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"NEW GENERATION" (NG) RADIOS

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Model: E39, E46, E52, E53

Production Date: Starting from 9/00

Objectives

After completing this module you should be able to:

- Recognize the new features of the "NG" radios.

- Identify the components that interact with the radio system.

- Describe the features of the MIR.

- Review how to access the radio service mode.

Introduction

Starting September 2000, a family of new generation radios will begin to be phased into production. The exception to this is the E52 which has been available with the MIR (multi-information radio) NG radio since series launch in mid 2000.
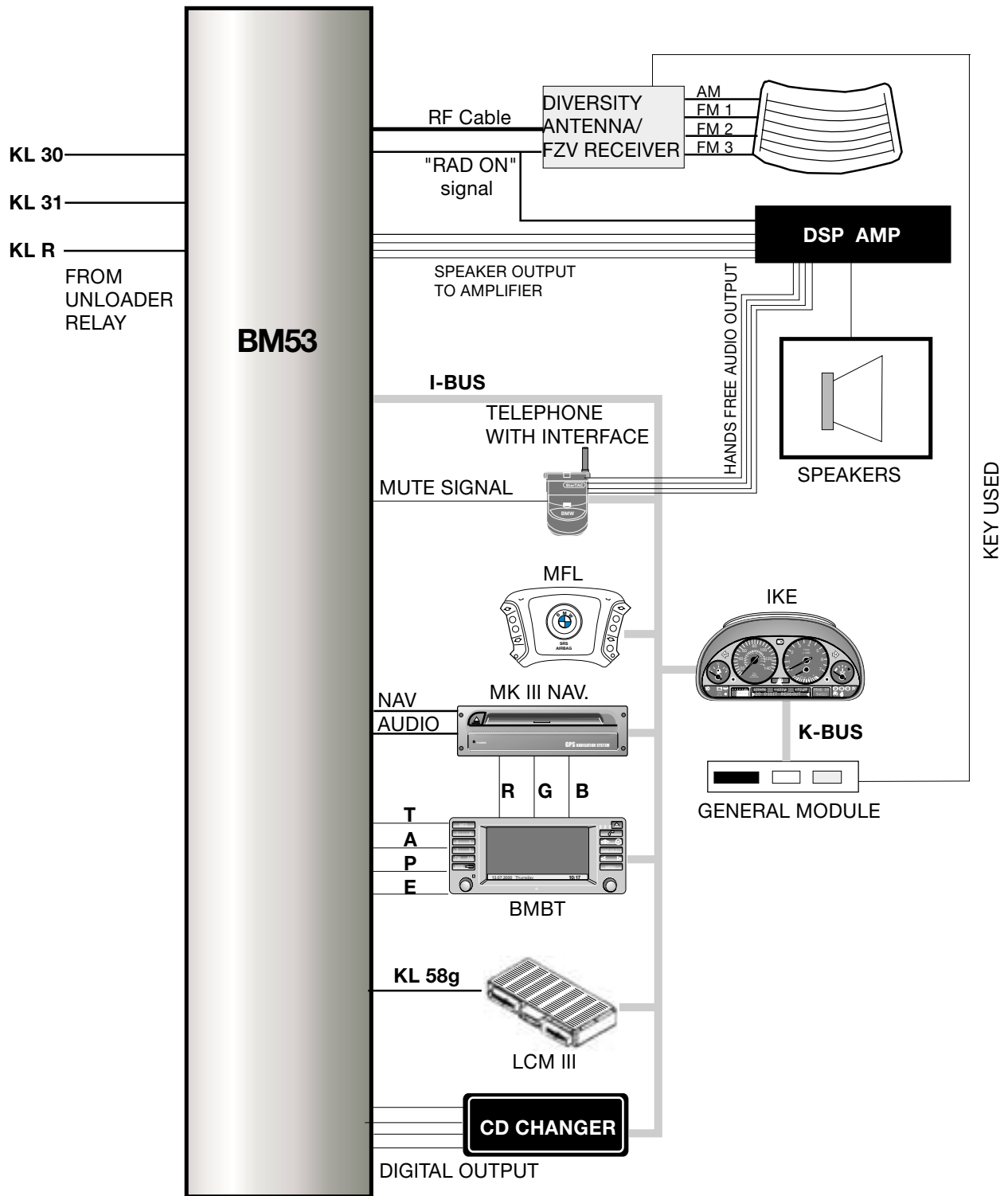
The NG "New Generation" radios will have increased functions:

- Radio can be operated without KL R.

- Radios are world frequency.

- Car memory programming.

- Audio mixing on vehicles equipped with navigation.

The radios external appearance has not changed. NG radios can be identified by their "53" designation.

Overview of the Radios for Each Model

RADIO	TYPE	MANUFACTURER	MODEL	INTRODUCTION DATE
C53	Business with cassette	Philips	E46	3/01
CD53	Business with in-dash CD	Alpine	E46	3/01
C53	Business with MID control and cassette	Phillips	E39/E53	9/00 E39 10/00 E53
CD53	Business with MID control and in-dash CD	Alpine	E39/E53	9/00 E39 10/00 E53
C53	Business MIR without cassette	VDO	E52	Start of production
BM53	Business with BM control	Becker	E46/E39/E53	03/01 E46 02/01 E39 04/01 E53

KL 30

KL 31

KL R

FROM
UNLOADER
RELAY

BM53

RF Cable

"RAD ON"
signal

**DIVERSITY
ANTENNA/
FZV RECEIVER**

AM
FM 1
FM 2
FM 3

DSP AMP

SPEAKER OUTPUT
TO AMPLIFIER

HANDS FREE AUDIO OUTPUT

SPEAKERS

KEY USED

I-BUS

TELEPHONE
WITH INTERFACE

MUTE SIGNAL

MFL

IKE

NAV
AUDIO

MK III NAV.

K-BUS

R G B

GENERAL MODULE

T
A
P
E

BMBT

KL 58g

LCM III

CD CHANGER

DIGITAL OUTPUT

**NG Radio System Overview
Example: E39 with MK III navigation and BMBT**

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NG Radios

Functional Overview

NG Radios

Radio Operation with KL R off
Operation is possible with the key off on the C53 and CD 53 radios. If the radio is turned on with KL R off, it will play at the last stored volume and settings for 16 minutes until the General Module sends the sleep command. No changes may be made to the radio unless KL R is switched back on. The radio can be turned on and off as many times desired.

Diversity Antenna
Antenna diversity has been adapted to the new generation of radios. When the radio is in operation, the diversity control unit is activated by the "RAD ON" signal.

World Frequency Radio
Radios on vehicles sold in the U.S. are world radios. Specific country settings can be made using the service mode. The settings are stored in an EEPROM.

Car Memory
If programmed, when locking the vehicle using the remote transmitter the:
- last station
- Volume setting
- Last audio mode (Tape, FM, CD etc.)

are stored according to the key number used. Unlocking the vehicle with the same transmitter will restore the settings. There is a maximum setting for volume which may be lower than the setting when the radio was last operated.

Clock
Time can also be displayed when KL R is off by pressing the clock button on the Radio/MID.

Backlighting
The LCM/LSZ produces two signals for the control of radio backlighting.
- Hardwired KL 58g
- Lights on/off over the K/I Bus.

The radio contains a photo-cell for adjustment of backlighting to ambient conditions.

Reset and Voltage Monitoring

A radio reset is triggered by under voltage or the internal processor monitor. The reset function restarts the radio, similar to turning it off and back on again. Operating voltage is measured at the KL 30 input. The radio is switched off if the system voltage exceeds 17V to protect the radio, it will switch on when the voltage falls below 16V.

