On-board Computer IV/III

Training
Reference
Book

BMW
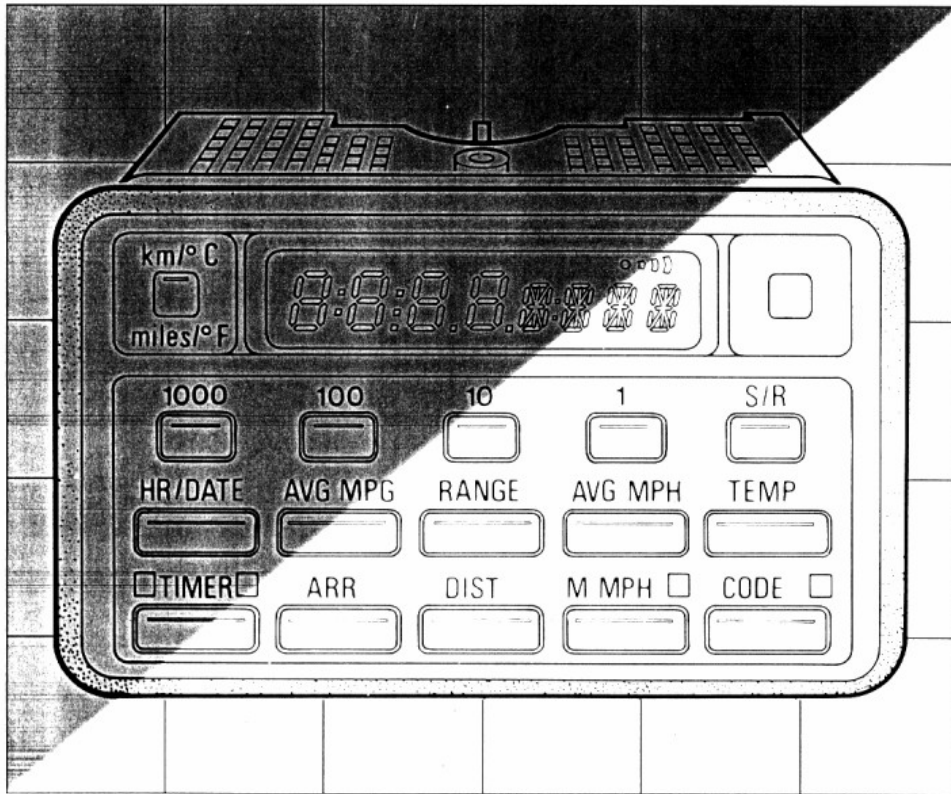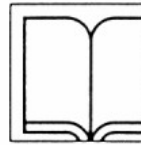
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This training reference book is not intended to be a complete and all-inclusive source for repair and maintenance data. It is only part of a training information system designed to assure that uniform procedures and information are presented to all participants at the BMW Service Training Center.

The technician must always refer to and adhere to the following official factory service publications:
1. Service Information
2. Repair Manuals
3. Specifications Microfiche
4. Technical Reference Information
5. Video Bulletins

Note: The information contained in the training course materials is solely intended for participants in this training course conducted by the BMW Service Training Center.

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For changes/additions to the technical data, please refer to the current information issued by the "Service Division".

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INTRODUCTION

The OBC IV is a multi-information touring computer. It can display information on the computer face or in the check control display module on the instrument cluster.

The computer consists of 11 function buttons and 5 input buttons.

The 11 function button include:

- HR/Date — Time and date.
- Avg. MPG — Average fuel consumption (two functions).
- Range — Traveling distance remaining on fuel in tank
- Avg. MPH — Average miles per hour
- Temp — Outside temperature
- Timer — Programming button for parked venting feature (750 IL) or stop watch
- ARR — Estimated arrival time to destination based on current speed
- Dist — Distance left to destination
- M-MPH — Speed limit warning
- Code — Alarm feature
- KM°C/Miles°F — Changeover button for display.

