

# NBC

Colourful board computer for vehicles

## Opel Calibra/Vectra A

Installation and user guide

FW: HD.01



## 1. Introduction

Colorful board computer is replacement for OEM board computer used in Opel Calibra and Vectra A. It has been designed for easy installation without any change in your car (Plug & Play)\*.

Big advantage of this computer (except lot of functions) is that can be set for any injection engine with fixed FPR (fuel pressure regulator) with any tires by your own. Not necessary to visit Opel dealer anymore.

Examples:

Do you have changed injectors? No problem just set new injectors in settings menu of BC and right data will be shown...

Do you have bigger rims? No problem just set it...

Do you have FPR for 4,5Bar? No problem, find or calculate what flow have your injector with this regulator and set it.. (new injector ccm = injector ccm/original pressure x new pressure).

### Warning:

**BC is not compatible with any LCD dashboard – it will not measure fuel level.**

\*See Installation for details.

## 2. Installation

1. Insertion of new electronic to OEM housing  
By default\* is delivered BC like new electronic with display which has to be inserted to housing of OEM BC.

How to do it you can see on short video <http://www.youtube.com/watch?v=TTq2nSkuHv0>

Because of emitting angle of display it is necessary for RHD connect display to be strip on left side [http://www.ppf.borec.cz/rhd\\_display\\_installation.jpg](http://www.ppf.borec.cz/rhd_display_installation.jpg) everything else is the same like above video.



2. Installation to car  
Connect to existing connector like OEM BC.
3. Installation of non Plug & Play functions (not necessary if you don't want to use it):
  - a. Engine oil temperature measurement\_– additional sensor and resistor\*\* needs to be installed see [http://www.ppf.borec.cz/sensor\\_installation.pdf](http://www.ppf.borec.cz/sensor_installation.pdf)
  - b. Lambda voltage measurement - necessary to add cable\*\* connection between lambda probe and BC see [http://www.ppf.borec.cz/lambda\\_connection.pdf](http://www.ppf.borec.cz/lambda_connection.pdf)

**In X20XE model year >96,5 is signal from injectors adjusted by ECU. Due this BC is not able to show RPM (see 5.6) correctly without small wiring adjustment see [www.ppf.borec.cz/simtec56.5patch.pdf](http://www.ppf.borec.cz/simtec56.5patch.pdf).**

\* Possible to deliver already mounted to housing see Options and accessories.

\*\* Not part of standard delivery see Options and accessories.

