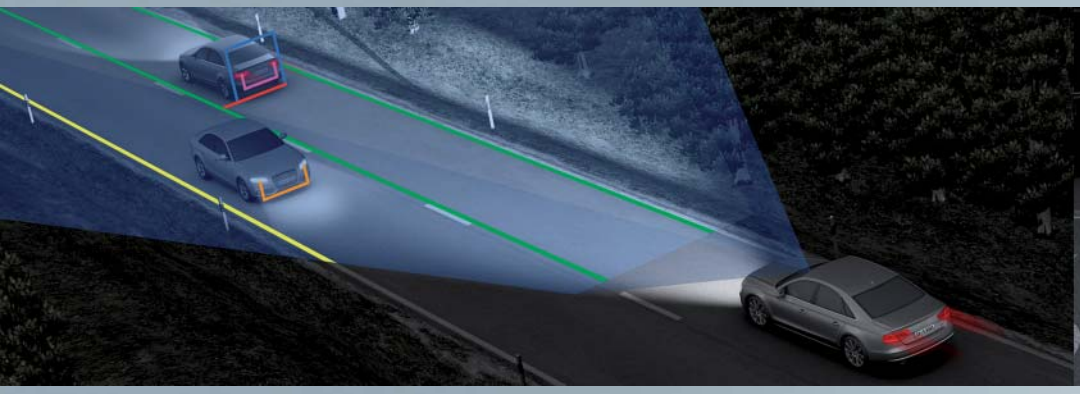
Self-Study Programme 461



Audi A8 ’10
Driver assistance systems

Camera control unit J852
Intelligent light system
Image processing control unit J851
Functions supporting ACC Stop & Go

Audi
Service Training

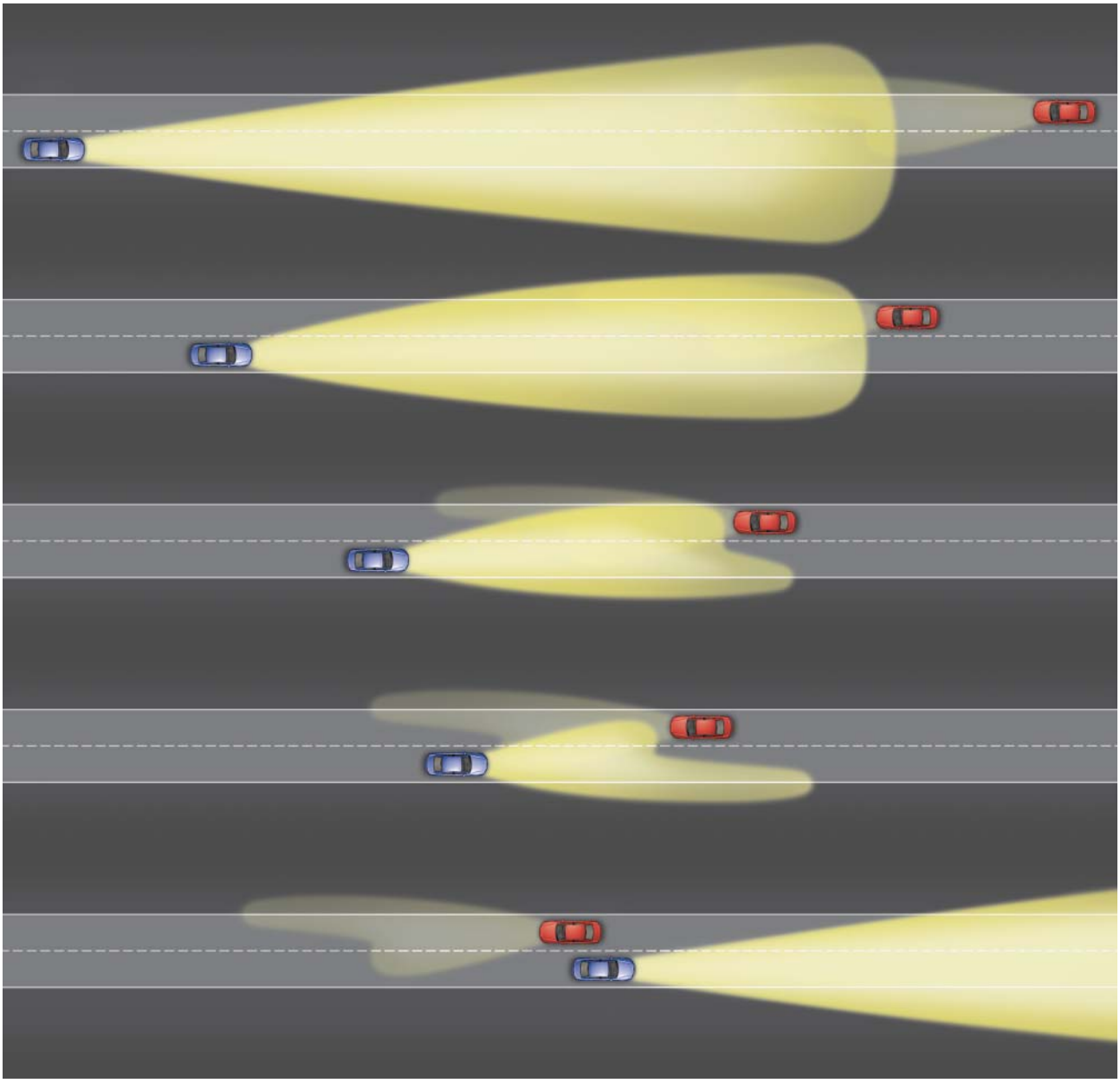
Introduction

Finally, it's here! A new generation of the Audi A8 is launched to the public with an extensive list of new features and innovations guaranteed to win the hearts of customers. Once again, the driver assistance systems incorporate a number of innovations. The flagship of the Audi range provides an impressive demonstration of how driver assistance systems can help customers to travel safely, comfortably and in a relaxed fashion.

One of the most exciting new features can be found in the area of vehicle lighting: the headlight assist system recently unveiled by Audi. This system automatically detects night driving situations where it is appropriate to use the main beam and when to switch to dipped beam. The main beam is turned on or off accordingly.

The new intelligent light system marks a departure from digital switch-over between dipped and main beam. Using a new type of camera, the system determines how far the headlights can be raised and adjusts the range of the headlights continuously between dipped and main beam.
The intelligent light system gives the driver the best possible road illumination at night without dazzling other road-users.

The technical basis for implementation of the intelligent light system is a new image processing system available in two configurations. In its full configuration the image processing system enables the ACC Stop & Go system to operate in a more anticipatory fashion. For this purpose, the ACC is notified in advance when the system detects a vehicle ahead changing lane.



461_005

Contents

The Self-Study Programme teaches basics of the design and function of new models, automotive components or technologies.

It is not a Repair Manual. Figures given are for guidance purposes only and refer to the software version valid at the time of preparation of the SSP.

For further information about maintenance and repair work, always refer to the current technical literature.

Note

Reference

The new image processing system

Introduction

The Audi A8 ’10 comes with a new image processing system comprising one or two control units depending on trim level. The new control units are as follows:

- image processing control unit J851

and

- camera control unit J852

The image processing control unit J851 is an all-new control unit. The camera control unit J852 replaces the previous Audi lane assist control unit J759. Thanks to amore powerful CPU, it can perform other functions in addition to Audi lane assist. The J851 and J852 control units are the central components of the image processing system in the Audi A8 ’10.

Ordered optional equipment	**Camera control unit J852**	**Image processing control unit J851**
		
Intelligent light system	fitted	not fitted
Lane monitoring system Audi lane assist	fitted	not fitted
adaptive cruise control Stop & Go	fitted	fitted

Wiring diagram of image processing system

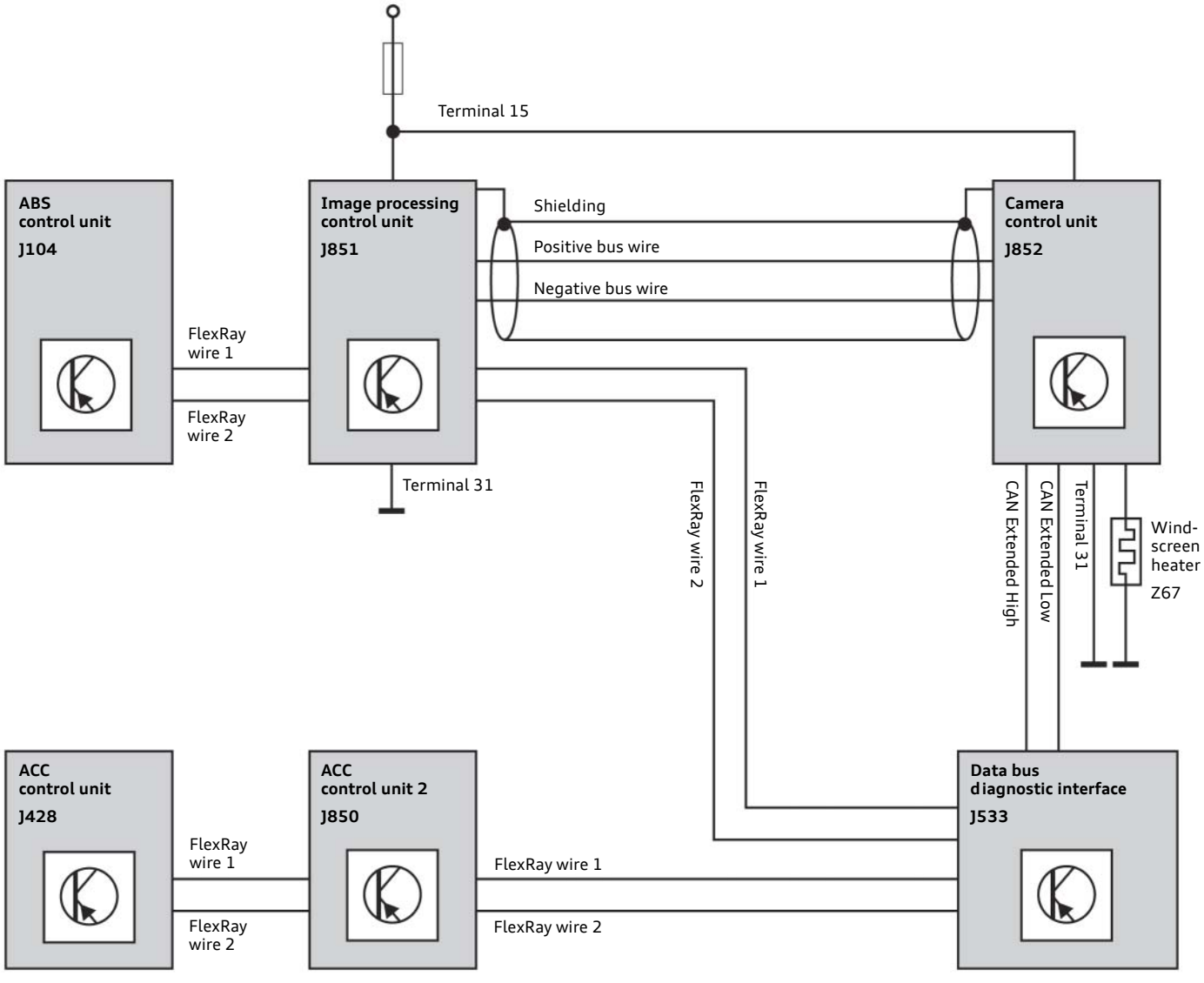
In total, nine wires lead to the image processing control unit J851:

- Two FlexRay wires leading to the ABS control unit J104
- Two FlexRay wires leading to the data bus diagnostic interface J533
- Two bus wires (LVDS) for image transfer to the camera control unit J852
- The shielding of the two bus wires (LVDS) leading to J852
- Two power supply wires: terminal 15 and terminal 31

In total, eight wires lead to the camera control unit J852:

- Two extended CAN wires for data exchange with other control units
- Two bus wires leading to image processing control unit J851 (LVDS)
- The shielding of the two bus wires (LVDS) leading to the image processing control unit J851
- One wire leading to the windscreen heater Z67 of Audi lane assist
- Two power supply wires: terminal 15 and terminal 31

LVDS ... Low Voltage Differential Signalling

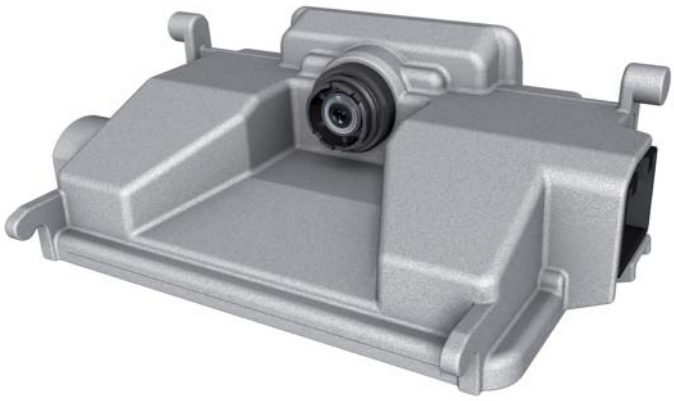


461_001

The camera control unit J852

The camera control unit J852 replaces the previous Audi lane assist control unit J759. It features a high end camera and a powerful CPU. The CPU of the control unit J852 implements the new intelligent light system in addition to the Audi lane assist function. Like Audi lane assist, this function works on the basis of images produced by a camera.

In addition to this, the camera control unit J852 feeds camera images to the image processing control unit J851 for processing. However, the control unit J851 will only be available at the launch of the Audi A8 ’10 if the vehicle is ordered with the ACC Stop & Go option.

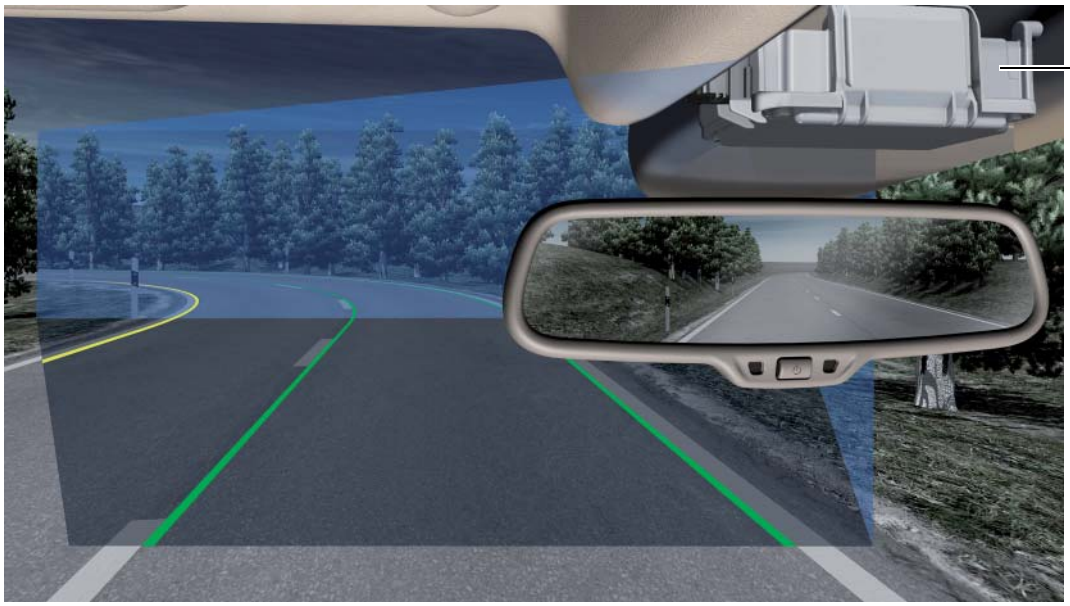


461_002

Installation location of camera

To provide the fullest possible coverage of the vehicle perimeter, the camera is positioned as high as possible on the windscreen (over the base of the rear-view mirror).

The control unit has the same position as the Audi lane assist control unit in other models.



461_003

New features of camera in control unit J852

To meet the new functional requirements, the control unit J852 is fitted with a new camera. The new camera can be differentiated from the camera in the Audi lane assist control unit by the following performance features:

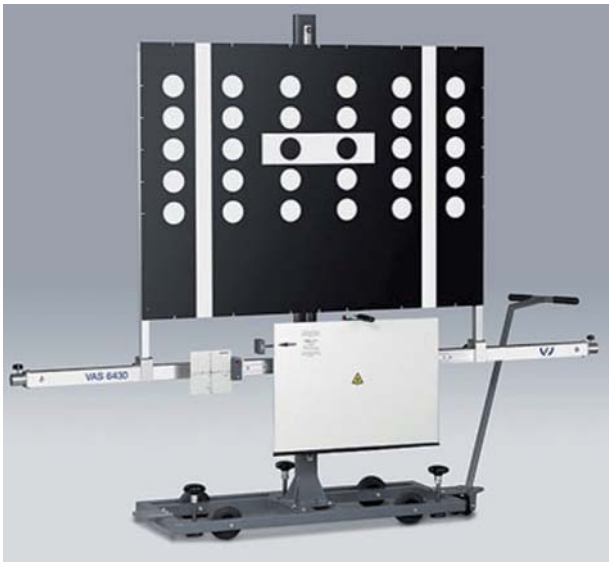
- The new camera has a resolution of 1024 x 512 pixels as compared to 640 x 480 pixels in the previous model
- The new camera is also able to process red colour information in addition to the previous black & white values
- Horizontal opening angle has been increased to 42 degrees

Calibrating the camera

The new camera also has to be recalibrated after certain types of servicing work. For details of the work after which calibration is required, refer to the relevant Workshop Manual.

Functions which process camera images can only operate fully if the camera is correctly calibrated.

The calibrating tool VAS 6430 for this purpose and the calibration process have been completely adopted from the previous system.



461_004

Data bus

The camera control unit J852 is a self-diagnosable control unit and is addressed by the diagnostic tester using **address word 85**.

Address word 5C of the Audi lane assist control unit J759 is no longer applicable in the Audi A8 ’10.

Note
For more detailed information about calibrating the camera and special tool VAS 6430, refer to Self-Study Programme 398.

New features of Audi lane assist

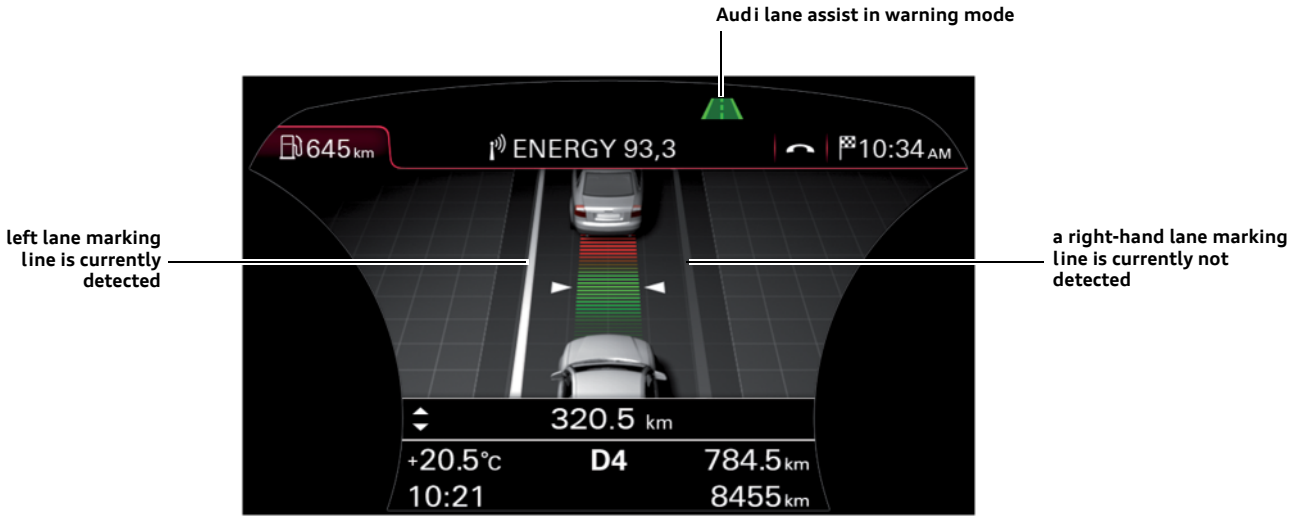
The Audi lane assist system of the Audi A8 ’10 has the following new features:

- Improved lane recognition through the use of a black & white camera also capable of recognising red colour values
- Improved performance in the area of road works thanks to ability to differentiate between lane marking colours
- Reduced steering wheel vibration through the use of a new imbalance motor
- New "single line detection" function
- Added "adapted warning threshold when cornering" function

New "single line detection" function

The "single line detection" function is implemented for the first time in the Audi lane assist system of the Audi A8 ’10. With this new feature, the Audi lane assist system enters warning mode when only a single lane marking line is detected.

