

CoPilot *national plus* Version 4.0 Manual

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1. Main program

The use of the CoPilot Rallye Computers is distinguished by a always the same, simple operation scheme:

- Press >MODE< until the desired function appears in the lower display line, then press >OK< to confirm.
- adjust the desired value or status with the keys >+< and >-< and once more confirm with >OK<.

This corresponds to a dialog between user and computer, which allows You to work as quick as possible with CoPilot Rallye Computer in a fast and secure way.

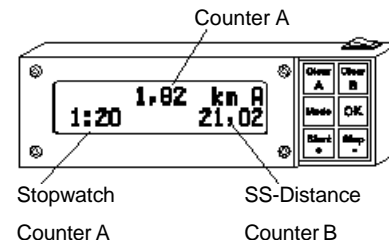
All counters and timers are still working, even if they are not displayed, while you press >MODE<.

All values are preserved in the memory, even if you turn off the power.

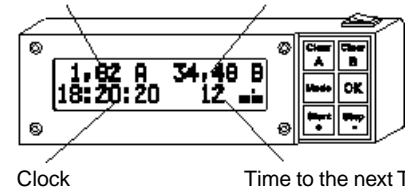
The keys >Clear A< and >Clear B< zeroes the Counter A and B. Counter A could be remote zeroed by an external switch.

1.1 Change display

This function allows You to switch between a display for special stages (picture 1.1.a.) and a display for road sections (picture 1.1.b.). You change only the way of displaying the data, not data itself.



Picture 1.1.a.
Display for road sections



Picture 1.1.b.
Display for special stages

For example:

Press >MODE< to change the display. In the second line appears >change display ?<, then confirm with >OK<.

1.2 Select Tyres

It is necessary for an exact distance measurement to regard the different tyre dimensions. This must be done with the tyre calibration function (see 2.3.). Together with every calibrated tyre you should store a text for this type of tyre. So during the rally You have only to choose the desired tyre.

For example:

You want to change from a gravel („185/70 SG90“) to a slick tyre („205/55 Slick“). Press >MODE< until >select tyres?< appears and confirm with >OK<. The following is displayed:

>Text:185/70 SG90<

>Tyre No. 3<

Search with >+< and >-< for in until you find:

>Text:205/55 Rain<

>Tyre No. 0<

Now press >OK< and this tyre with its calibration faktor is valid.

1.3 Set distance and time

The downcounting SS distance counter is to show You at every time the remaining distance to the finish of the stage. This counter is also used for the autom. stopwatch.

For example:

You have just passed the time control and now your are waiting for the next section. The SS distance is 23,89 km and the time for this road section is 42 minutes. Press >MODE< until >set Dist./Time?< appears and confirm with >OK<. Adjust with the keys >+< or >-< until the value is 23,89 km. Then press >OK<. Now set the time 42 min in the same way and confirm with >OK<. Just before you start the special stage press >START<. In the display appears a "S". Whith the first turn of the wheels the "S" changes to "Z" , the SS-Distance is counting down, the time is counting down and the automatic stopwatch is counting up till the SS-Distance is zero.

1.4 Change counter A/B

With this function You could configurate the two counters A/B to countup, countdown or stop.

For example:

You missed a crossing on a road section and must turn. Now Counter B has to count down, until you reach the missed crossing. Press >MODE< until >change Counter B ?< appears in the display, then confirm with >OK<. Set the down counting mode with >+< or >-< and return with >OK<.

1.5 Service Display

To display the quantity of the petrol in the fuel tank, press >MODE< until the lower line of the display shows >service display?<. Press >OK< and you get all the informations you need at the service: Fuel, actual time and the remaining time for the next time control. Press >MODE< to end this display.

1.6 PC-Datatransfer

All data (tyre text,interval times, fuel calibration) stored in the Rallye Computer, can be read and write via RS232 Interface. A komfortable Software for IBM kompatible PC/Laptop is delivered with the Rallye Computer. The communication starts if you connect PC and Rallye Computer:the display shows > RS232 Data <. When you finish the data transfer the Rallye Computer invites you >disconnect PC<. During the data transfer all counters are inactiv.

2. Calibration program

Different to the main program, which starts, when you turn on the computer, the calibration program, must be called in a special way: Press >MODE<, while you turn on the computer. This double key operation is to prevent any unintentional change of stored data. In the display appears:

```
>CoPilot nat+ 2.0<
>select language? <
```

The calibration program has five functions:>select language<,> set time <,> calibr. tyres <,> test inputs < and > calibr. fuel < .

You reach the main program if you answer >Cancel OK?< with >OK<.