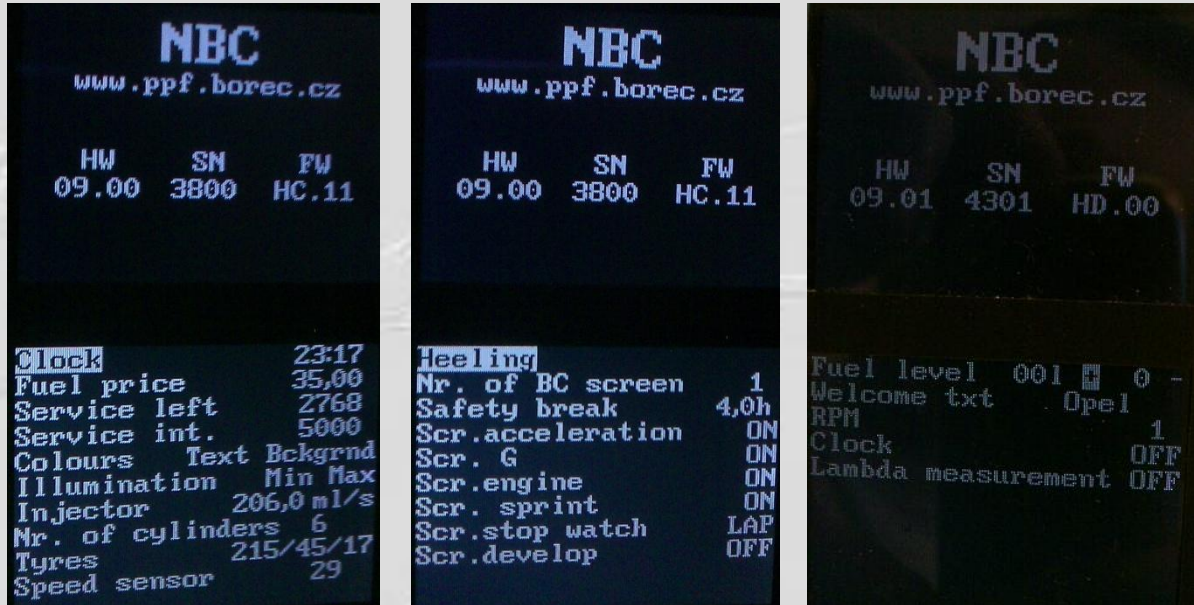
### 3. Functions

- 3.1. 6 independent measurement of driving data
- 3.2. Actual speed
- 3.3. Average speed
- 3.4. Max speed
- 3.5. Actual consumption
- 3.6. Average consumption
- 3.7. Consumed fuel
- 3.8. Driving time
- 3.9. Reached distance
- 3.10. Price of drive
- 3.11. Start/Stop function
- 3.12. Distance Range
- 3.13. Outside temp
- 3.14. Clock
- 3.15. Stop watch with lap or intermediate time
- 3.16. Board net voltage
- 3.17. Actual G-force
- 3.18. G-force chart
- 3.19. Max G-force
- 3.20. Acceleration measurement from 0 to any speed
- 3.21. Time for distance measurement (1/4mile sprint)
- 3.22. Actual RPM
- 3.23. Max RPM
- 3.24. Engine oil temperature measurement
- 3.25. Lambda probe voltage with bargraph
- 3.26. Setup BC inside menu
- 3.27. Tires size setup
- 3.28. Ice warning
- 3.29. Voltage warning
- 3.30. Fuel level warning
- 3.31. Service check warning
- 3.32. Safety break warning
- 3.33. Engine oil temperature warning
- 3.34. Data backup  
Measured data and settings are remaining in memory even the battery is disconnected.
- 3.35. Personal look  
Possibility to change text and background color.
- 3.36. CZ/SK/EN/DE/IT/PL/HUN/RO/RUS/ESP/BULG/FR/EST/PORT language (other languages if required)
- 3.37. UK version (MPH, MPG)
- 3.38. Firmware Update  
Possibility to load new FW to the BC.



## 5. Settings:

It is necessary to setup BC after installation to show correct info. Setup screen is automatically on when BC is plugged in or after holding of rear button and press simultaneously from button in "0" screen



5.1. Clock- clock setup.

5.2. Fuel price – fuel price setup.

5.3. Service left – Resetting of remaining distance to next service check.

Showing distance to next service check. You can reset this value by pressing rear button.

5.4. Service int. – setup of interval of service check.

If service interval is exceeded BC notice you with every engine start. When service check is done, just reset remaining distance.

5.5. Colours – Text and background colours setup.



Examples:



## 5.6. Illumination – illumination potentiometer setup.

BC is changing brightness of illumination according to illumination of dashboard. To enable this function is necessary to setup min and max illumination brightness.

Instructions:

- Start the engine,
- Switch the lights on,
- Turn the potentiometer to left end position
- Press the rear button to save it 
- Turn the potentiometer to right end position
- Press the rear button to save it 

5.7. Injector – Flow value of injectors in ml per second. Set it up according to table 1.

5.8. Number of cylinders

5.9. Tyres – Tyre dimension setup.

5.10. Speed sensor – Number of impuls of speed sensor per one wheel round. Set it up according to table 1.

5.11. Heeling – Stop the car on flat surface and save the zero tilt by pressing of rear button. In case you don't set it or set it incorrectly, the fuel tank lever measurement will not work properly.

5.12. Number of BC screens – Number of BC screens, which will be showing. See chapter 5.2.

5.13. Max driving time – The time of continuous driving after which will be shown safety brake warning see chapter 5.7

5.14. Switching on/off screens – If you don't use some screens often, you can switch them off.

5.15. Develop screen shows internal measurements of BC – only for diagnostic reasons.

5.16. Fuel level – Adjusting of fuel level measurement.

5.17. Welcome txt – You can setup text which will be showed after you switch on/off ignition.

5.18. RPM – RPM measurement setup. Set it up according to table 1.

5.19. Clock – switch off/on displaying clock when is ignition off.  
This function has impact on power consumption  
don't use when you are not driving with your car often.

5.20. Lambda measurement – lambda probe voltage with bargraph  
There are two options ON – bargraph shows actual voltage  
BFR – bargraph shows last measured value

## 6. Screens description

### 6.1. Upper screen

Actual speed

128 Km/h 8,6 1/100Km

Actual consumption

Voltage in board

13,5v 210 Km

net Driving range

Outside temp.

24<sup>Out</sup> °C 00:09

Clock

- Warnings
  - Voltage <12,5V will be highlighted with yellow colour.
  - Voltage <11,9V will be highlighted with red colour.
  - Distance range <=60Km will be highlighted with red colour.
  - Temperature <4°C will be highlighted with blue colour.



