installation instructions
For

Multifunction clock or timer

Into a BMW e34
Using the example of a 95' 525tds Touring

1 COPYRIGHT AND LEGAL NOTICES TO TEXT AND PICTURES

These instructions are published on the World - Wide - Web for online access, but the author still owns the copyright.
Saving and printing out for personal use as well as the publication of quotations (short excerpts) with indication of the author and the source are permitted.

The creation, use and non-commercial distribution of copies of the complete documentation in electronic or printed form is permitted if the content including the author attribution remains unchanged and this copyright information is included in the text in a clearly legible form.

Commercial distribution (including use as a main or secondary item in an auction), the creation and distribution of edits (modified, extended, shortened or translated versions) and copies on the web are only permitted with the express written permission of the author permitted.

2 NOTES ON LINKS

The Hamburg Regional Court decided per judgment dated May 12, 1998 that by including a link on ones page, one may also be accountable for the content included there.
According to the regional court, accepting this accountability can only be ruled out by expressly disassociating oneself from this content. The following applies to all these links: I have no influence whatsoever on the design and content of the linked pages. I therefore hereby expressly distance myself from all content on all linked pages in this manual and do not adopt this content as my own.

3 DISCLAIMER

All information in this manual is without guarantee for its correctness and completeness.
The author assumes no liability for any damage to persons or vehicles.
Any use of this guide is at your own risk.

4 THANKSGIVING

At this point I would like to thank everyone (especially www.e34.de) Thank you for helping me with information and/or pictures to create this guide.

5 FEEDBACK

Without feedback, it's hard to extend the guide to as many vehicle types as possible, or to find valid generalizations for simplification. If someone finds other conditions on their vehicle, I would be happy to receive an email (problem, solution, possibly photo) so that I can deal with them in the future.
Of course, the same also applies to errors and inaccuracies, which can certainly creep in, since I can't always really try everything.

Gunnar525@e34.de

6 TABLE OF CONTENTS

7 LIST OF FIGURES

Gunnar525@e34.de

8th BASIC

8.1 contents

These instructions describe the work required to retrofit an on-board computer in an e34. In addition to taking into account various vehicle preparations, the installation of on-board computer accessories such as radio and bonnet contact, alarm horn relay + signal horn and the turn signal switch with on-board computer function are also explained.

8.2 directions

The direction information always refers to the direction of travel. Marked in the direction of travel at the front. Left always corresponds to the driver's side and right to the passenger side.

8.3 abbreviations

B.C	on-board computer
DWA	Anti-theft alarm system
FFB	Radio remote control
GM	Basic module (part of the ZKE)
HR34	Heating control 34 (analogue or digital)
YOURF3	Integrated heating control with filter 3
IHKA	Integrated automatic heating and air conditioning
IHKR1	Integrated heating and air conditioning control 1
IHKR2	Integrated heating and air conditioning control 2
IHKR3	Integrated heating and air conditioning control 3
IHKR/F3	Integrated heating and air conditioning control with filter 3
MF watch	multifunction clock
rm	Relay module (part of the ZKE)
MF timer	with switching function for auxiliary heating and/or ventilation
hourly	parking heater
ZKE	Central body unit (GM & RM - no ZVM)
ZVM	Central locking module (no ZKE)

8.4 Introduction to reading schematics

The circuit diagrams can be found here:
http://www.e34.de/bmw_e34/tips_tricks/schaltplaene/schaltplaene.htm

The plans are structured as follows:

0140 explain the symbols used 0670-0 represent
the power distributors (fuse box in the engine compartment and equipment carrier at the rear) 0670-1 the fuse ratings and connected consumers 0670-2 the distribution of the supply voltage to all consumers 0670-3 the details of the fuses 0670-4 the earth distributors all consumers 0670-5 the diagnostic connections In the following circuit diagrams of the various control units, the supply voltage, fuses and ground connections are not listed in detail, since this is already stated in the chapters just mentioned.