This may be either the road edge marking line or the centre line of the road.



461_030

Combined display of Audi lane assist and ACC

Added "adapted warning threshold when cornering" function

The Audi lane assist system offers the customer options for adjusting the warning threshold three at the MMI terminal: early, medium and late. The added function "adapted warning threshold when cornering" applies only to the "medium" and "late" warning thresholds.

When cornering, the Audi lane assist system tolerates the vehicle slightly crossing the centre line. If Audi lane assist detects a broken centre line, the tolerance will be greater than for continuous lines.

Note
For a detailed description of how Audi lane assist works and how it is implemented in the vehicle, refer to Self-Study Programme 398.

Intelligent light system

Function

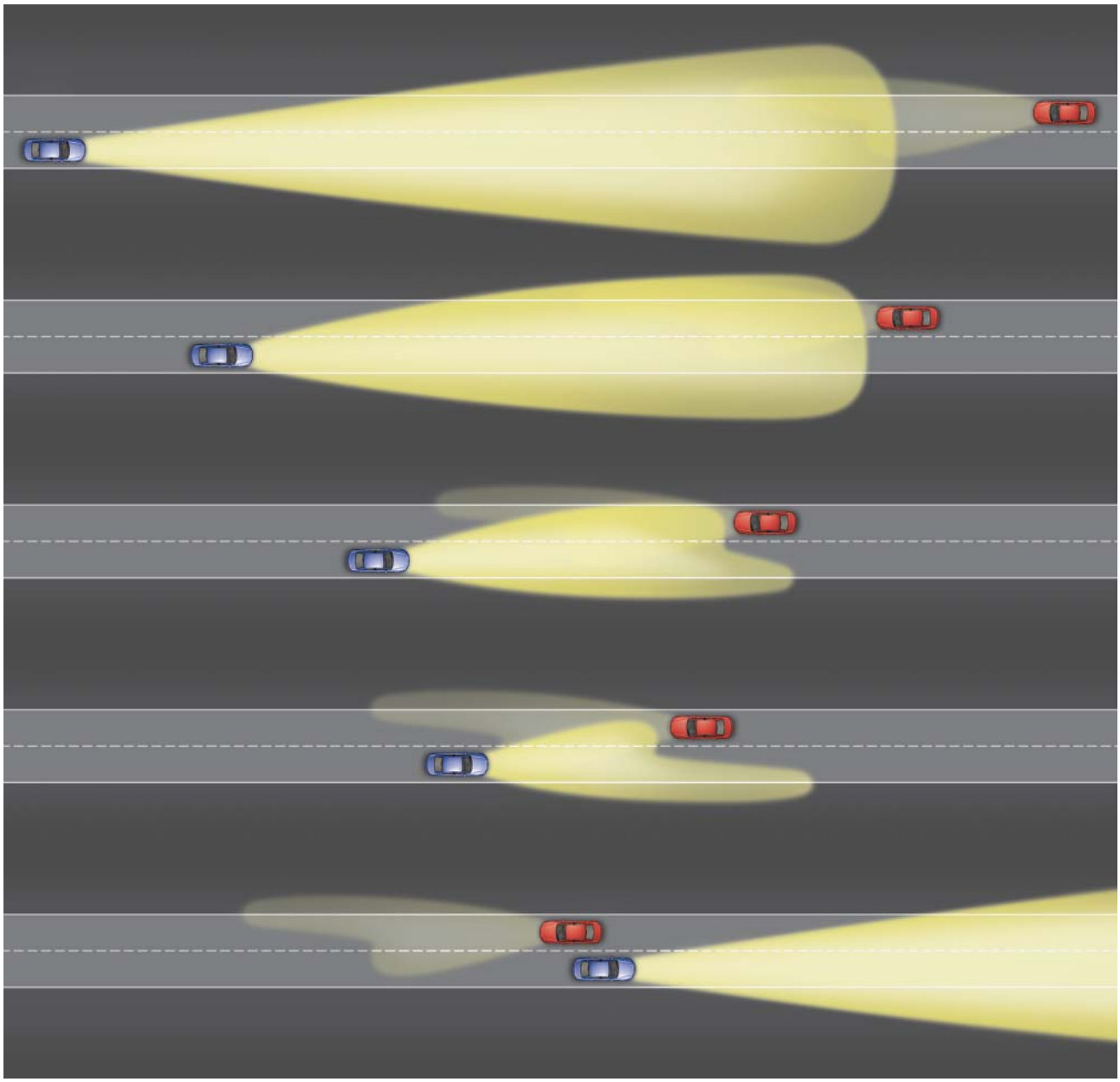
Intelligent light system gives the driver the best possible road illumination at night without dazzling other road-users. The function is a further development of the headlight assist system, which automatically detects whether the actual traffic situation allows the main beam to be switched on when driving at night and, accordingly, switches the main beam on or off.

Unlike intelligent light system, however, the headlight assist system is entirely digital: it switches directly from dipped to main beam. Intelligent light system, on the other hand, regulates the headlight range continuously between low beam and main beam according to the momentary traffic situation.

Response to oncoming vehicle

If an oncoming vehicle is detected, the intelligent light system reduces the headlight range to the dipped beam position to prevent dazzling of oncoming traffic.

After the oncoming traffic has passed, traffic situation permitting, the headlight range is again increased until the headlights are in the main beam position.



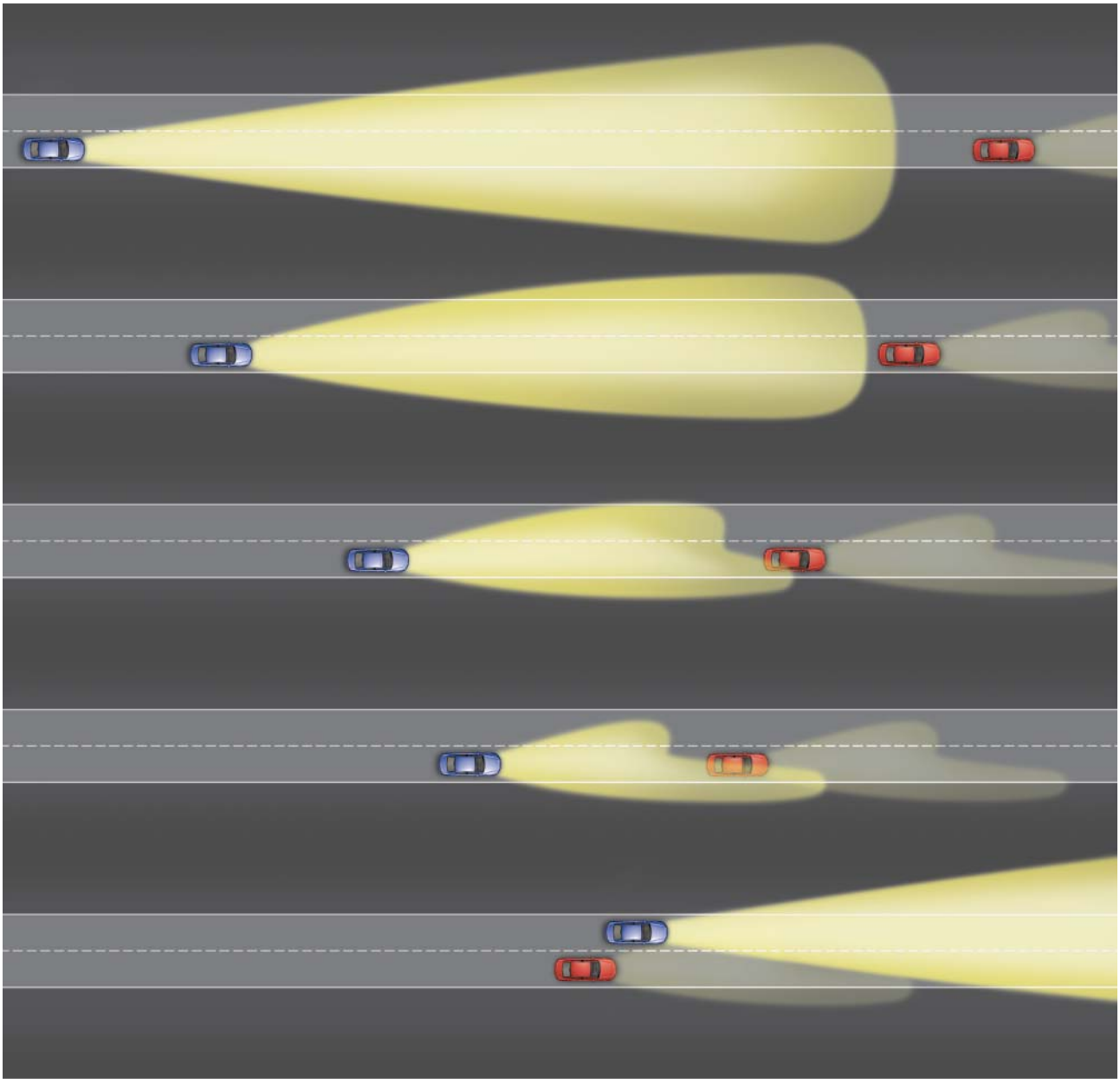
461_005

Response to vehicle driving ahead

When approaching a vehicle driving ahead, the system behaves in much the same way as for an oncoming vehicle.

In this situation, too, the intelligent light system continuously reduces the range of the headlights to ensure that the driver of the vehicle ahead is not dazzled.

After overtaking the vehicle ahead, the range of the headlights is then increased again to the main beam position if the traffic situation permits.



461_006

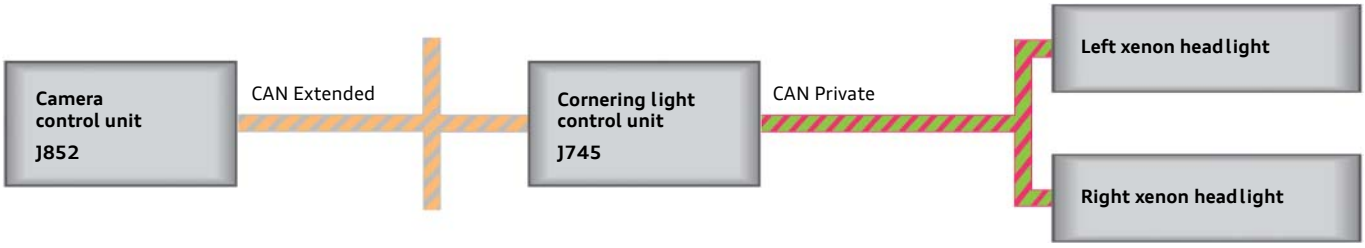
Note
For further information about the headlight assist system, refer to Self-Study Programme 434 "The Audi headlight assist system".