### 6.2. BC screens

Number of BC page

1 50,2 Km

Distance

Average speed

33 Km/h 10,3 1/100

Average consumption

Max speed

Max 104 Tot 5,11

Total consumed fuel

Driving time

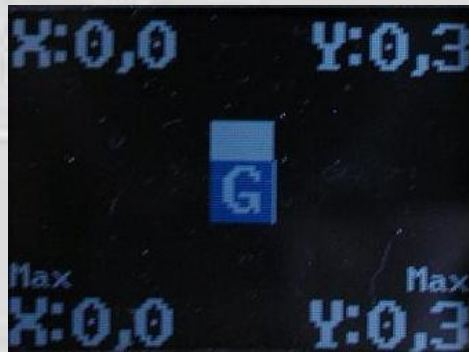
01h,29 147,3

Driving price

- Screen 1,2,3,4
  - There is a possibility anytime to reset all data in each screen and measure 4 different kind of route. As you have 4 original BC next to each other.(so you can measure in one screen your long trips, in other one urban trips, business trips, winter season etc).
  - Start/Stop – is always possible to stop a measurement and start it again by pressing rear button. Stopping of measurement is indicated by changing of colour of page number (so when you are not for ex. in the city and you want to measure consumption for long trips, you can stop screen for urban trip measurement and switch to another. Function Start/Stop is working only for screen 1-3.
  - Resetting – hold rear button at least 2s.
- Screen A – Actual drive
  - Information about actual/last drive.
  - This screen is resetting automatic after every engine start.
- Screen O – Overall data
  - All data since the BC has been installed.
  - In screen O is not price.
  - Resetting:
    - Disconnect BC (unplug connector).
    - Press and hold both buttons.
    - Connect BC (buttons needs to be pressed).
    - Hold both buttons until appear message „RESET OK“

### 6.3. G-force measurement screen

*Actual G-force in  
In bends*



*Actual G-force during acceleration  
and breaking*

*Actual G-force chart*

*Max G-force in bends*

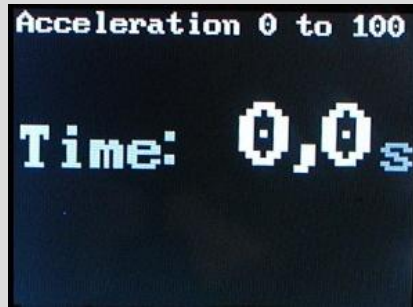
*Max G-force during acceleration and  
breaking*

*In G-force meas. Screen is measured 2 direction of G-force. Actual G-force is shown numerical and graphical. Max G-force could be reset with rear button. When G-force exceeds 0,7G, chart turns to yellow, when over 1G, than turns to red.*



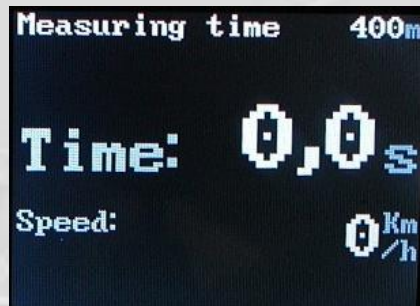


#### 6.4. Acceleration measurement screen



Acceleration 0-100km/h measurement. Start and end of measuring is automatic. Start of measurement begins after still stand. Rear button set it to Zero. Predefined speed 100 km/h is possible to change by holding of rear button at least 2 seconds.

#### 6.5. Time for distance measurement (1/4mile drag)



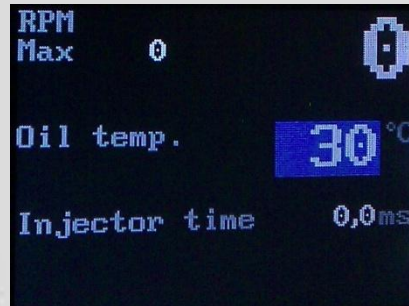
NBC in this mode measures ¼ mile time. Start and end of measuring is automatic. Start of measurement begins after still stand. After you pass the distance NBC shows max speed. Rear button set it to Zero. Predefined distance ¼ mile (400m) is possible to change by holding of rear button at least 2 seconds.

**Warning: This measurement is only for fun, because NBC is not able to detect wheel spinning.**

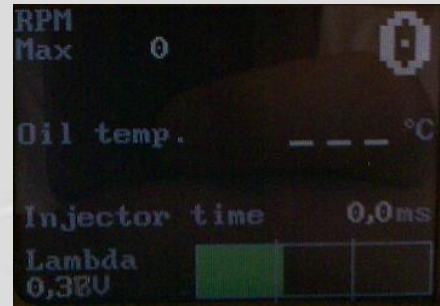
## 6.6. Engine screen



Engine screen without additional installation



Oil temperature measurement installed



Lambda measurement installed

NBC in this mode shows actual and max engine revolutions per minute and injector time. Rear button set max RPM to Zero.

If you install resistor and sensor (see installation) BC will show also engine oil temperature.

- Warnings
  - Temperature  $<60^{\circ}\text{C}$  will be highlighted with blue colour.
  - Temperature  $>140^{\circ}\text{C}$  will be highlighted with red colour.