7000 List of all connectors, if necessary with image reference (1st number) and specification of the connector type (2nd number).
7100 Installation location of various plugs and components in the form of
images 8000 Overview of the plug connections of the main cable harnesses
8500 List of all plug connectors with regard to shape and number of poles

Example:

How does the MF clock get to the switching plus (terminal R)?

1. Circuit diagram MF clock: circuit diagram 6213-2 page 1

The clock has plug X501 and goes to fuse F1 via terminal R (switching plus). More at 0670.3

2. Connector X501: circuit diagram 7000 page 29:

X501, behind the center console, 26 pin, green. There is no picture of the position and the plug can be found on 8500 page 1 position 1

3. 0670.3 page 0

If you take a closer look, you will find the N10 module (MF clock) to which the violet-yellow cable you are looking for is connected to pin 8. These colors were not listed in the circuit diagram of the MF clock. It can also be seen that this cable runs via connectors X1428 and X15 to X225 and from there to F1. The switching plus can also be recognized by the designation “R” above the safety symbol.

When looking further at the X15 connector found, for example, there is an image that shows that the connector is installed to the left of the instrument cluster under the dashboard. Incidentally, this is where the wiring harness connects across the dash to the rest of the vehicle. The combination instrument is not attached to it, but eg the hazard warning lights, the cigarette lighter, the MF clock or the BC, and if available the connection for the auxiliary heating/ventilation (8-pin.) above the glove compartment.

In this way, cable color, cable cross-section (the number next to the color), position (often even with a picture) and connector type can be determined.

Gunnar525@e34.de

8.5 Disconnecting / removing the vehicle battery

Before any plug in the vehicle is disconnected, the battery (actually it is a rechargeable battery) should always be disconnected first. It is located either in the engine compartment or under the back seat.

With a sedan, the seat is simply removed by jerking upwards.

When touring, the buckle covers must first be removed. To do this, the small round pin in the cover is removed. An Allen key, for example, is inserted into the hole underneath. This should be inserted until you feel resistance (approx. 3-4 cm). The retaining lug (see arrow) is pushed back with the Allen key and the cover can be lifted off.

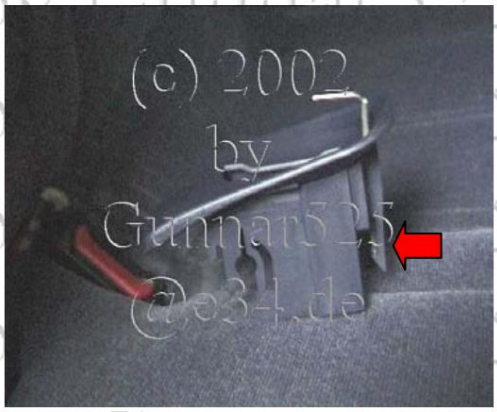

Figure 1: Rear seat belt buckle cover

It is enough to disconnect the ground connection.

ATTENTION: The digital daily odometer reading, date, time, BC measurement data, radio configuration and, after a long time, the error messages stored in the vehicle are lost.

An anti-theft alarm system should also be disarmed beforehand, otherwise it will report the power failure.

Before disconnecting, please make sure that you have a possible radio code within reach.

If the battery is to be completely removed, ground first, then plus is disconnected. When installing, positive is connected first, then ground.

After reconnection, a radio remote control may have to be operated twice so that the saved status matches the actual one again.

A power sunroof must be reinitialized by pressing and holding the button for a few seconds before it can be operated again.

9 THE DIFFERENT WATCHES AND BC MODELS

9.1 The analog clock

Figure 2: The analog clock

Only the pendulum and the cuckoo are missing here!

9.2 The multifunction watch (MF watch)

Figure 3: The multifunction watch

Compared to the analogue clock, there is also a date, outside temperature display, ice warning from <= 3°C and, if desired, a "gong" (memo) on the hour.