The five input buttons are: SET/RES, 1000, 100, 10 and 1, A number can be input in any order of decimal digits with the 1000, 100, 10 and 1 buttons. Pressing a button will increase the number of that digit by one. If number "9" has been reached, the next number appearing will be "0" etc. If a button is pressed longer than 0.75 sec., the number will be increased by one automatically every 0.5 sec.

The S/R button has to be pressed to take-over an input number. The function being programmed, will flash on the display until the S/R button is pressed. The S/R button is always the concluding button for all inputs.

ON-BOARD COMPUTER IV
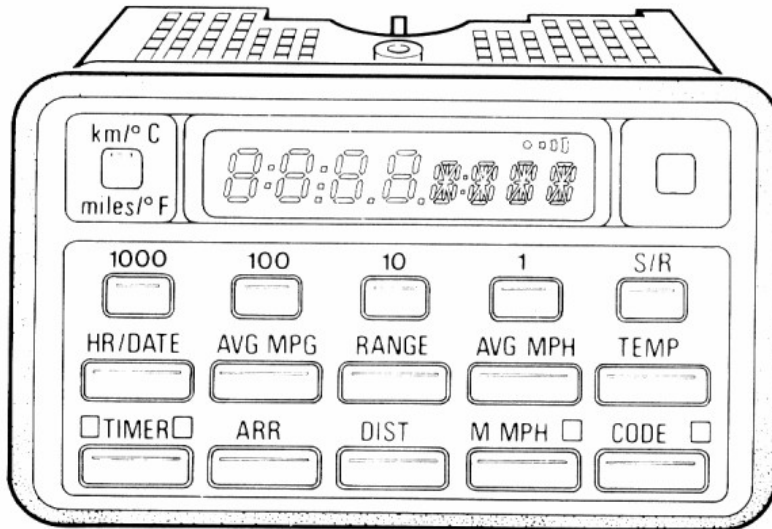
OPERATION OF BC IV

All data is input using the five buttons 1, 10, 100, 1000 and S/R (set/reset).

Function: Clock

• Clock Button

- Time input with number buttons "1000", "100", "10" and "1". Clock is started with "S/R" button.

- A new input is set by S/R

Hour Signal Input:

- Clock button

- Push S/R button (but do not change the time).

Sonic symbol appears in BC. 15 seconds before the end of 1 hour a tone is sounded as a reminder. This function is cleared with "Time" displayed by pressing S/R.

AM-PM

AM or PM is set with the "1000" button.

Date

- Press clock button while time is displayed — date appears.
- Input date with buttons "1000", "100", "10" and "1", text "Dat" flashes.
- Conclude input with S/R.
- Year flashes, input correct year.
- Press S/R.

AVG MPG

- Two fuel consumption functions displayed.
- Press AVG MPG, program 1 displayed.
- Press AVG MPG again, program 2 displayed.
- New calculation starts by pressing S/R for each display.

Range

- Range button: Indicates the driving range on the amount of fuel in the tank at the present time.
- A + sign with the range display indicates the measuring limit of the fuel level transmitter = full tank.
- The driving range will not change on a stopped car (engine switched off).
- Filling up will be recognized after turning off the ignnition as from 5 liters or the reserve contact must have opened.
- Range goes to instant on when reserve contact closes.

AVG MPH

- AVG MPH = indicates the average speed.
- Speed button — S/R = starts a new calculation.

Temperature

- Temp button = Indicates the outside temperature. If temperature is below = 37°F display will switch over to "temp" for 8 sec. (flashing display) + gong, and stay in temp mode until removed.
- The alarm will reset when the temperature increased to + 42°F.
- Temperature display is dampened to rise slowly as vehicle slows to stop. (Prevents engine heat from influencing reading)
- Restarts when vehicle speed > 11 MPH.

Timer
Timer as stop watch with intermediate time taking.

- Timer button + S/R = stop watch running.

- S/R again = stopped time.