For temperatures below  $0^{\circ}\text{C}$  or higher then  $200^{\circ}\text{C}$  is "---" symbol displayed instead value.

Lambda voltage measurement (additional connection between BC and lambda required, see installation).

Lambda probe is measuring about 1x per 2 seconds

One of two modes can be chosen in setting menu.

Actual – in bar graph will be actual voltage on lambda probe (pulsate).

Buffer – holds last measured value of lambda.

### 6.7. Stop watch screen

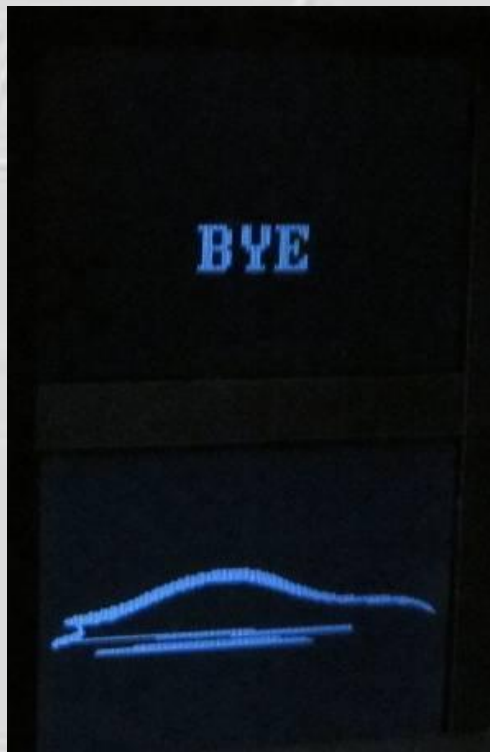


NBC in this mode can measure time with intermediate or lap times, depend how you setup in settings.

With rear button you start measurement, write intermediate or lap time or clear times when is measurement stopped. Front button stop measurement.

### 6.8. ON/OFF screen

After you switch on or off ignition, the screen with car logo and welcome text will be shown.



## 6.9. Warnings:

There is appearing warning symbol on the upper screen in some particular conditions. This warning is followed with sound warning.

- **Safety break**

Appear when driving time exceeded the time for safety brake.  
see 5.13

Warning is the showing every 10 minutes.



- **Service check**

Appear when service interval is exceeded – every time the ignition goes on  
see 5.3 a 5.4.



- **Icy**

Appear when outside temp. Is lower than 4°C



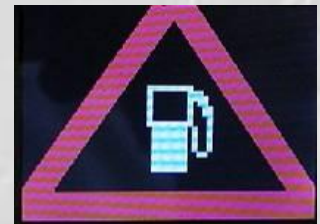
- **Low voltage**

Appear when board net voltage is lower than 11,9V



- **Fuel level low**

Appear when fuel level goes below 8l



- **High engine oil temperature\***

Appear when engine oil temperature is higher than 140°C



\*Only when sensor and resistor is installed see Installation.

## 7. Technical information

### 7.1. Speed measurement

Range: 0-300km/h  
Accuracy: +-2Km/h

### 7.2. Consumption measurement

Actual consump. range: 0,1-999L/100km  
Average consump. range: 0,1-99,9L/100km  
Accuracy: 1% see table nr. 1

### 7.3. Outside temp. measurement

Accuracy: +-1°C

### 7.4. Fuel tank level

Accuracy: +-3L  
Low refuel (<6l) are not taken.

### 7.5. G-force

Range: 0,1-2,5G

### 7.6. Tires

Width: 165-285  
Profile: 30-80  
Diameter: 12-19

### 7.7. Injectors:

50-999ccm

### 7.8. Number of impulse per 1 wheel round:

5-255

### 7.9. Number of cylinders:

3-8

### 7.10. Input voltage range:

10-16V

### 7.11. Current consumption

Ignition off: 9mA max  
16mA max if clock are on, see 4.18  
Ignition on: 100mA max

Table nr.1

Engine	Injector* (ccm)	Number of impuls per wheel round	RPM
C20NE	2,5bar 172 3,0bar 192	30	2
C20XE, X20XE, X20XEV	2,5bar 214 3,0bar 241	15	1
C20LET	2,5bar 304 3,0bar 346	mech.speedometer- 15 electr.speedometer- 29	1
C25XE, X25XE	196	29	1

\* injectors and pressure regulator changing its parameters by its age. Therefore is possible, that BC will not show you correct information's with values set according the table. In this case just modify the value of injector in BC menu.

## 8. Options and accessories

Bellow is list of optional parts which can be delivered.

BC already mounted in OEM housing.



Sensor and resistor for engine oil temperature measurement.



Cable with BC connector pin for lambda measurement.



For any questions you can write on [pepo@calibra.cz](mailto:pepo@calibra.cz)