9.3 The timer

Figure 4: The timer

It has the same basic functions as the multifunction clock, but additional switching times can be programmed to control an auxiliary heater and/or auxiliary ventilation.

Gunnar525@e34.de

9.4 The onboard computer III

Figure 5: On-board computer III

The BC III was installed in the e32 730, 735 and 750. It has only 2 rows of buttons and a smaller range of functions than the BC IV. The size and pin assignment of the BC III is identical to the BC IV. There was no BC III with a coding plug. More information about the conversion is available under FAQ!

9.5 The onboard computer IV

Figure 6: On-board computer IV

The BC IV was installed in the e32 and e34. There are 2 variants: with and without coding plug. More information about the conversion is available under FAQ!

10 THE CONDITIONS

The MF clock was installed in every model of the e34 series. However, the timer - like the BC - only in models < 518. For the timer retrofit in a 518i, therefore, only an individual solution comes into question, which I cannot provide here.
For the MF clock 8 cables are needed in the plug of the clock. The time switch requires 2 more and one 8-pin. connector above the glove box.

10.1 Checking the existing wiring

10.1.1 The radio expansion

There are screws under the side covers of the BMW radio that fix the device. After loosening it can be taken out.

Figure 7: BMW radio retaining screws

The thick plug on the back has a latch, which is pulled up to open the plug.

Figure 8: Radio connector plug

Depending on the device and equipment, the number of plugs on the back and the way they are attached varies.

10.1.2 Remove clock

The clock (like the BC) is held by a lever in the top right of the radio slot.
You have to pull this towards you to release the device. You should also press from behind - for example through the radio slot or from the side of the glove compartment - so that the lever does not break, since the device may be very tight.

Gunnar525@e34.de

Figure 9: BC / watch ejection lever

10.1.3 The plug

Figure 10: Connection plug BC / clock

To connect an MF clock, this plug must have at least 8 occupied poles - for the timer at least 10! If there are fewer cables in the plug, it must be retrofitted.

10.1.4 The outside temperature sensor

Figure 11: outdoor temperature sensor

The sensor is installed to the right of the left fog light. In the cable to the main headlights, you should be able to find the tied-back, yellow plug, with the exception of a few cases.

10.1.5 The gong

The gong is located in the driver's footwell. If the vehicle has a light warning or check - control (plain text messages in the instrument cluster), it should be available.

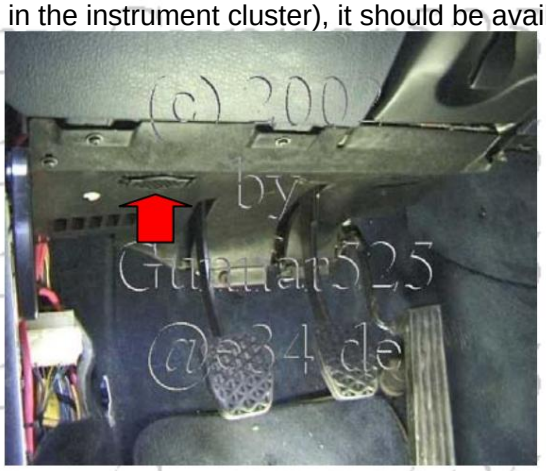

Figure 12: gong

If the gong is not available, but there are enough cables for the MF clock in the clock plug, the plug for the gong should already be available - otherwise the plug is retrofitted together with the cables for the MF clock or timer.

10.1.6 The connection plug for the auxiliary ventilation wiring harness

When installing the timer - if the switching function is to be used - the 8-pin. connector above the glove compartment.
The fairing is held in place by the 3 screws.

Figure 13: Screws left, middle & right Glove box cover

After removing the screws, the cover lowers far enough to see the connector.