Implementation of function in vehicle

The actual traffic situation is monitored by the camera in control unit J852 and evaluated in the control unit's CPU. The image processing software scans for light sources in the camera image. The control unit software classifies detected light sources as follows:

- Front headlights
- Rear lights
- Street lighting
- Miscellaneous irrelevant light sources

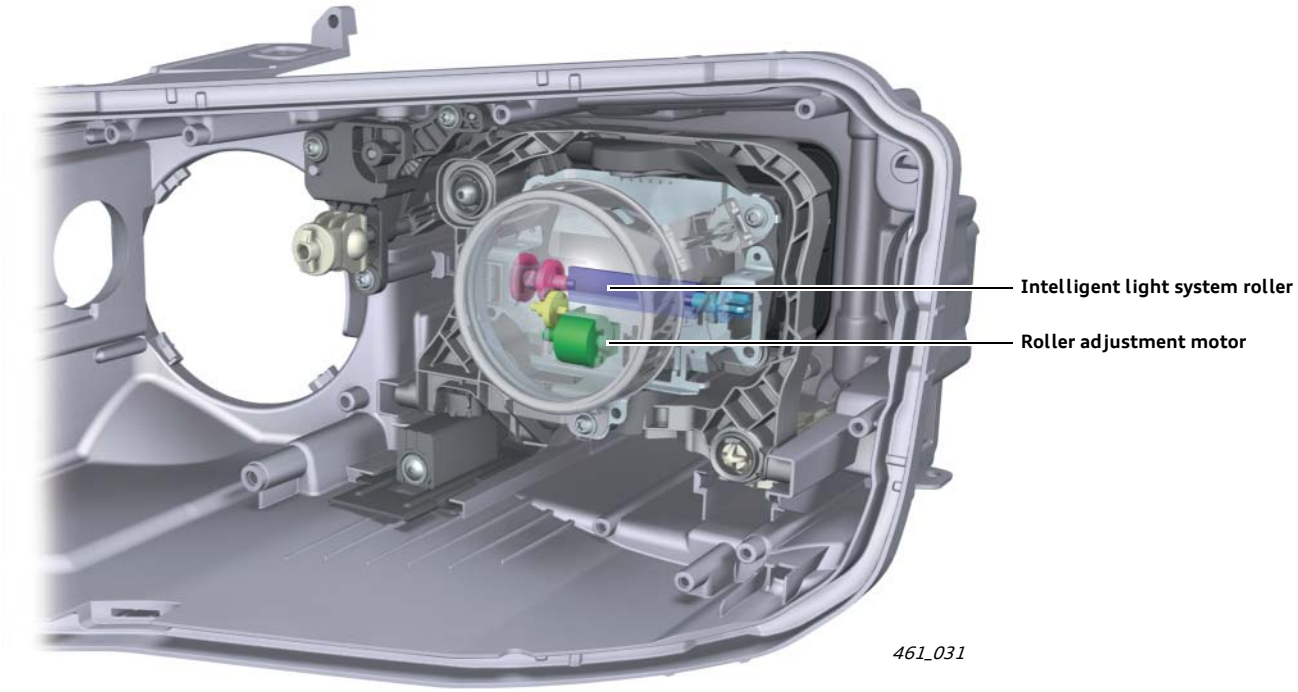
If the light sources can clearly be attributed to a vehicle, the control unit J852 determines the position of the detected vehicle in the camera image and estimates its distance to the vehicle. Both values are then sent to the cornering light and headlight range control unit J745 via CAN Extended bus.



461_007

A roller for adjusting the headlight beam range is integrated in both headlights. The roller has a profiled surface which is rotated by an adjusting motor to illuminate the road as required. In this way, the range of the headlight beam is adjusted.
Control unit J745 determines the required roller positions from two input variables: position of detected vehicle and distance to detected vehicle.

The roller positions are transferred to the two headlights via CAN Private bus. The headlight electronics activate their adjustment motors as indicated by J745 to give the best possible illumination of the road according to the momentary traffic situation.



461_031

Note
The intelligent light system is only available in the Audi A8 '10 in combination with xenon headlights and the cornering light. The cornering light is, on the other hand, available even without the intelligent light system.

Switching the function on and off

To switch the intelligent light system on, two requirements have to be met:

- the rotary light switch must be in the "AUTO" position
- automatic main beam must be activated on the MMI terminal

If both of these requirements are met, the intelligent light system can be switched on by flicking the indicator stalk forwards.

The intelligent light system can be switched off again by pulling the indicator stalk back.

Flick indicator stalk forwards

Pull indicator stalk back

461_008

System status indication on the multi-functional display

The following icon on the multi-functional display indicates that the intelligent light system is active:

461_009

The same icon is used to indicate that headlight assist is active. Given that only one of either function can be installed on the vehicle, no new icon is needed.

Switching on the main beam manually

The driver can switch on the main beam manually even if the intelligent light system is active. This is done by flicking the indicator stalk flick forwards once again.

This turns the main beam on and the intelligent light system off as per the operating logic of the headlight assist system.

Active intelligent light system

The basic requirements for an active intelligent light system are:

- the function must be switched on
- the driving lights must be turned on by the automatic driving light control function
- the camera in control unit J852 must detect a sufficient level of darkness
- predetermined speed thresholds must be exceeded

The speed thresholds for activating and deactivating the intelligent light system depend on whether the system has detected a built-up area or not. A built-up area is considered detected if at least two separate street lights are recognisable in the camera image. The system can differentiate clearly between street lighting and other light sources.

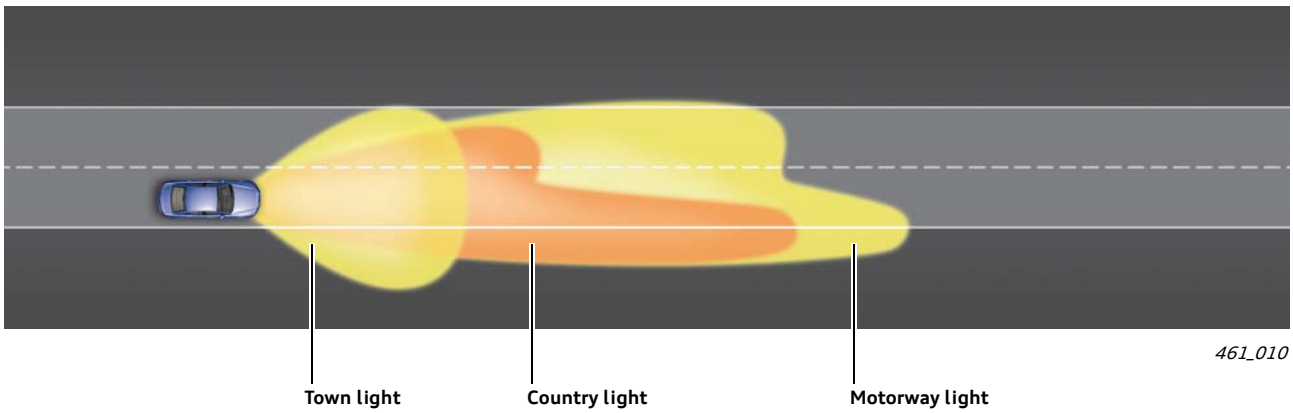
Activation and deactivation thresholds

Built-up area detection status	Activating the intelligent light system	Deactivating the intelligent light system
Built-up area **not** detected	Speed exceeds 60 kph threshold	Speed drops below 40 kph threshold
Built-up area **is** detected	Speed exceeds 90 kph threshold	Speed drops below 80 kph threshold

Roller adjustment and resulting illumination of road

The rotatable rollers in both front headlights are moved into a suitable position by adjustment motors according to the traffic situation. The actual positions of both rollers define the geometry of the beam illuminating the road. The intelligent light system adjusts the range of the headlights continuously between low beam and main beam according to the momentary traffic situation.

The road is always illuminated in exactly same way on main beam. However, this does not apply to the dipped beam. The dipped beam illuminates the road in different ways, depending on road type. This is accomplished by moving the roller into different positions when the headlights are on dipped beam. As far as road type is concerned, a distinction is made between roads in built-up areas, country roads and motorways.

