating instructions, as well as the general operating permit, must always be kept gribble and accessible in the vehicle.





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 e-mail: service@axionag.de

Intended use

The ICA Turn-Assist XR45 is designed exclusively for use in closed vehicles with 12V/24V power supply.

	<p>Qualification and suitability for driving the vehicle cannot be compensated or replaced by using the turn assist system!</p>
	<p>The road traffic regulations must always be followed in full. The system does not replace the driver's duty to use the exterior mirrors and the shoulder view when turning, changing lanes or turning! The driver must always assess the situation himself and evaluate whether driving manoeuvres are possible without danger!</p>
	<p>Physical system limits can influence the system in its proper function. This applies in particular to higher speeds and external influences such as direct sunlight, heavy rain, snow or contamination of the sensor system, as well as absolute darkness. To ensure the full functionality of the cornering assist system, the sensors must not be covered and should be kept free of ice, snow and dirt.</p>
	<p>The turn assist system supports the driver by providing information and warnings about vulnerable road users in the danger zone next to the vehicle. It serves to supplement the usual safety precautions when driving the vehicle. The driver is still obliged to pay attention to road users, vehicles and objects in the danger zone next to the vehicle and should never rely solely on the cornering assist system.</p>

When used as intended and in compliance with all prerequisites, notes and warnings in the operating instructions, the system does not pose any hazards.

Disclaimer



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

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 any other. AXION AG also reserves the right to revise this publication at any time without notice to any person.

The information provided in this documentation includes general descriptions and/or technical characteristics of the performance of the equipment described herein.

This documentation cannot serve as a proper assessment of the suitability or reliability of the equipment for a specific application by a user and must not be used as a substitute for such an assessment.

It is the responsibility of each such user or installer to conduct a proper 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 relevant state, regional and local safety regulations must always be observed when installing and using this unit. For safety reasons and to ensure compliance with the documented system data, only the manufacturer is authorised to carry out repairs to components. Failure to observe this information may result in injury or damage to the equipment.

Warranty

The warranty for the cornering assistance system is 24 months. System components must not be opened, changed or manipulated. In the event of non-compliance, safe functioning can no longer be ensured. This will invalidate both the warranty and the operating permit.

Product information

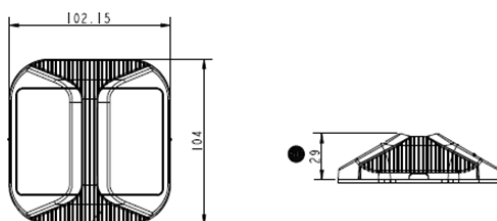
Scope of delivery

Figure	Description	Article number
	Radar sensor incl. cover	MWR-XR45
	Control unit (MCU)	ICA-MCU45
	LED warning light	ICA-WLED45
	Warning buzzer	ICA-WBZ45
	Control knob (button)	ICA-EBT45
	Connection cable set	ICA-MCC45
	Radar connection cable	ICA-RCC45
	Extension cable 6m	WPC-4506
Screws + nuts	Mounting material	-

Technical Data

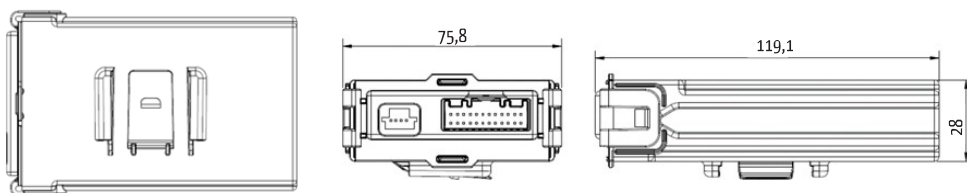
Radar Specifications - MWR-XR45:

Dimensions	102 mm x 104 mm x 29mm (WxHxD)
Operating voltage	DC 9-32V
Power consumption	<495mA @ DC 12V
Frequency	76~77 GHz
Frame Rate	20 Hz
FOV	180°
Resolution	± 0,25 m
Waterproofness	IP67
Operating temperature	-40°C - 85°C
Storage temperature	-40°C - 85°C



Control unit specifications - ICA-MCU45:



Dimensions	119.1 mm x 75.8 mm x 28 mm (WxHxD)
Operating voltage	DC 9-32V
Power consumption	< 10 W
Operating temperature	-40°C - 85°C
Storage temperature	-40°C - 85°C



Operating and Display elements

The system can be operated via the button included in the scope of delivery. The brightness level of the LED warning light can be adjusted by pressing the button. The brightest level is automatically reactivated each time the system is started.