GAL (Speed Dependent Volume)

The speed signal from the IKE/KOMBI is available to the radio over the K/I Bus. GAL is not a feature on vehicles equipped with DSP.

Bus Communication

The radio communicates with other modules via the K bus or I Bus dependent on the model. The information shared over the bus line includes:

- **IKE/KOMBI** - Terminal status (KL 15, KL R)
- **LCM/LSZ** - Lights on
- **IKE/KOMBI link to TXD** - Diagnosis
- **MID or BMBT** - button or rotary knob status.
- **GM** - Key used to lock or unlock vehicle
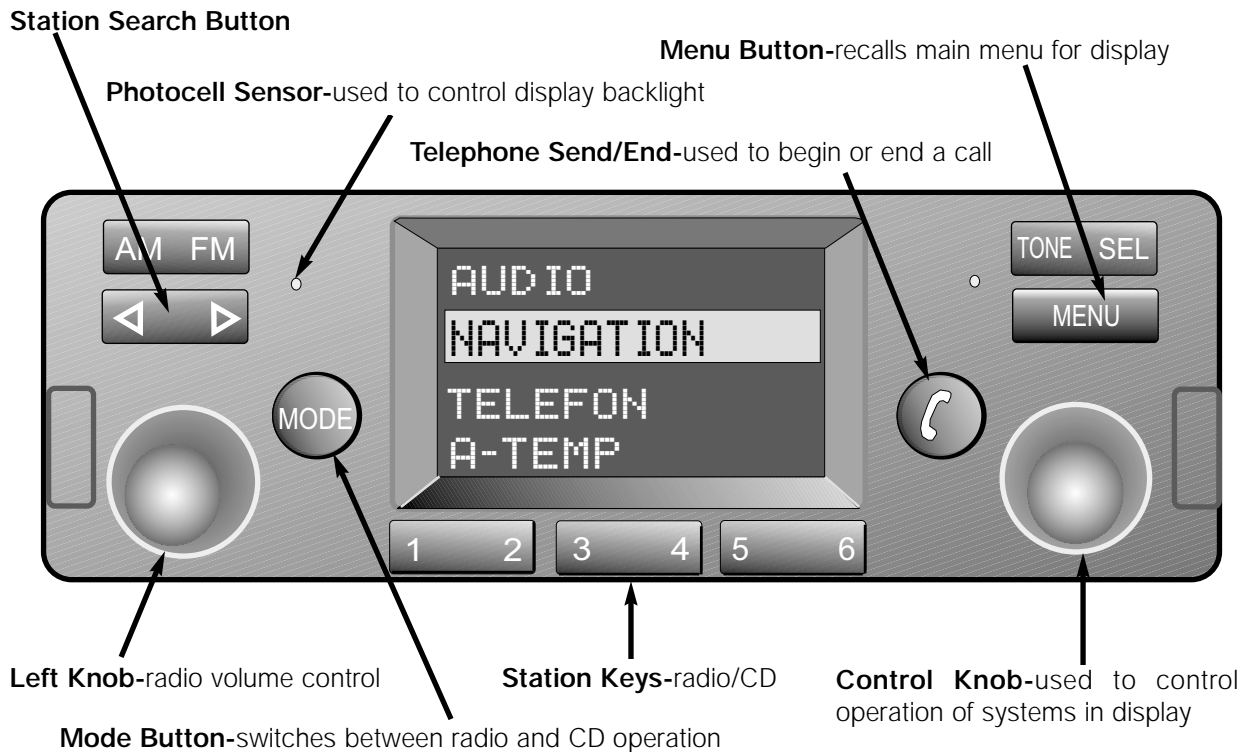- **MFL** - audio controls status

NG radios do not use anti-theft codes. Operation of the radio is only possible if connected to a bus line and the detection of at least one other component.

Multi Information Radio (MIR)

The Multi-Information Radio (MIR) is used in the E52 Z8 and is the first of the NG series of radios. The MIR contains the radio receiver, display screen, and control panel all in one unit. A cassette player is not included.