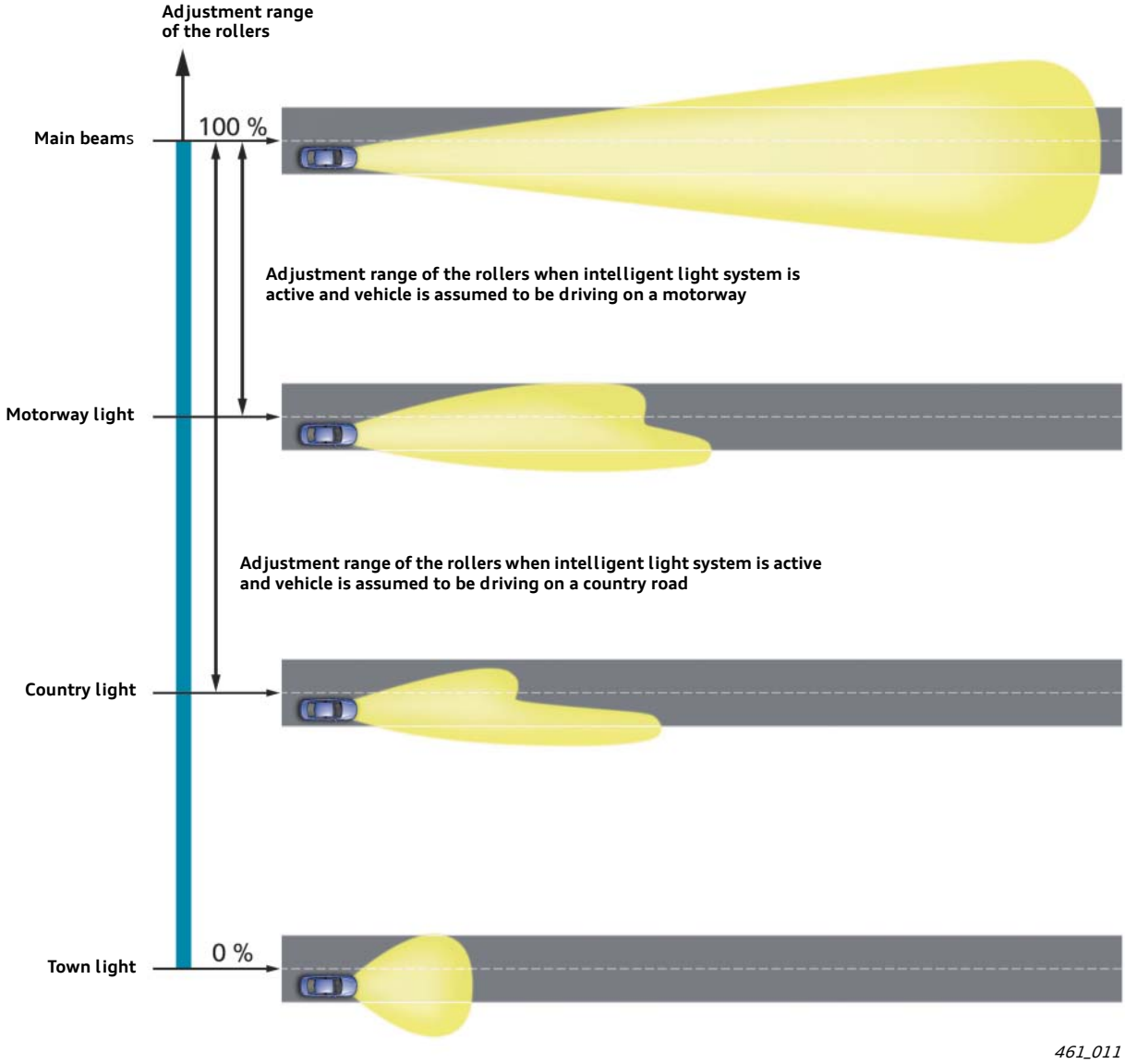


The dipped beam functions as a **town light** when driving in built-up areas or at low speed, as a **country light** when driving on country roads and as a **motorway light** when driving on motorways.

The country light corresponds to the dipped beam in vehicles without intelligent light system.

Adjustment range of the rollers in the headlights

If both rollers are at the bottom end of their adjustment range, they produce the town light from the light emitted by the xenon headlights. To produce town light, both xenon modules are additionally rotated slightly outwards. When the rollers are at the top end of their adjustment range, the road is illuminated by the main beam. The country light and motorway light are produced in two other positions within the adjustment range.

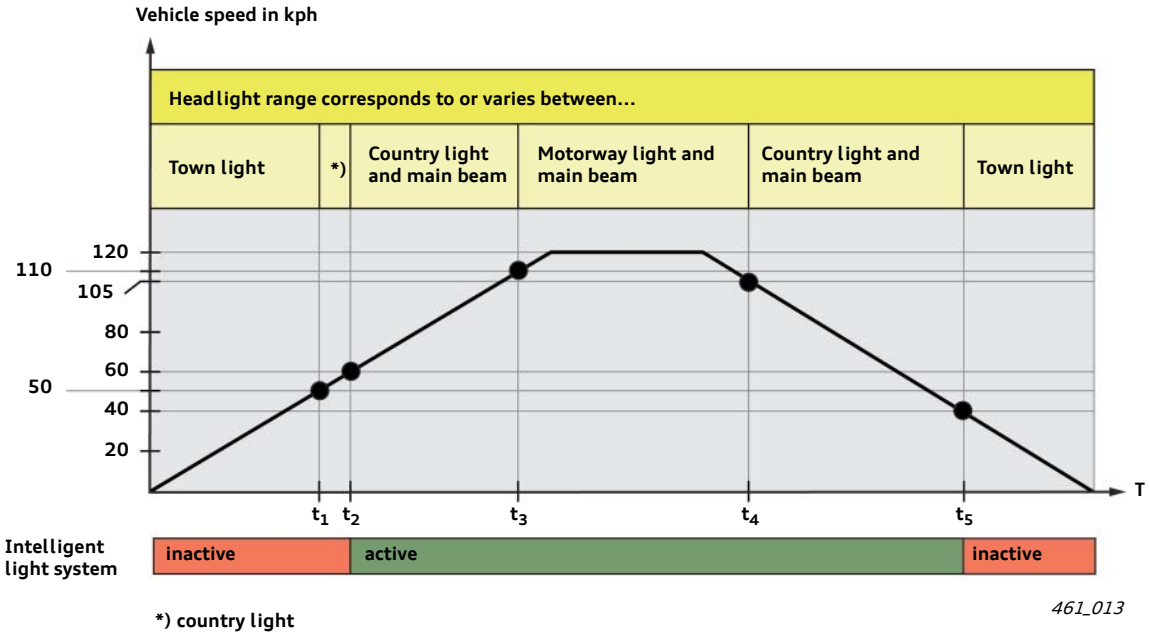


Transitions between town light, country light and motorway light

The momentary speed at which the vehicle is travelling dictates which of the above three forms of light is to be used as the dipped beam. The built-up area detection function of the system also influences its behaviour.

To provide a better understanding of the context, the transitions between town light, country light and motorway light are explained using two exemplary driving profiles:

1) **Assumption: the system does not detect a built-up area during the driving cycle**



Before time t_1:

The vehicle is travelling slower than **50 kph**
The intelligent light system is inactive
The headlight range now corresponds to the town light

Time t_1:

Event: vehicle exceeds a speed threshold of **50 kph**

Reaction:
- The headlight range now corresponds to the country light

Time t_2:

Event: vehicle exceeds a speed threshold of **60 kph**

Reaction:
- The intelligent light system is activated
- The headlight range now varies between the country light and main beam, depending on the traffic situation

Time t_3:

Event: vehicle exceeds a speed threshold of **110 kph**

Reaction:
- The dipped beam now corresponds to the motorway light
- The headlight range now varies between the motorway light and main beam, depending on the traffic situation

Time t_4:

Event: vehicle speed drops below a threshold of **105 kph**

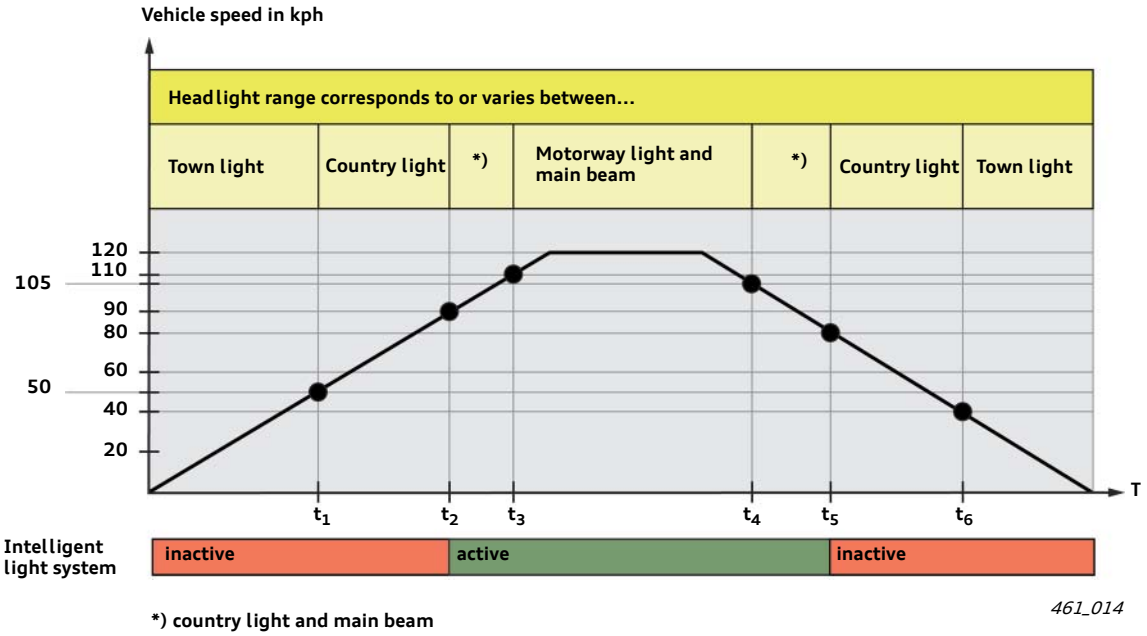
Reaction:
- The dipped beam now corresponds to the country light
- The headlight range now varies between the country light and main beam, depending on the traffic situation

Time t_5:

Event: vehicle speed drops below a threshold of **40 kph**

Reaction:
- The dipped beam now corresponds to the town light
- The intelligent light system is deactivated

2) **Assumption: the system detects a built-up area during the driving cycle**



Before time t_1:

The vehicle is travelling slower than **50 kph**
The intelligent light system is inactive
The headlight range now corresponds to the town light

Time t_1:

Event: vehicle exceeds a speed threshold of **50 kph**

Reaction:
- The headlight range now corresponds to the country light

Time t_2:

Event: vehicle exceeds a speed threshold of **90 kph**

Reaction:
- The intelligent light system is activated
- The headlight range now varies between country light and main beam, depending on the traffic situation

Time t_3:

Event: vehicle exceeds a speed threshold of **110 kph**

Reaction:
- The headlight range now varies between motorway light and main beam, depending on the traffic situation

Time t_4:

Event: vehicle speed drops below a threshold of **105 kph**

Reaction:
- The headlight range now varies between country light and main beam, depending on the traffic situation

Time t_5:

Event: vehicle speed drops below a threshold of **80 kph**

Reaction:
- The intelligent light system is deactivated
- The headlight range now corresponds to the country light

Time t_6:

Event: vehicle speed drops below a threshold of **40 kph**

Reaction:
- The headlight range now corresponds to the town light

Note
The speed thresholds described in this Self-Study Programme were valid at the time of writing of this Self-Study Programme and are subject to change. The intelligent light system is only available in countries where the function meets the national statutory requirements.

Intelligent light system with navigation assistance

Introduction

More and more navigation systems are installed in vehicles every year. Navigation systems are now considered part of the standard package in high end models in particular. This fact can be turned to advantage by making selected navigation data available to in-car control units.

The following navigation data, among other information, is available to control units:

- current road category (country road, motorway, etc.)
- speed limit on this stretch of road
- number of lanes
- approaching corners and their curve geometry
- approaching intersections
- current location is in town or out of town
- country in which vehicle is currently located
- type of traffic (left / right hand traffic)

This navigation data provides the control units with exact information about the road ahead of the vehicle. For this reason, this data is called anticipatory or predictive route data.