2.1. Select language

This function allows you to select the language of the CoPilot Rallye Computer. You can switch between german, english, french and spain.

2.2 Set time

This function is used to set hours, minutes and seconds of the clock.

For example:

You want to set the clock to 20:33:00. Confirm > Set clock OK?< with the key >OK<. It is displayed:

```
>hours 18:20:12<
>with +,- und OK <
```

Now you can adjust with >+< or >-< the hours and set with >OK<. It appears now:

```
>Minutes 20:20:12<
>with +,- und OK <
```

Adjust Minutes and seconds in the same way.

2.3 Calibrate Tyres

This function gives you the opportunity to calibrate 10 different tyres, each with text, to recognize them later in the main programs function >select tyres< (see 1.2).

For example:

You want to calibrate a 205/55 slick tyre. Press >MODE< until >select tyres ?< appears and confirm with >OK<. Now you see the following text:

```
>Text:*****<
>Tyre No. 0<
```

Select one of the 10 memory places (Tyre No. 0 to 9) with the keys >+< und >-< and confirm with >OK<. Under the first character appears a blinking bar. Now you can set this character by scrolling the alphabet with >+< and >-< until you got the „2“. Confirm with >OK< and set the next characters. You can set 11 characters or numbers in this way. If the last one is set and confirmed, you get the following message:

```
>press clear A+B <
> STOP to cancel <
```

If you only want to change the text, press >STOP< to cancel, otherwise go on with the calibration by pressing >Clear A< and >Clear B< common.

This double key operation is again to prevent any unintentional change of stored data. In the display appears:

```
> stop car and <
> press START <
```

Fit the tyres and place the car in front of a 10 meter distance. Press

>Start< and you will see:

```
>move 10 mtr then<
> press STOP 000<
```

The value in the lower right corner of the display counts up, while you move the car over the exact 10 meter distance forward. Reaching the end press >Stop<. The calibration is finished.

```
> 205/55 slick<
>ist calibrated 0<
```

2.4 Testprogram

The test program shows you the correct function of the probe and the remote switch. Press >MODE< until >Test inputs OK ?< appears and confirm with >OK<. This display appears:

```
>wheel probe <
>remote switch <
```

Moving the car, the symbol behind „wheel probe“ must switch between open and close. A correct connection of the remote switch change the symbol in the display behind „remote switch“ from open to close, if you press the remote switch. Another pressing of >OK< shows you the value of the overall counter:

```
>all:000000 km<
```

Press once more >OK< to finish the test program, or press >Clear A< and >Clear B< common, to reset all stored data (inclusive overall counter, tyre data and fuel calibration data).

2.5 Calibrate fuel

Select the function like above with >MODE< and >OK< and choose one of the four memory places (Fuel No. 0 to 3) with >+<, >-< and >OK<. Similar to the tyre calibration function above you can now cancel if you only want to change the fuel No. Press >Clear A< and >Clear B< common to make a new calibration. Now you are invited to set the maximum contents of the tank (use >+<, >-< and >OK< to adjust). Start with an empty fuel tank. Turn ignition on and fill up to the petrol quantity, which is displayed and confirm each with >OK<. Please pay attention to the fact that the fluid has to be calm after each filling. If all 25 values are stored the calibration is complete.

3. Mounting

This chapter describes the electrical and mechanical mounting of the Rallye Computers. Please pay attention on this, because a faulty connection or fitting can cause a damage!. Although you have to make sure, that the mounting position did not cause any danger to the passengers in case of an accident.

The complete delivery contains:

- CoPilot Rallye Computer
- Cable (2 m) with Sub D Plug (9 pol female)
- Screws M5x15
- Manual (German/English)
- PC-Software