Figure 14: Connection of wiring harness for auxiliary heating and/or auxiliary ventilation

Gunnar525@e34.de

10.2 Possibilities with missing cables

10.2.1 Only the sensor connection is missing

If all the necessary cables can be found in the plug of the clock - but there is no tied-back plug for the temperature sensor, it is worth just pulling the 2 wires of the sensor.

10.2.2 Retrofit wiring harness MF clock

The "outside temperature sensor cable set" 61 12 9 401 879 is sufficient for the MF clock. The cable set contains the connection for the sensor, the gong and the missing contacts in the clock plug and a few others that are connected to the left of the steering column. 01 29 9 787 286 is the number of the installation instructions for the cable set.

10.2.3 Outside temperature connection and auxiliary heating/auxiliary ventilation

If the timer is to be installed and both the connector for the sensor and the connector above the glove compartment are missing, the “additional wiring harness for auxiliary heating/auxiliary ventilation” cable set can be used. This is NOT the “auxiliary ventilation cable set” or “auxiliary heating/auxiliary ventilation cable set”!
It contains 2 cable harnesses with connections
for: sensor, gong, 8-pin. Connector above the glove compartment, new clock connector and various contacts that are connected in the power distributor and under the dashboard. A BC should also be able to be installed with the wiring harness. The number of the installation instructions is: 01 29 9 786 642. Unfortunately, the number of the wiring harnesses has not yet been found.

10.2.4 dashboard wiring harness

If the plug for the MF clock or timer does not have enough cable - or if the 8-pin is missing. Plug above the glove compartment for the timer, so the dashboard wiring harness can be swapped out. Note that you need a wiring harness from a comparable vehicle. There are differences with regard to EH gearbox yes/no as well as ASC yes/no and check control yes/no.

If no exactly matching cable harness can be found, the individual cables can also be transplanted. However, the basic difference with / without check - control also applies here!

10.3 Retrofitting the temperature sensor connection

If there is no tied-back plug for the outside temperature sensor (this should only apply to a few vehicles), the two wires for the sensor can be retrofitted "individually".

Figure 15: Temperature sensor cable end on the left next to the steering column

The cables are laid differently depending on the year of construction and design.

	E34 model year 88 (with CC - station wagon)
sensor plus x770:2; 0.5bl/rt – x71:7; 0.5 b/rt/ye – x34:2; 0.5 bl/rt/ge sensor ground	
x770:1; 0.5 br/gr – x71:8; 0.5 br/gr – x34:3; 0.5 br/or	
	E34 model year 91 (with CC - station wagon)
sensor plus x770:2; 0.5 blu/rt/ye - x34:2; 0.5 bl/rt/ge sensor	
ground x770:1; 0.5 br/or - x34:3; 0.5 br/or	
	E34 model year 94 (without CC - station wagon)
sensor plus x770:2; 0.35 blu/rt/ge - x15:17; 0.35 bl/rt/ge sensor	
ground x770:1; 0.5 br/or - x1160 (ground distributor in the power distributor)	

Ideally, these should follow the cables of the main headlights to the power distributor in the engine compartment (rear left) and lead through this into the interior directly in front of the plugs in the last picture.

Gunnar525@e34.de

10.4 Dashboard - replace wiring harness

Since the BC IV can also be installed when the dashboard wiring harness is replaced, a corresponding description can be found in the BC IV installation instructions.

However, before you start working with the dashboard, you should check whether the counterparts to the connectors X15, X251 and, if applicable, X34 of the A. board have all the signals required for the MF clock / timer. The wiring diagrams can differ depending on the vehicle, equipment (with / without check - control) and year of construction!

11 INSTALLATION OF THE MF CLOCK / TIME CLOCK

11.1 Remove radio

There are screws under the side covers of the BMW radio that fix the device. After loosening it can be taken out.

Figure 16: Retaining screws BMW radio

The thick plug on the back has a latch, which is pulled up to open the plug.

Figure 17: radio connector plug

Depending on the device and equipment, the number of plugs on the back and the way they are attached varies.