This information is used, among other things, to optimally adjust the headlights. In this way, the beam pattern of the xenon headlights is enhanced according to the momentary driving situation.

A different beam pattern can be configured for town roads than, say, for country roads. This also gives more flexibility when it comes to illuminating roads with separate lanes, such as country roads with a steady stream of oncoming traffic.

Advantages of intelligent light system with navigation assistance

A major advantage in making additional use of navigation data is that the current road type can be identified not only by the speed at which the vehicle is travelling and by the street lighting. The control unit can also determine from the navigation data whether the vehicle is currently driving in town, on a country road or on a motorway. The route data also indicates transitions between different types of road. This allows optimal use to be made of the intelligent light system.

The advantage of the intelligent light system with navigation assistance over the version without navigation assistance is that the intelligent light system can be activated on a single-lane country road at speeds as low as 30 kph, which gives additional safety.

The availability of intelligent light system with navigation assistance is currently limited to Europe.

Activation and deactivation thresholds

Road type	Activating the intelligent light system with navigation assistance	Deactivating the intelligent light system with navigation assistance
Road in built-up area	Speed threshold of 60 kph is exceeded	Speed drops below 40 kph threshold
Single-lane country road	Speed exceeds 30 kph threshold	Speed exceeds 20 kph threshold
Motorway or multilane country road	Speed exceeds 60 kph threshold	Speed drops below 40 kph threshold

Note
The intelligent light system is available with navigation assistance by ordering the optional "MMI Navigation Plus" system.

Use of town light

a) Use of town light

To enable the intelligent light system with navigation assistance to use the town light as the dipped beam, the following requirements must be met:

- the vehicle must be in a built-up area

and

- the road must be neither a motorway nor a multilane country road

and

- the vehicle must not be travelling faster than 55 kph

b) Switch-over from town light to country light

To enable the intelligent light system with navigation assistance to again use the country light as the dipped beam again, the following requirements must be met:

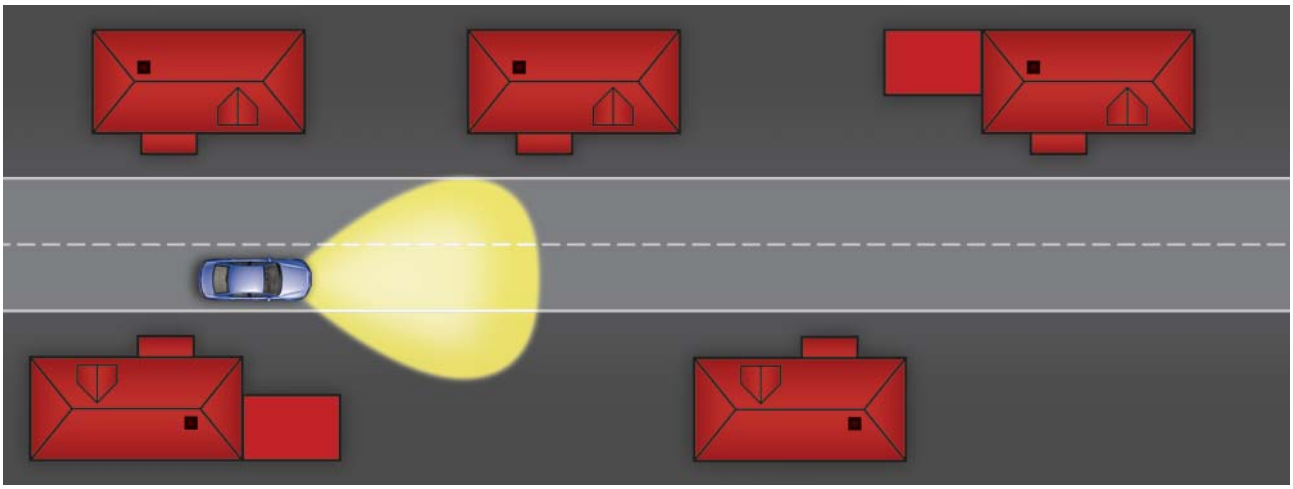
- the vehicle must be outside the built-up area

or

- the road must be either a motorway or a multilane country road

or

- the vehicle must be travelling faster than 60 kph



Vehicle with town light *461_015*

Use of motorway light

a) Use of motorway light

To enable the intelligent light system with navigation assistance to use the motorway light as the dipped beam, the following requirements must be met:

- the vehicle must be on a motorway, motorway ramp or multilane country road

and

- the vehicle must be travelling faster than 80 kph

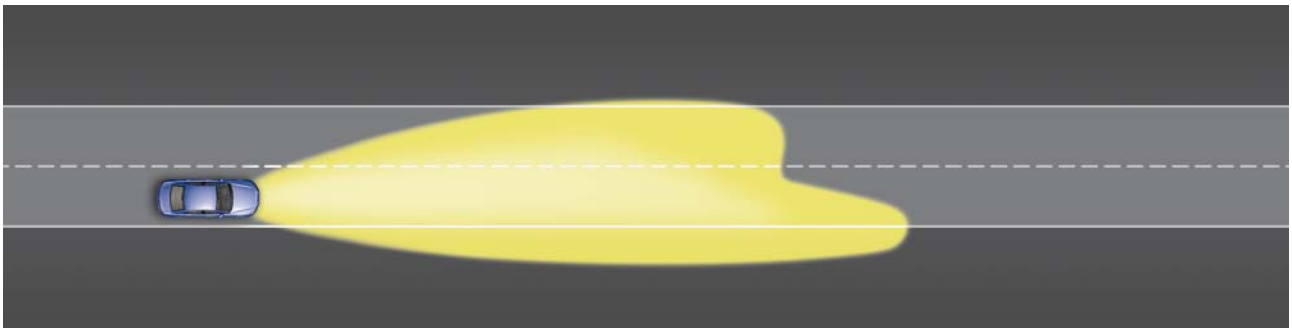
b) Switch-over from motorway light to country light

To enable the intelligent light system with navigation assistance to again use the country light as the dipped beam, the following requirements must be met:

- the vehicle must be on a single-lane country road

or

- the vehicle must be travelling slower than 70 kph

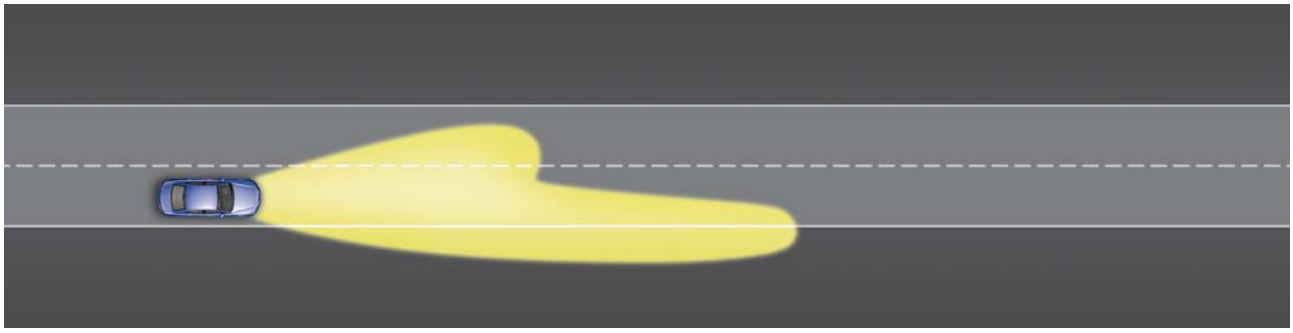


Vehicle with motorway light *461_016*

Use of motorway light

If neither the conditions for use of the town light nor for the motorway light are met, the country light is used as the dipped beam.

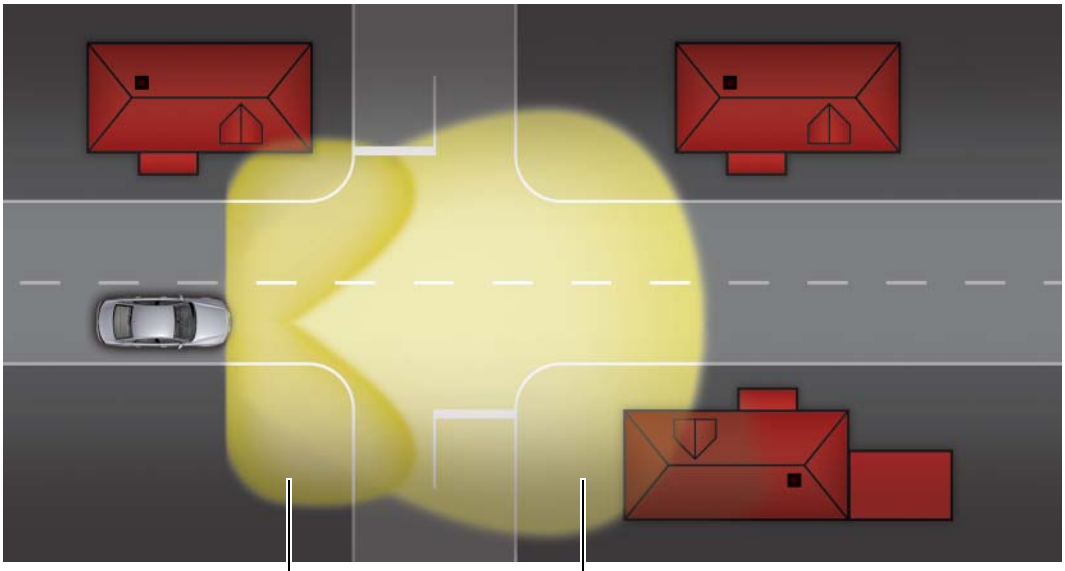
The country light is used even if the vehicle is reversing or if the current vehicle location cannot be assigned to a road type (e.g. when driving offroad).



Vehicle with country light *461_017*

Intersection light

In addition to town light, country light and motorway light, the intelligent light system with navigation assistance also has an intersection light.



461_018

Intersection light **Town light**

The intersection light is obtained by switching on the two static turning lights. It helps the driver to identify side-on hazards at intersections. It comes on shortly before the intersection.

The intersection light always comes on in combination with another light. It is turned on together with the town light when driving in town, or together with the country light when driving on country roads.

Switching on the intersection light

The intersection light is only switched on if the vehicle is travelling slow than 40 kph as it approaches an intersection.

Intersection light off *461_019*

Intersection light on *461_020*

Note
Intersections can be only detected reliably from navigation data so the intersection light function is not available for the intelligent light system without navigation assistance.