The MIR is used to control and display the:

- GPS-Navigation System

- Audio system including CD Changer

- Telephone

- Outside temperature

Station Search Button

Photocell Sensor-used to control display backlight

Menu Button-recalls main menu for display

Telephone Send/End-used to begin or end a call

AM FM
◁ ▷

TONE SEL
MENU

AUDIO
NAVIGATION
TELEFON
A-TEMP

MODE

📞

1   2   3   4   5   6

Left Knob-radio volume control

Station Keys-radio/CD

Control Knob-used to control operation of systems in display

Mode Button-switches between radio and CD operation

Every time the MIR is switched on it looks to see if a navigation computer is installed and displays the correct menu options. Text and symbols on the display are generated by the navigation computer and transmitted to the MIR via the "Navigation" Bus. If the MIR does not detect that a navigation computer is connected, the MIR itself will generate it's own display signals. The screen display is monochrome only.

The navigation elements of the MIR will be discussed in the MK3 module.

Audio Mixing
Audio mixing allows the vehicle passengers to listen to navigation instructions without muting the radio or CD player.

On-Board Computer Functions
Outside temperature is the only on-board computer display possible for the Z8.

Workshop Hints

Service Mode for NG Radios

A service mode is available as on previous radios as a diagnosis tool and for changing radio settings. Entering the service mode varies by the device used to control the radio.

To enter the service mode:

C53/CD53 with and without MID:
- Turn on the radio.
- Within 8 seconds, press and hold the "m" button for 8 seconds.
- Scroll through functions using the "+" and "-" keys or the station < > search buttons.
- Turn off the radio to end the service mode.

C53 MIR:
- Turn on the radio.
- Within 8 seconds, press and hold the "SEL" button for at least 8 seconds.
- Scroll through functions using the station < > search buttons.
- Turn off the radio to end the service mode.

BM53 with board monitor:
- Turn on the radio.
- Press and hold the "RDS" button for at least 8 seconds.
- Scroll through the functions using the station < > search buttons.
- Turn off the radio to end the service mode.

BM53 with Widescreen board monitor:
- Turn on the radio.
- Within 8 seconds, press the "INFO" button.
- From the info screen select RDS
- Press and hold the BM control knob for at least 8 seconds.
- Scroll through functions using the station < > search buttons.
- Turn off the radio to end the service mode

Service Mode Functions

1. Serial Number: Display of the radio serial number.

2. Software version: Display of the radio software version. Displayed as (calender week, year, version)

3. GAL: Speed-sensitive volume control. Can be adjusted from level 1-6 using the 6 pre-set audio buttons. Vehicles equipped with DSP do not use this feature.

4. Field strength and Quality (F/Q): The station currently displayed can be assessed for field strength and quality. An "F" (i.e. F15) number is used to indicate the strength of the signal being received by the radio. This is a good test of the antenna system, station signal, and the radio itself. A "Q" (i.e. Q-00) number is used to determine the quality of the radio station including both the audio and RDS signal if applicable.

5. DSP: This function provides information about whether the vehicle is fitted with DSP. The value is displayed as a one (fitted) or zero (not fitted) and is communicated by the DSP amplifier via the I/K bus.

6. TP Volume: Provides adjustment for traffic report minimum volume. Not used in the US.

7. AF: Alternative Frequency tracking setting. Not used in the US.

8. Area: Used to select the appropriate market setting (USA, Canada, Europe, Japan and Oceania). Adjust using the pre-set buttons.

9.Index: Display of the revision index.

Review Questions

1. How can the "NG" radio be distinguished from an earlier radio?_____

    _____

    _____

2. Which was the first "NG" radio to be used in a production vehicle?

    _____

3. Discuss the most significant features that "NG" radios will offer._____

    _____

    _____

    _____

    _____

4. How might the audio system react if the vehicle alternator is producing over 17 Volts?

    _____

    _____