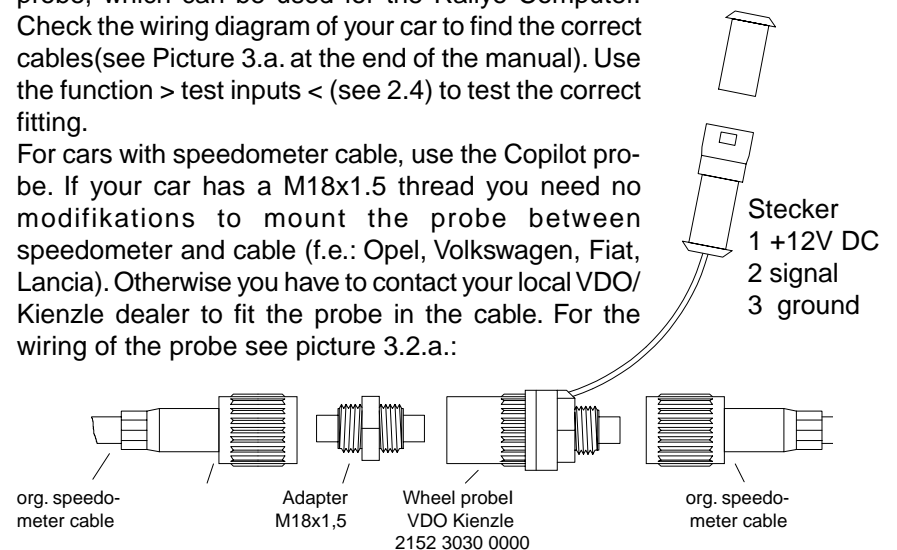
3.1 Power supply

Connect the white cable with +12V DC. Take a fused (1A) circuit, which is not connected to the ignition switch. All data are preserved in the memory, even if you turn off the power. The brown cable has to be connected to ground.

3.2 Probe

Cars with electronic speedometer are equipped with a probe, which can be used for the Rallye Computer. Check the wiring diagram of your car to find the correct cables (see Picture 3.a. at the end of the manual). Use the function > test inputs < (see 2.4) to test the correct fitting.

For cars with speedometer cable, use the Copilot probe. If your car has a M18x1.5 thread you need no modifications to mount the probe between speedometer and cable (f.e.: Opel, Volkswagen, Fiat, Lancia). Otherwise you have to contact your local VDO/Kienzle dealer to fit the probe in the cable. For the wiring of the probe see picture 3.2.a.:



Picture 3.2.a Wheel probe connection

3.3 Remote zeroing

The Copilot Rallye Computer has the opportunity of remote zeroing of Counter A. Connect the switch to the grey cable and ground. It is possible to use several switches (f.e. for the drive during the training, see picture 3.a.). Use the function > test inputs < (see 2.3) to test the correct fitting.

3.4. Fuel gauge

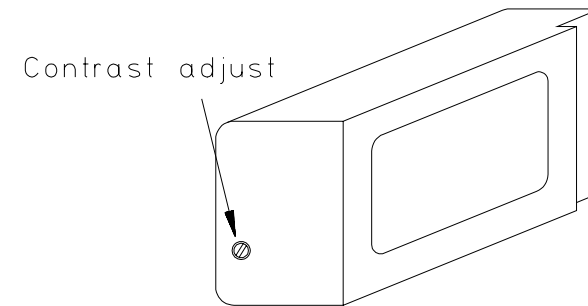
If you want to use the function >fuel< you have to connect the black cable with the fuel gauge of your car (see picture 3.a.). Please connect a 120 Ohm/1W resistor instead of the normal instrument, if you did not longer use it.

3.5. PC-Connection

Use the RS232 interface of your IBM compatible PC/Laptop to connect the Rallye Computer. For this connection you can use a standard RS232 extension cable.

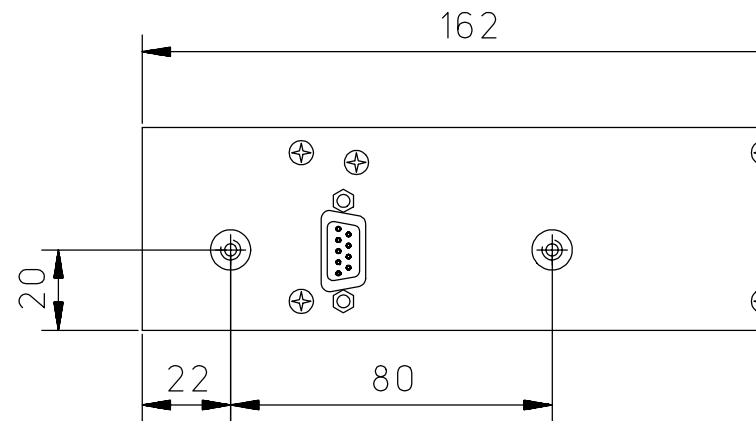
3.6. Contrast adjustment

The contrast of a LC-Display depends on the temperature. So it could be necessary to change the contrast in very high or low temperatures. Use the small potentiometer at the left side of the housing (see picture 3.6.a.).



3.7. Mechanical fitting

The picture below (3.7.a.) gives you the information to make a adapter plate for your car. Please use only the delivered screws. Longer screws may cause a damage in the CoPilot Rallye Computer.