Switching off the intersection light

The intersection light is switched off if one of the following conditions is not met:

- the vehicle is accelerating faster than a predetermined threshold rate

or

- the vehicle is more than 15 m away from the last intersection and still more than 150 m away from the next intersection

or

- the vehicle is more than 15 m away from the last intersection, less than 150 m away from the next intersection and travelling faster than 60 kph

Tourist mode

Automatic Tourist mode

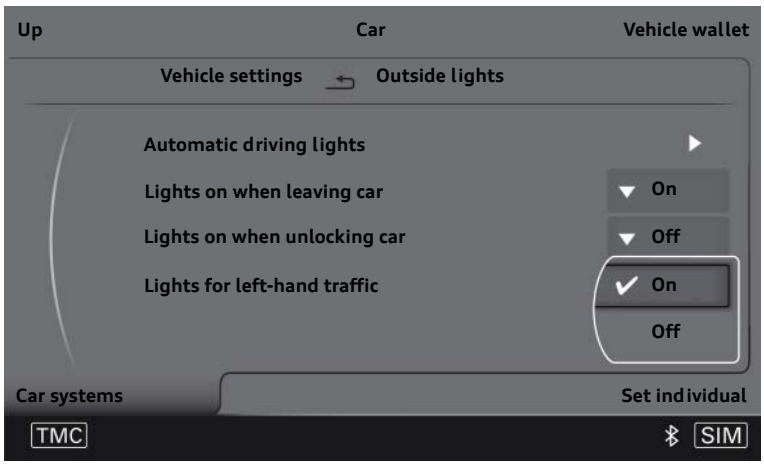
The cornering light and the headlight range control unit J745 can detect from the navigation data whether the vehicle has crossed a national border. The control unit can also determine from the navigation data whether the traffic drives on the left or right-hand side of the road.
If the control unit establishes the vehicle has crossed the border between a country with right-hand traffic and a country with left-hand traffic, the light beam pattern is mirrored and the illumination of the road is adapted accordingly. This takes place automatically and is indicated to the driver by a text message on the multi-functional display.

The mirrored beam pattern is produced by profiled rollers integrated in both headlights.

Manual adjustment of the Tourist mode

The driver can also configure the Tourist mode manually. There is an adjusting function for this purpose on the MMI terminal. After activating this function, the beam pattern of the headlights is mirrored on the road.

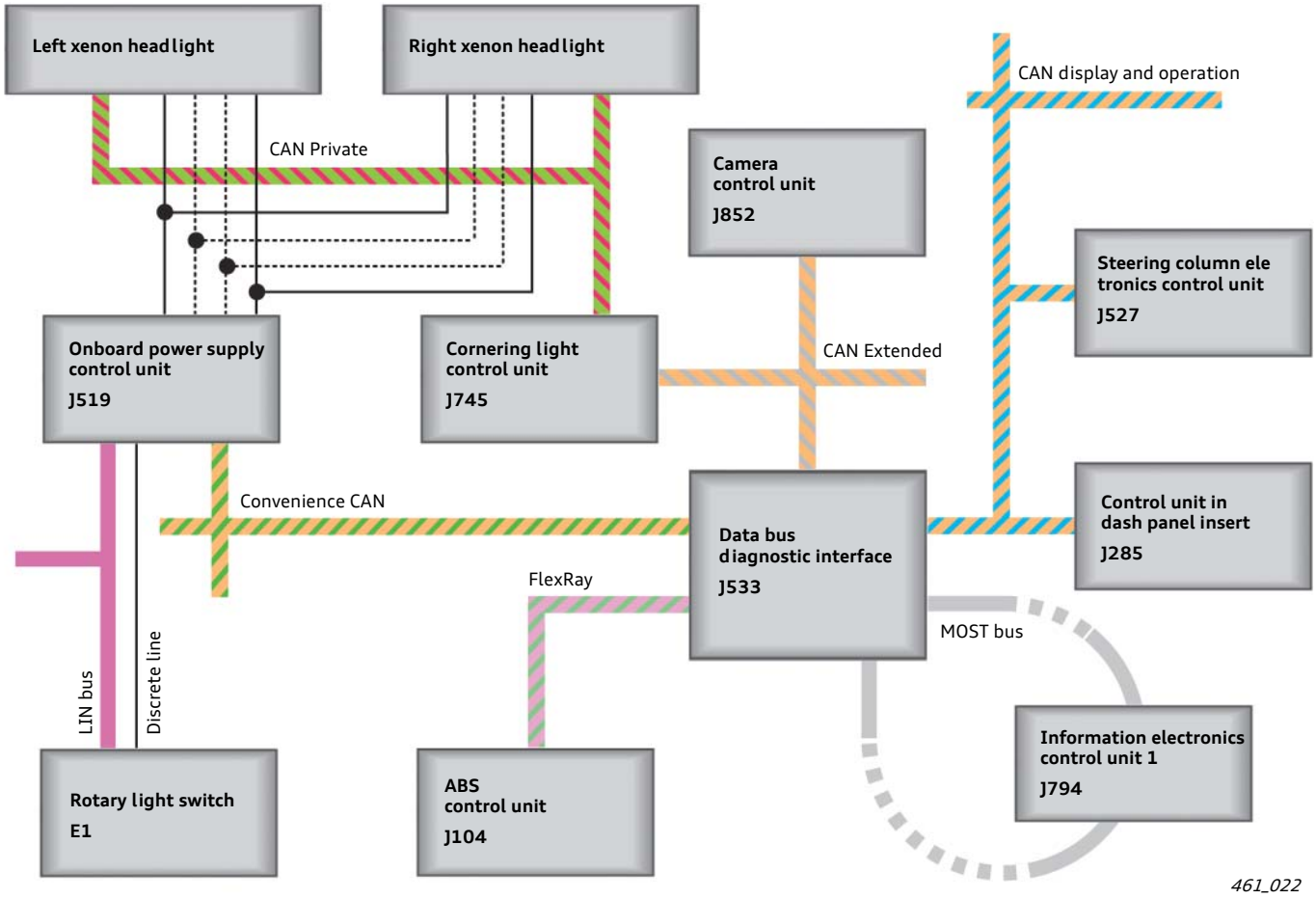
In vehicles which have the intelligent light system without navigation assistance, only the manual adjustment option is available on the MMI terminal.



461_021

Communicating with the intelligent light system

(with and without navigation assistance)



Camera control unit J852

- scans the camera image for headlights and tail lights and indicates the position and distance of detected vehicles via the bus.

Cornering light and headlight range control unit J745

- determines the optimal beam pattern of the headlights based on the data from the camera control unit J852 (and the navigation information) and computes the required positions of both rollers. These positions are then transferred to the xenon headlights.
- activates the two static turning lights which, among other things, produce the intersection light.

Information electronics control unit -1- J794

- transfers selected navigation data to the bus. The navigation unit is integrated in the information control unit 1 J794.
- enables the customer to activate or deactivate the Tourist mode manually.

Onboard power supply control unit J519

- determines the "on" status of the intelligent light system based on the information from the multiple control units (position of rotary light switch, actuation of indicator stalk, etc.) and transfers this information to the bus.

Steering column electronics control unit J527

- reads in the position of the indicator stalk and transfers this information to the bus. The intelligent light system is switched on and off via the indicator stalk.

Control unit with display in dash panel insert J285

- displays information and warnings from the intelligent light system on its display.
- indicates the "on" status of the intelligent light system.

ABS control unit J104

- transfers the current vehicle speed to the bus.

Data bus diagnostic interface J533

- is the interface between the various data bus systems.

The image processing control unit J851

The image processing control unit J851 is a new control unit which processes the image data from the camera of control unit J852. For this purpose, it receives the complete camera image 25 times a second.

A private bus line (LVDS) running between control units J851 and J852 acts as a transfer medium. Other information and variables are also transferred by this route from the camera to the image processing control unit.

461_023

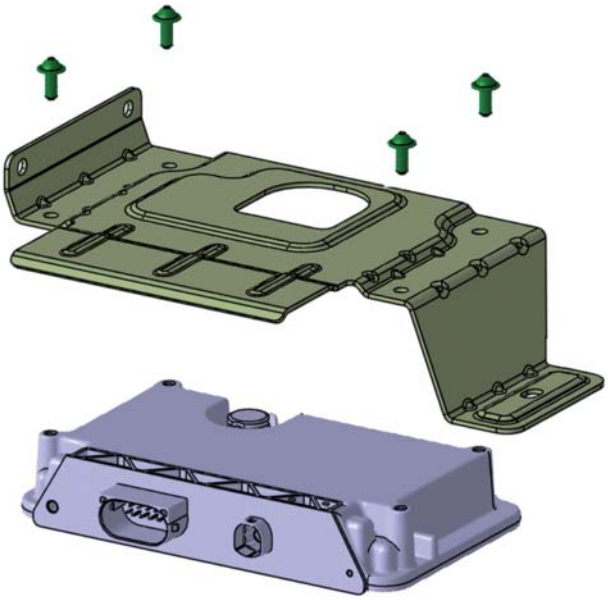
The image processing control unit J851 is only fitted in the Audi A8 '10 if the vehicle has the optional ACC Stop & Go feature. In future, however, other functions which require camera images as input signals will be integrated in this control unit.

These will also include the new Traffic Sign Recognition system, which will be available in the Audi A8 at a later date.

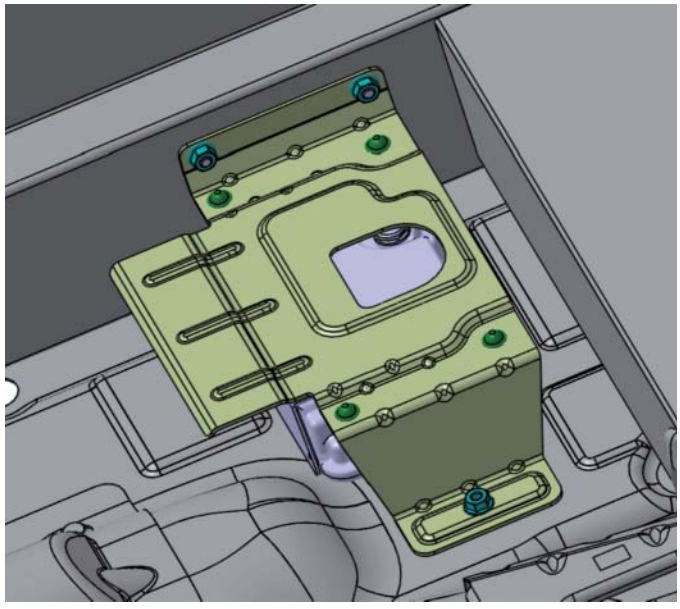
Installation location of image processing control unit

The image processing control unit J851 is located in the footwell in front of the front passenger seat in the vehicle floorpan.