- Timer button again with stop watch running = intermediate time: timer button again = running stop watch. Then S/R = stopped total time. 1/10 seconds are displayed with the stop watch or intermediate time taking.

Timer (For Parked Venting)

- used to activate parked car venting system

- venting system operates through I.H.K.A. system

- blower fan runs for ½ hour when activated

- two timed functions available

- to activate parked venting
  - key in position R
  - press timer button
  - "vent off" displayed
  - pressing S/R will activate system

- To Program parking venting:
  - key in position R
  - press timer button twice (T1 displayed)
  - input desired time
  - press S/R
  - 1st LED illuminates (program 1 set)
  - press timer button again (T2 displayed)
  - input desired time
  - press S/R
  - 2nd LED illuminates (program 2 set)

- programming maintained until changed by inputting new time

- to activate parked venting

- press time button (once or twice)

- S/R button after each (system activated)

- 1 or 2 LED's illuminated

- Inverse operation:
  - press temp and time together
  - in heat displayed
  - allows checking of vent function below 60°F (16°C)

Arrival Time (AAR)

- displays estimated time left on trip

- only displays when distance programmed

- calculates from distance and speed signals

Distance (DIST)

- displays mileage left on trip

- To program:
  - press DIST button
  - input mileage
  - S/R button (program set)

M MPH
Speed Limit Warning

- Input, for example. 55 with limit button and, "10" and "1" — set with S/R = LED on. If "V" > than input value = LED flashes = gong.

- LED is on steady when speed is less than "V" limit.

- Gong can only activate again if speed drops below "V" limit by 3 MPH, and again exceeds "V" limit.

- The LED comes on as information that the function is activated. The speed limit value remains in the memory. A new input is made by programming over the old input.

- The function can be deactivated by pressing the limit button a second time. The LED goes out.

- The actual speed can be programmed as the limit by pressing S/R while limit is displayed.

Code

- Ignition lock position "R". *Code button*: Input code with "1000", "100", "10" and "1" buttons. Code is set with the S/R button.

- Now turn ignition key to "0" = LED on 36 hours.

- The engine hood is now monitored regardless of the ignition lock position (alarm horn). Driving away protection is activated when the ignition is switched on.

- Deactivating Code: The reminder gong and flashing display are activated via term, "R" or "15". Input code: and not Via S/R. Three wrong inputs or starting attempt = alarm.

Emergency Deactivation:

Emergency starting procedure if the code has been forgotten:

- Disconnect (for 1 minute) and reconnect the battery.

- Turn the ignition key to position 1; the alarm will sound.

- A time display will appear and run down to zero for 15 minutes.

- After 15 minutes, the engine can be started.

- Emergency deactivation can be stopped by inputting correct code.

KM/°C — Miles/°F

- The change over button converts the currently displayed BC information.

- The display is changed from US to metric values and back again. Each time the button is pressed.

REMOTE CONTROL

The remote display feature of the BCIV is activated by pressing in on the turn signal lever. The BC information will be displayed in the LCD module. Each time the lever is pushed in, the next display will come up in sequence. This will not change the display of the BC.

The LCD module display can be programmed to display any sequence or amount of information from the BC. To program the display:

- Press and hold the turn signal lever in. (For approx. 3 sec.)
- P1 displayed in check control.
- Press the desired function buttons on the BC.
- Press S/R and the program is set.

To cancel the program and return the display to the original sequence:

- Press and hold the turn signal lever.
- P1 displayed in check control.
- Press S/R.

The language of the BC can be changed with the check control button. By selecting another language for the check control, the BC language also changes.