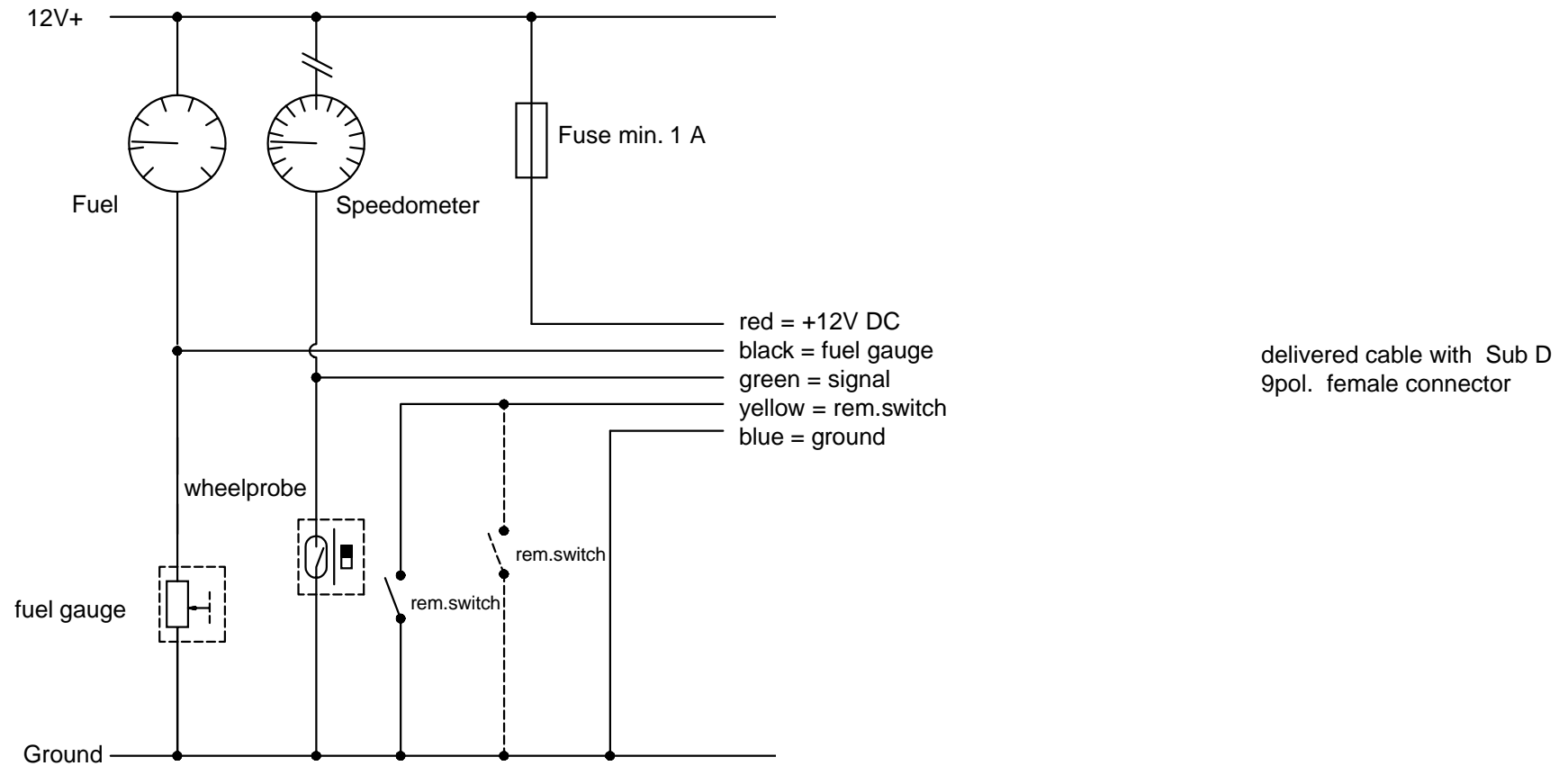


Picture 3.7.a Rearview of CoPilot Rallye Computer

4. Techn.Data

CoPilot Rallye Computer national plus

Power supply:	8 to 14,5 V DC
Power consumption:	200 mA at 12V DC
Temperature:	-20°C to 80°C
Weight:	ca. 300 g
Size:	162mm x 50mm x 36 mm
Display:	Liquid Cristal Display (LCD) 2x16 Characters, Height 8mm, LED Backlight, Supertwist
Mainboard:	Intel 80C32 8 bit Micro- controller, 8Kbyte Memory, RS232-Interface, A/D Converter, Realtime Clock
Counter:	A 0,00 to 99,99 km, B 0,00 to 999,99 km, both up, down and halt, down counting SS distance counter 0,00 to 99,99km, Overall counter up to 999999 km
Timer:	motion controled stopwatch up to 99 min : 59 sec, Clock with 24 hour format



Picture 3.a. Connection of the CoPilot Rallye Computer national plus Version 4.0