11.2 Remove analogue clock

The clock is held by a lever in the top right of the radio slot. You have to pull this towards you to release the device. You should also press from behind - for example through the radio slot or from the side of the glove compartment - so that the lever does not break, since the device may be very tight.

Figure 18: **BC / watch ejection lever**

Now the new clock is inserted and the radio is installed again.

12 THE PARKING VENTILATION

So that the auxiliary ventilation function can be used via the timer, a small wiring harness and a relay box must be installed.
The necessary steps correspond exactly to those for installing the auxiliary ventilation in connection with the BC IV, which is why the more detailed description can be found in the installation instructions for the BC IV.

Gunnar525@e34.de

13 FAQ - FREQUENT QUESTIONS AND ANSWERS

question	answer
The display or the buttons of the MF clock / Timer are only partially or not at all illuminated.	The MF clock / timer has 3 light bulbs for lighting, which can sometimes break. Remove, test bulbs and replace if necessary.
I drive an e34 - 518i and want one Retrofit timer	The time switch was never installed in the 518i, so only one comes for installation Individual solution in question.
I drive a particularly old BMW e34 > 518i. Can I use a MF clock or timer retrofit?	The oldest known to me, successfully converted (BC, with indicator lever and display in the station wagon!) Vehicle is an e34 525i-m20 from 8/88!
I want the MF clock / timer retrofit, but only lead into the plug 3 cables.	See chapter “Checking the existing ones Cabling"
The outside temperature shows -30°C.	If the environment is > -30°C (warmer), this may be the reason: The MF clock / timer is not correctly connected to the temperature sensor (Contact problems on the plug) - or this is missing.
I installed the MF clock / time switch, but I can neither on outside temperature change or set the date / time	Date and time can only be set in Set key position 1 or 2. The MF clock / timer recognizes this status via pin 8, which is connected to terminal R (ignition plus). is. This cable is not required for the analog clock, as can be seen in the circuit diagrams. The lighting of the MF clock / time switch is also available without the cable after pressing the date/time only about 10 seconds. active. With cable she turns in key positions 1 and 2 automatically.
I'm looking for a source for the needed ones parts.	Scrap yard, car recycler, Internet or newspaper. I don't have any left!
What is a gong?	A gong is a gong is a gong. The gong 'gong' once when the temperature falls below 3°C and for a very long time if you leave the light on. If it doesn't 'gong' yet: gong through the text Replace the bell and read again!

14 PARTS OVERVIEW

designation	use	Part number approx.	NP '02
Gong with holder	E31....E46, X5, Z3	65 81 8 360 995	35€
outdoor temperature sensor	E30...E36, Z3	65 81 8 350 779	20€
Cable set outside temperature sensor	E34	61 12 9 401 879	25€
Wiring harness (middle main wiring harness)	E34	vehicle specific!	300€
Outside temperature / digital clock (MF clock)	E32, E34	62 13 1 374 288	120€
Aperture outside temperature / digital clock - German (MF clock)	E32, E34	62 13 1 374 291	10€
Outside temperature / digital clock (time switch)	E32, E34	62 13 1 389 551	190€
Aperture outside temperature / digital clock - German (timer)	E32, E34	62 13 1 374 296	10€
Without slot on the control panel			
Auxiliary ventilation cable set	E34	61 12 8 359 188	40€
Auxiliary heating / auxiliary ventilation relay box	E34	61 36 1 391 724	100€
With slot on the control panel (e.g. IHKA)			
Cable set auxiliary ventilation	E34	61 12 8 351 218	25€
relay box auxiliary heating / auxiliary ventilation	E31...E34	61 31 1 379 737	90€
relay K4 hourly ventilation at IHKA without hourly ventilation.	E32, E34	61 36 1 390 383	12€
Relay box bracket (additional screws)	E34	61 31 1 389 004	14€

Gunnar525@e34.de