The LED warning light is used as an indicator element for the system status and for all visual indications and warnings:

	LED lights up yellow	Error condition detected, function disturbed, communication error
	<p>LED lights up</p> <p>red LED flashes</p> <p>red</p>	<p>Object in the coverage area</p> <p>Object in the danger zone with increased risk of collision</p>

Area of use

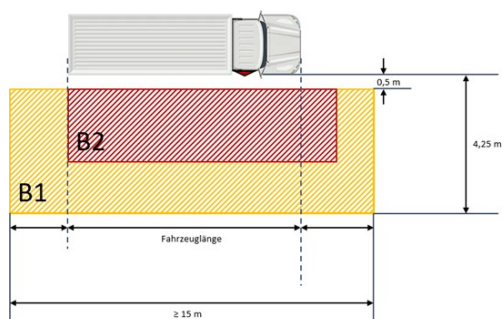
The system is designed for commercial vehicles (classes N2 and N3) and buses (classes M2 and M3) with more than nine seats including the driver's seat, which meet the following installation conditions. The system can also be used for vehicles with <3.5T weight, if the possible installation position allows this.

- The system must be completely installed on the vehicle in which the driver receives the warning.
- The sensor positions listed in these operating instructions must be observed for proper functioning.
- The camera can be positioned within the limits of both the passenger compartment and the body of the vehicle.
- Make sure that no component protrudes more than 100 mm beyond the edge of the vehicle.
- The system can be operated under all load conditions of the vehicle.

Functional description

The ICA Turn Assist XR45 is a radar-based system. It consists of a combined radar sensor with two radar units for monitoring the coverage area, a control unit for signal processing and the warning device consisting of LED and buzzer.

The system is active when the ignition is switched on. When switching on, the LED lights up briefly and the buzzer sounds once. The radar continuously checks the **coverage area (B1, yellow)** next to the vehicle and classifies the detected objects. As soon as unprotected road users (=VRU) move within the coverage area, the driver is informed visually by the LED warning light lighting up.



If a turn is initiated by switching on the indicator or a steering movement and VRUs are in the coverage area, the driver is warned visually by the flashing LED warning light.

While the vehicle is moving (<40 km/h) and VRU is in the danger zone (B2, red), the buzzer also sounds an acoustic warning tone.

This multi-level warning concept helps the driver to get a better overview of the respective situation and to better assess its dangerousness.




The turn assist system has a self-diagnosis function. During operation, it continuously checks itself for faults. As soon as a connection or component is faulty or its function is restricted, the warning LED lights up yellow and draws the driver's attention to the restricted function. This also applies if the radar is covered or dirty. As soon as the fault is eliminated, the system automatically switches back to normal operation after a short time.




For a better overview, the turn-off assistant can be expanded to include a camera monitor system. For this purpose, a camera is mounted on the outside of the vehicle, which displays the cover area, and a monitor is mounted in the area of the A-pillar. For recommendations, please contact the manufacturer AXION (see reverse) or your specialist dealer.