It is secured to a mounting bracket which, in turn, is bolted to the body.



461_024



461_032

Diagnostics

The image processing control unit J851 is a self-diagnosable control unit and is addressed by the diagnostic tester using **address word 8E**.

Functions of image processing system for ACC Stop & Go

ACC assistance by driver assistance systems

A new ACC generation featuring a Stop & Go function is available in the Audi A8 '10. In addition to an extended range of speeds from 0 kph to 250 kph, the most striking new features are the first-time use of dual radar sensors in the vehicle frontend and the systematic networking of the ACC system with other driver assistance systems.

The ACC control units receive, among other things, the following information from control units J851 and J791:

From image processing control unit J851:

- position of vehicles ahead in same lane and in adjacent lane
- information on imminent lane changes by vehicles ahead
- detected objects immediately ahead of vehicle

From the parallel park assist control unit J791:
(park assist control unit)

- detected objects immediately ahead of the vehicle

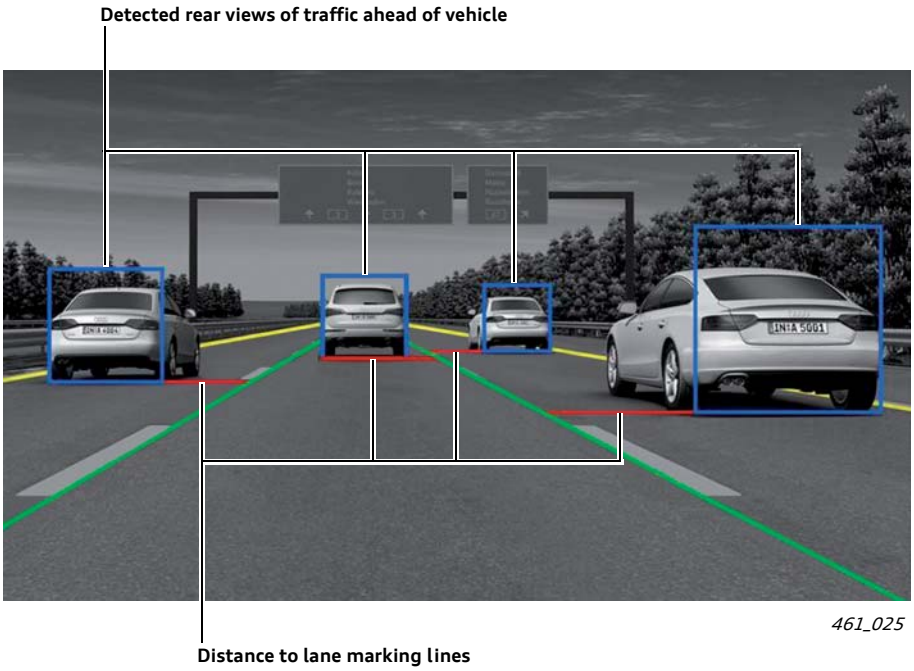
Audi A8 '10 models are equipped with control units for image processing and parallel park assist if equipped with the optional ACC Stop & Go system.

The Audi side assist control unit and the navigation system supply the ACC control units with information. However, they are optional even if ACC Stop & Go is fitted.

Recognition of traffic ahead of vehicle in camera image

To assist the ACC in detecting vehicles, the image processing control unit J851 scans the camera image for vehicles ahead. For this purpose, the system scans the camera image specifically for the rear views of vehicles.

A scan for rear views is adequate because only vehicles travelling in the same direction are relevant when it comes to detecting potential lane changes.



461_025

The image processing system is capable of differentiating between passenger cars, trucks and motorcycles.
If a vehicle is detected, its position is transmitted to the ACC. The ACC uses its two radar sensors to determine the distance to the detected vehicle. The position and distance to this vehicle are, therefore, known and can be factored into the ACC's control algorithm.

Recognition of imminent lane changes

Recognition of vehicles ahead likely to cross over into one's own lane

If a vehicle is detected ahead in an adjacent lane, the distance between it and one's own lane marking line is determined continuously. By continuously monitoring this distance, the system is able to detect whether a lane change is imminent or not. The detection of an activated turn signal by the image processing system is another indicator of an intended lane change.

If an imminent lane change is assumed, this information is factored into the response of the ACC. This results in more comfortable and anticipatory handling with active adaptive cruise control.

Recognition of vehicles likely to leave one's own lane

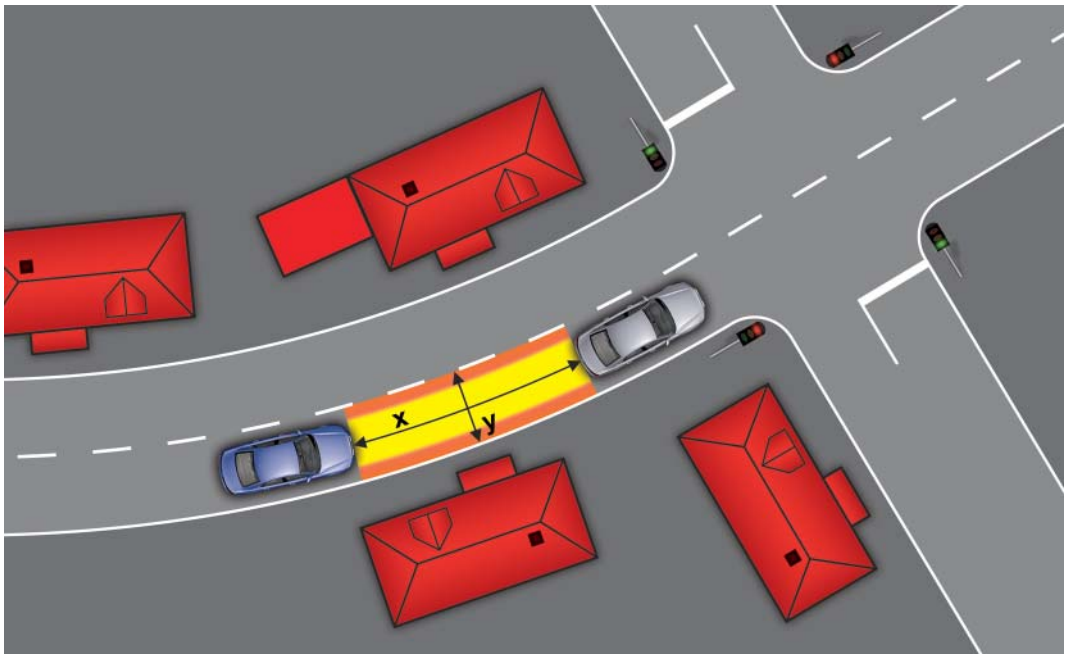
If a vehicle is detected ahead in the same lane, the distance between it and one's own lane marking line is also determined. The distance to the lane marking line nearest the vehicle is always measured. By continuously monitoring this distance, the system is able to detect whether the vehicle is about to leave the lane or not. In this case, too, the detection of an activated turn signal is another indicator of an imminent lane change.

If a lane departure is assumed, this information is factored into the response of the ACC. This results in more comfortable and anticipatory handling with active adaptive cruise control.

Drive-away enabling by ACC image processing system

Care must be taken to ensure that there are no persons or cyclists ahead of the vehicle, particularly when driving at low speed and when setting off again with act are used to detect objectsive ACC. For this reason, the measured variables of other sensors in front of the vehicle.

For this purpose, use is made of both the signals generated by the ultrasonic sensors of the park assist system and the image processing system, which scans the camera image for moving objects.



Area monitored by image processing control unit for drive-away enabling *461_026*

The ACC is notified if objects are detected when the vehicle is stationary or moving slowly (the detection function is active up to a speed of 15 kph). To warn the driver, the ACC then instructs the dash panel insert to sound a gong and display a warning message on the multi-functional display.

The length x of the monitored area ahead of the vehicle extends to 12 m. The width y of the monitored area varies as a function of speed between vehicle width + 20 cm and vehicle width + 40 cm.

Test yourself:

One or more answers may be correct.

1. With which optional equipment is a camera control unit J852 installed in the Audi A8 ’10?

- ☐ a) Audi lane assist
- ☐ b) Audi side assist
- ☐ c) adaptive cruise control ACC with Stop & Go function
- ☐ d) Audi night vision assist

2. Which of the following statements regarding the intelligent light system are true?

- ☐ a) The different types of road illumination are achieved by moving the headlight module
- ☐ b) The intelligent light system is implemented by continuous upward and downward adjustment of the xenon headlights
- ☐ c) The intelligent light system is available only in combination with LED headlights
- ☐ d) The intelligent light system is activated by flicking the indicator stalk forwards

3. Which of the following statements regarding the intelligent light system with navigation assistance are true?

- ☐ a) The cornering light control unit J745 has its own GPS unit
- ☐ b) This optional feature has an additional intersection light function
- ☐ c) The automatic Tourist mode ensures that the mode of road illumination is adapted automatically after crossing the border between a country with right-hand traffic and a country with left-hand traffic
- ☐ d) The intelligent light system is activated at 30 kph when driving out of town on a single-lane country road

4. Which of the following statements regarding the image processing control unit J851 are true?

- ☐ a) It is required for the intelligent light system
- ☐ b) It incorporates functions which are required for ACC Stop & Go
- ☐ c) It is connected to the FlexRay bus system
- ☐ d) It is used for lane recognition by Audi lane assist

Test solutions: 1ac; 2bd ; 3bcd ; 4bc

Self-Study Programmes relating to other driver assistance systems

SSP 398 Lane departure warning system - Audi lane assist

- Functional description
- Displays and operation of the system
- Electrical components
- System overview
- Communication structure
- System calibration
- Diagnostics

Order number: A05.5S00.21.20

SSP 413 The Audi parking system in the Audi A3

- Functional description
- The parking method of the Audi parking system
- System components
- Communication structure
- Diagnostics

Order number: A08.5S00.44.20

SSP 434 The Audi Headlight Assist System

- FFunctional description
- Mode of operation of the headlight assist system
- Displays and operation of the system
- Implementation of function in vehicle
- Diagnostics

Order number: A07.5S00.50.20

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