

Radio

In contrast to previous models, the radio is provided as standard in the E39. In line with design and ergonomic objectives to reduce the total number of display and operating elements in the centre console of the E39, a radio has been designed whose primary functions (volume, station selection buttons, station search, source selection etc.) are operated via the multi-information display (MID) or the operating unit of the integrated radio information system (IRIS). The volume and search function can also be operated via a multi-function steering wheel, this status is then additionally indicated in the text display of the instrument cluster (with IKE).

Radio systems

The following types of radios are offered for the E39:

Trade name of radio	Operating unit	BMW-internal designation
BMW reverse RDS	BMW designation	C32
BMW Business RDS	IRIS or MID	C33
BMW Business CD RDS	IRIS or MID	CD33
BMW Professional RDS	MID	C34
BMW on-board monitor radio	On-board monitor	C23

An anti-theft security code (radio code) is no longer necessary for the radios C33, CD33, C34 and C23 since these radios can only be operated in conjunction with IRIS, MID or on-board monitor. Since the radio set and operating unit of the C32 form one unit, this radio is protected by a code function (activated after disconnecting and reconnecting to power supply).

Operating unit

IRIS (integrated radio and information system)

The IRIS operating unit contains the operating and display elements for:

- Radio functions
- Clock functions

The push-button information on the IRIS is transferred in the form of an I-bus/K-bus telegram to the relevant control unit:

- IRIS radio operation to radio set
- IRIS clock operation to basic instrument cluster / IKE

In turn, these control units send text information via the I-bus/K-bus which is then shown in the IRIS display.

MID (multi-information display)

The MID is used as soon as further optional extras in addition to the functions which can be operated by the IRIS are installed in the vehicle.

Depending on the scope of equipment, the MID contains the operating and display elements for:

- Radio functions
- Clock functions
- On-board computer functions
- Telephone functions
- DSP functions

The components are linked via the I-bus/K-bus. The push-button information on the MID is transferred in the

form of an I-bus/K-bus telegram to the relevant control unit. In turn, the control unit sends text information via the I-bus/K-bus which is then shown in the MID display.

Radio reception

In contrast to a home radio, a car radio is constantly subjected to changing reception conditions. At one point reception is excellent, however, reception may be very poor after just a short distance has been covered. Reception can be best checked by driving in a circle. In this way, the rear window aerial is pointed in all directions.

Rear window aerial

One aerial each for the AM (amplitude modulation) and FM (frequency modulation) bands is integrated in the rear window. The received signal is amplified by the aerial amplifier and is transferred via a high frequency line (HF line) directly into the radio.

Aerial diversity

In the aerial diversity optional extra, one aerial is connected for the AM band and three separate aerials for the FM range. The three FM signals received are switched in the diversity amplifier through to the radio cyclically via the RF line. The radio sends a feedback signal relating to the quality of the received aerial signal (the intermediate frequency signal) to the aerial diversity system. The aerial diversity system decides which of the three aerials has the best reception quality at present and switches this aerial through to the radio until the next measuring cycle is carried out. The aerial (FM1) arranged vertically in the rear window is used in the case of interference in the intermediate frequency signal.

Speaker system

Three speaker systems are offered irrespective of the type of radio. In contrast to the Active and Top HiFi systems, in which an amplifier is interconnected, the speakers are connected directly to the radio in the stereo system.

Stereo system (standard equipment)

- 2 tweeters (high-range speakers) in the front door (directed towards the front passenger opposite)
- 2 medium-frequency woofer speakers in the front door with integrated diplexer for tweeters
- 2 medium-frequency woofer speakers in the rear door

Active HiFi system

Speakers as for stereo (same parts), additionally:

- 2 medium-frequency speakers in the front door
- 2 medium-frequency tweeters in the rear door
- Active HiFi amplifier with
 - vehicle-specific equalizing
 - active diplexers
 - 10 x 15 watt output power

Due to different connector assignments than for stereo, the tweeter is not operated by means of the diplexer integrated in the front speaker but rather it is driven as all loudspeakers directly by the active amplifier.

Top Hi-Fi system

Number of speakers and locations same as Active HiFi, but in superior quality and additionally:

- Subwoofer with 4 speakers under rear window shelf
- Top hi-fi amplifier with:
 - vehicle-specific equalizing

- active diplexers
- speed-dependent equalizing
- volume-dependent equalizing
- speed-dependent dynamic compression
- space simulation (space size, echo)
- speaker - operating time balance
- tweeter output stages 4 x 15 watt
- medium-range output stages 2 x 15 watt
- woofer output stages 4 x 30 watt
- subwoofer output stages 4 x 30 watt
- space simulation as well as user-programmable equalizer operated via MID or on-board monitor operating unit