Assembly and commissioning

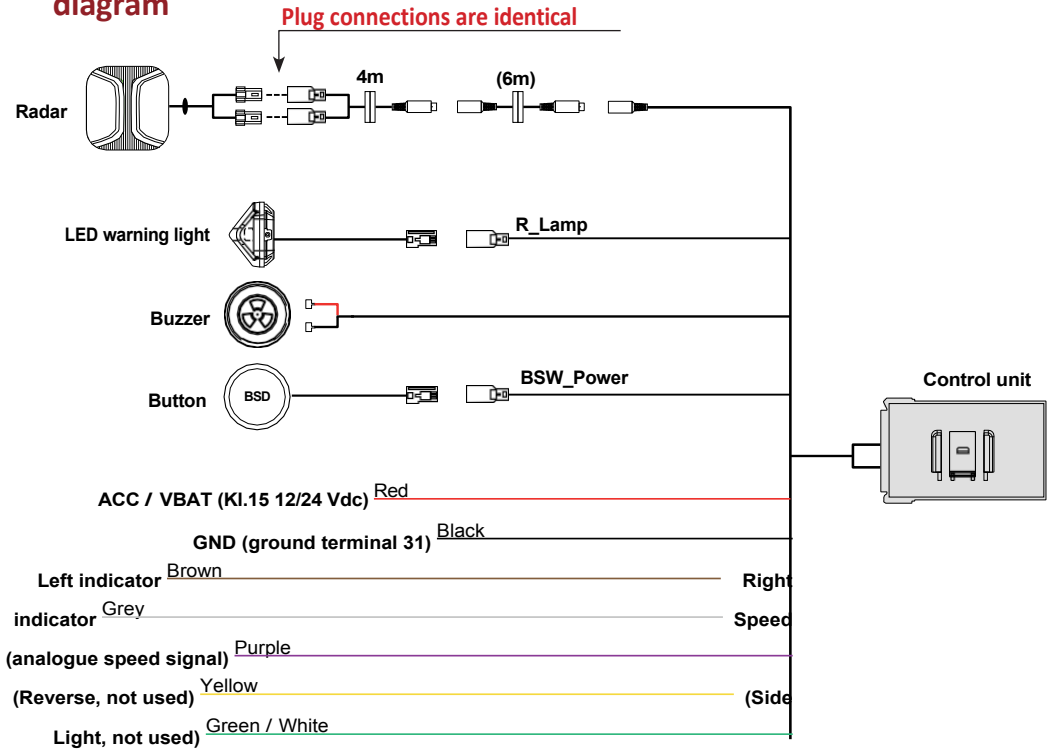
Safety instructions for the assembly

Observe the safety instructions and requirements prescribed by the vehicle manufacturer and the motor trade!

	<p>Ensure that you have read and understood the instructions and all safety information before using this product. Failure to follow these instructions may 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's 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's electrical system.
	<p>Especially when working on the following lines, make sure that all connections are made professionally and that all cables and connections are sufficiently insulated:</p> <ul style="list-style-type: none"> • Terminal 15 (battery plus, switched) • Terminal 31 (vehicle ground, battery minus) <p>Only use a diode test lamp or a voltmeter to test the voltage in electrical lines.</p> <p>Use crimping pliers to connect the cables or solder the cables properly. When laying the electrical connections or cables, ensure that they are not bent or twisted, that they do not rub against corners or edges and that they are not laid through sharp-edged bushings without protection. Do not pull on the cables and connections. Secure installed cables against mechanical and thermal stress by taking appropriate protective measures and insulate all connections and terminals. For any connections to terminal 31 (earth), connect the cable to a suitable earth screw with a cable lug and toothed lock washer or directly to the body with a cable lug and self-tapping screw. Ensure good ground transmission 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 re-setting (e.g. radio code) ready.</p>

	<ul style="list-style-type: none">• Never use the appliance outside the specified temperature range.• Do not use the unit 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 unit and all components connected to it are undamaged.• Check the operating environment.
	<ul style="list-style-type: none">• Make sure that the unit is connected to the correct voltage.• Do not open the casing of the unit.• Do not make any changes to the unit.• If there is visible damage, take the unit out of operation immediately.• Persons who are not physically, sensory or mentally capable of operating or installing the appliance safely 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>

Wiring diagram



Connect the labelled cables for the speed signal and the left and right indicator to the vehicle. Ensure that there is no test or residual voltage on the signal line (usually 3V). This can lead to errors in the signal processing. If this is the case, use an additional relay circuit.

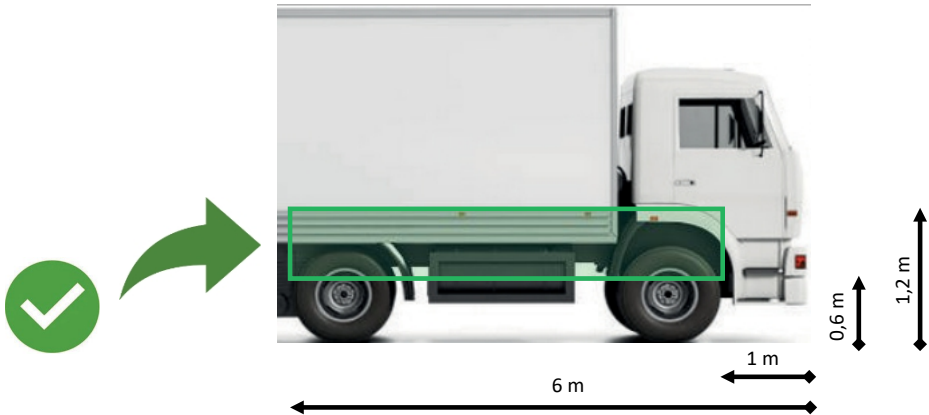
Connect all labelled plug connections for the individual components and ensure that the plugs are seated correctly. Note: The two connections of the radar sensor do not differ and can be connected as desired.

The following connectors are not used: M_Lamp, OBD, as well as the lines REV (yellow) and Side Light (green-white).