To cancel the display in the check control:

- Press the CC button

  or

- Press the code button

INPUTS TO BC IV

The BC receives the following as inputs:

- Power on terminals   30, 50, R, I5 & 58g
- Ground
- Remote control   From the turn signal lever
- Distance pulse   From the instrument cluster
  (U signal)
- Serial interface   From the instrument cluster (data transfer)
  (LAC)
- Fuel level
- Reserve contact   From the fuel level transmitter
- Injection signal   From the motronic control unit
  (T1)
- Outside temperature   From the temperature sensor (front of vehicle)
- Hood contact   Fron the micro switch
  (code alarm)
- Language change   From the instrument cluster (CC button)
- R × D   Diagnostic line

Inputs → Processing → Outputs → Load

OUTPUTS OF BC IV

Activation of Acoustic Transmitter

There are two leads from the BC to the acoustic transmitter. This makes the activation of different frequencies and loudness possible. Different tones are produced for:

- hour reminder signal
- temperature warning
- code input warning
- speed limit warning

Activation of Starting Interlock

The starting interlock prevents injection and ignition when activated. Starting interlock is activated by a signal from the BC, when a wrong code has been input 3 times or three starting attempts have been made without deactivating the code. The interlock remains even when the battery has ben disconnected and reconnected (see emergency deactivation procedure).

Activation of Alarm Horn

The BC alarm horn will be activated with the activation of the starting interlock.

Activation of Parked Car Venting

The signal is sent ot the IKHA control unit to activate the venting feature when programmed in the BC.

T X D

Connection to the diagnostic link.

TEST FUNCTIONS FOR OBC IV ·

There are 20 test functions availble on the OBC IV:

1. Matrix display — activation of LED's
2. Actual fuel consump. (installations) — liters per 100/Km (Ti & vehicle speed)
3. Actual monentary fuel consumption — liters per hr. (Ti)
4. Fuel consumption for range — AVG last 50 km. (30 miles) dampened
5. Range — not averaged.
6. Present fuel amount — liters — Not Dampened
7. Present fuel amount — determined — Dampened
8. Road speed — K.P.H. — Digital speedometer
9. Battery voltage — Term. 15
10. Sets reserve amount — E-34 only
11. Programming language — E-34 only
12. AVG speed for ARR time — K.P.H. — Avg. speed used for ARR function
13. Arrival time — undampened — not averaged
14. MFG date of ROM
15. Fault memory — for M.F.G. purposes
16. Check of inputs & outputs — for M.F.G. purposes
17. All data for OBC IV — for M.F.G. purposes
18. Horn sound for code alarm — changes alarm horn from pulse to solid
19. Lock or unlock
20. Correction function for V12 fuel consump. — changes fuel consumption calculation

To activate the test program:

- press 10 and 1000
- "test" appears in the display

[handwritten notes: Range 750-1250 etc Set, get actual MPG (2 Tanks) - Real Reading. Programmed MPG x 1000 (BC) changes Range + MPG]

Note: Five of the test functions are unlocked (free) and will display when pressing the test number and S/R.

Test 1, 10, 11, 19 and 20 are unlocked.

The other tests are locked and the computer has to be unlocked to read these test functions.

To unlock the computer:

- press 10 and 1000
- "test" appears in the display
- press 19 and S/R
- "0000 lock" appears in the display
- input the sum of the day and month programmed in the computer
  (example: day 4 and month 6 = 10)
- press S/R (OBC-unlocked)

Important — When testing sequence is completed, the computer has to be relocked.

To lock the computer:

- press 10 and 1000
- press 19 and S/R
- "Frei" is displayed
- press changeover miles/F°-km/C°
- computer locked

BCIII INTRODUCTION

The operation of BCIII is basicly the same as BCIV with less features and functions

The button selection consists of 8 function buttons and 5 input buttons. The functions are: CLOCK/DATE, TIMER, SPEED, LIMIT, CONSUMPTION, RANGE, TEMP. and CODE.

The five input buttons are: SET/RES, 1000, 100, 10 and 1. A number can be input in any order of decimal digits with the 1000, 100, 10 and 1 buttons. Pressing a button will increase the number of that digit by one. If number "9" has been reached, the next number appearing will be "0" etc. If a button is pressed longer than 0.75 sec., the number will be increased by one automatically every 0.5 sec.

The S/R button has to be pressed to take-over an input number. The function being programmed, will flash on the display until the S/R button is pressed. The S/R button is always the concluding button for all inputs.

Operating the on-board computer via the steering column switch will activate the parallel display in the instrument cluster. The function appears in the instrument cluster display in addition to the BC display. Every time the turn signal lever is pressed the display on the BC will also change.

Sonic Symbol for hour signal input
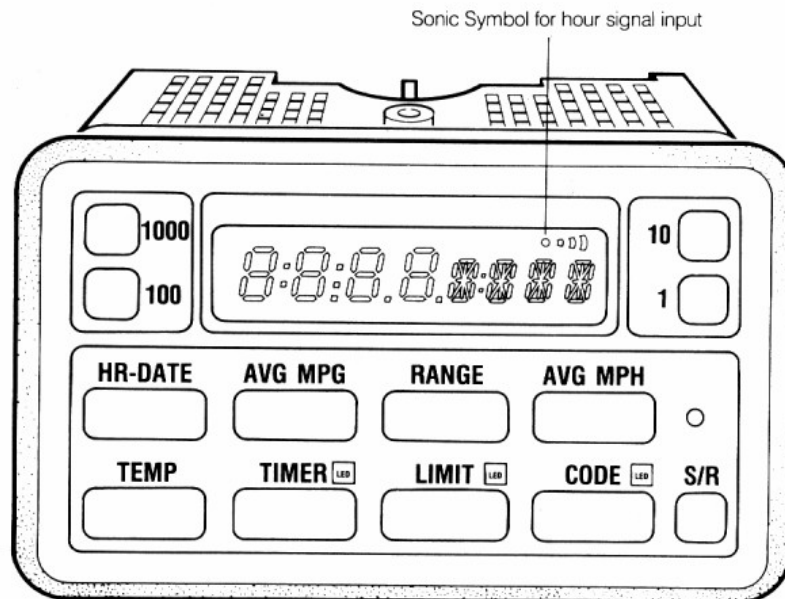
The following is a list of highlighted differences between BCIII and BCIV:

- BCIII is not programmed for display of the year.

- There is only one avg. fuel consumption display.

- The language of the BCIII cannot be changed by changing the check control language display.

- There is no changeover feature for the BCIII display.

- The remote control feature changes the BCIII display as it appears in the check control.

  Cancelling the check control display is done by pressing any BC function button. (Except function currently being displayed or code button).

- The emergency deactivation procedure, of the code alarm, cannot be cancelled by inputting the correct code.

Test Functions of BCIII

Other helping functions can be called by pressing two number input buttons simultaneously. They are not meant for the driver, but are used for testing and servicing.

— Calling the type identification number with information on unit programming: Buttons "1" + "100" (pressed simultaneously).

— Switch in the test mode for the input of various numbers, in order to be able to call certain intermediate results and diagnosis information into the display:

Buttons "10" + "1000" (pressed simultaneously). The word "Test" will appear in the display. After a corresponding number, a pertinent intermediate result appears in the display while pressing SET/RES button.

The following intermediate results or fixed values can be called in this manner.

1. Activation of all elements	=	control of LEDs
2. Actual consumption	=	value which is available at time (combined "TI" & V signals)
3. Actual L/h consumpt.	=	value which is available at time (instaneous)
4. RW consumpt. (averaged)	=	value which is available at time avg. with last 30 miles
5. Range (not averaged)	=	value which is available at time RW — Kilometers
6. Tank volume (not det.)	=	value which is available at time signal from transmitter alone
7. Tank volume (determ.)	=	value which is available at time dampened with support values
8. Actual speed	=	value which is available at time digital speedometer
9. Operating voltage term. 15	=	power supply in (volts)
11. Date ROM (TTMMJJ*)	=	When "ROM" was described = manufacturing date

*TT = Day – Day
*MM = Month – Month
*JJ = Year – Year

Note: Test numbers 12, 13 & 14 are for manufacturing purposes.