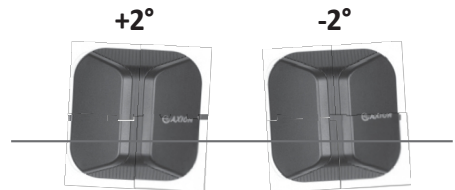
All plug connections outside the driver's cab and all open plug connections must be additionally sealed with insulating tape to protect them from dirt and moisture.

Assembly instructions

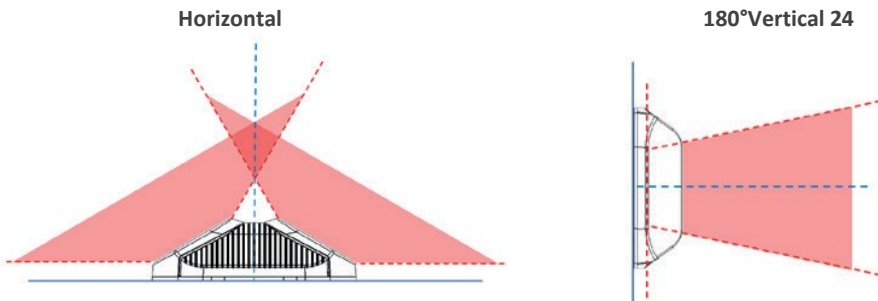
The radar must be mounted in the designated mounting area. This begins at a distance of 1 m from the technical front edge of the vehicle and ends at a distance of 6 m from the front edge. The mounting height starts at 0.6 m and is limited to a maximum of 1.2 m measured from the centre of the radar to the ground. A mounting position near the front axle is recommended.



The radar sensor has a tolerance of $\pm 2^\circ$ in each axis (x,y,z). When mounting the sensor, make sure that it is mounted on a flat surface, surface parallel to the vehicle and perpendicular to the ground. The marked nose on the sensor must face downwards so that the sensor is mounted in the correct viewing direction.



The radar is fixed with two screws, which must be secured on the back. The radar must be mounted in such a way that it is not restricted in its view by other vehicle or attachment parts. The viewing area has a size of:



A mounting bracket is necessary depending on the conditions of the car body.
Available versions:

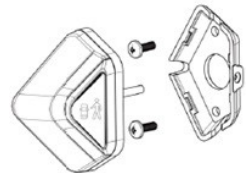


Mounting the radar

1. (If bracket is necessary) Fasten radar bracket firmly to the body of the vehicle.
2. Connect both radar plugs with the connection cable ICA-RCC45.
3. If required, the connection cable can be extended with the ICA-WPC4506 cable.
4. Pre-assemble the radar with the screws
5. Align radar so that the given tolerances are met
6. Screw the radar tightly to the body or bracket.
7. Attach the cover to the sensor using the attached adhesive tape.

Mounting the LED warning light

The LED warning light is mounted on the passenger side, preferably on the A-pillar, using screws or an adhesive pad so that the display can be easily seen by the driver. The LED warning light must be mounted at least 30° away from the driver's line of vision.



Mounting the control unit

The ICA-MCU45 control unit is mounted in the cockpit area, e.g. with an adhesive strip in a water-protected area. The mounting position and orientation can be freely selected.

Parameterisation of the system

A separately available **USB-CAN adapter** and the **SystemSetup** application are used to parameterise the radar sensor and calibrate the speed:

See document: *AXION App Instructions XR45.pdf*

USB CAN adapter:



Troubleshooting

Error pattern	Possible causes	Solution
System does not start	<ul style="list-style-type: none"> Faulty connection 	<ul style="list-style-type: none"> Check the connections according to the connection diagram Check power supply
Warning LED does not light up at system start-up	<ul style="list-style-type: none"> Plug connection or cable damaged LED board damaged 	<ul style="list-style-type: none"> Check plug connection and cables Request spare part
Warning buzzer does not sound at system start-up	<ul style="list-style-type: none"> Plug connection or cable damaged Warning buzzer damaged 	<ul style="list-style-type: none"> Check plug connection and cables Request spare part
LED lights up permanently yellow + Warning buzzer sounds	<ul style="list-style-type: none"> Sensor dirty or covered Radar signal not available 	<ul style="list-style-type: none"> Clean sensor Check plug connections and cables

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

Repairs



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

Further information

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 to avoid potential hazards to the environment and public health.

Disposal of Electronic equipment



The symbol on the product, accessories or packaging indicates that this appliance must not be disposed of as unsorted waste but must be taken to a special collection point! Dispose of the appliance 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 in other European countries. By disposing of the appliance correctly, you will help to avoid possible environmental and health hazards 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 ICA Turn-Assist XR45 complies with EU Directive 2014/30EU. The full text of the EU Declaration of Conformity at the following email: service@axionag.de

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