

Volvo

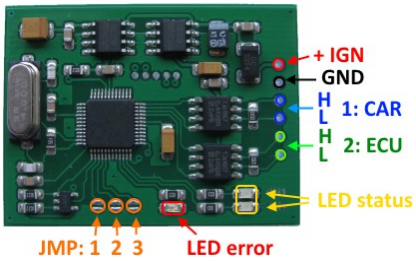
CEM - 3

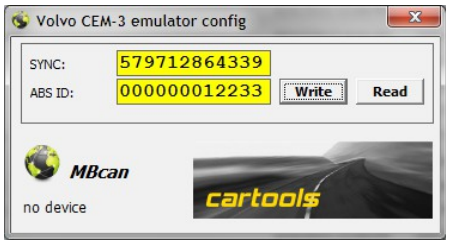
immo emulator

CAN, 500 kB + ABS_ID

Usage: VOLVO cars from 2004 to 2009: **P1 Platform**, S40/V50/C30/C70 II, Motorola based CEM, 500 kB CAN, ABS_ID used. Acts as a **CAN filter** between ECU and original CEM. Must store 6 bytes SYNC and 6 bytes ABS_ID into emulator AND / OR modify ECU EEPROM.

Installation: install emulator in CAN wiring between CEM and ECU (cut CAN wires), CAN 1: CAR (CEM) side, CAN 2: ECU side, power from main relay output. If you install emulator inside ECU it is good idea to install it in place of CAN EMI supressor.





Configuration and jumpers (JMP):

- JMP1: open to allow SYNC update, if short update is prohibited;
- JMP2: open for standalone mode (emulator acts as a CEM for ECU), short for standard mode;
- JMP3: open for default SYNC: 025430725756 , ABS_ID: 000000018155; if short – use custom SYNC and ABS_ID stored into emulator EEPROM.

Common alignment methods:

- method 1 – modify default SYNC and ABS_ID into ECU EEPROM. Jumpers (solder bridges) must be: JMP1 short, JMP2 short, JMP3 open. Install emulator inside ECU and enjoy;
- method 2 – store necessary SYNC and ABS_ID into emulator. JMP1 must be open to allow EEPROM updates, JMP3 shorted (to use custom SYNC and ABS_ID stored into emulator EEPROM), MBcan or any suitable CAN logger must be attached to emulator CAN 1 (CEM) side:
  - Using MBcan: simply store necessary SYNC and ABS_ID;
  - Using CAN logger - speed 500kB, 11-bit (short) id. To store necessary SYNC (ex: 010203040506) and ABS_ID (ex: 000000018155) must send 2 frames::

```
0x7FE 7 01 01 02 03 04 05 06
0x7FE 7 02 00 00 00 01 81 55
```

Response from emulator must look like these 2 frames below:

```
0x7FF 7 11 01 02 03 04 05 06
0x7FF 7 22 00 00 00 01 81 55
```

To request actual SYNC and ABS_ID from emulator, must send:

```
0x7FE 7 55 00 00 00 00 00 00
```

Emulator will respond like above, 2 frame with SYNC and ABS_ID accordingly.

  - Short JMP1 to prohibit SYNC updates. All configuration changes become active at next power-ON,

- If JMP2 is open, original messages from CEM are completely dropped and own ones are sent (standalone mode, “no CEM”). If JMP2 is shorted, original messages issued by CEM are modified to comply with ECU demands.

LEDs on emulator board:

- **LEDstatus** – two leds, CAN1, CAN2 activity
- **LEDerror** – CAN exchange error / ECU authorization error. Goes off if valid authorization request from ECU received (ECU communicates), although it doesn't mean ECU is authorized (there is no method how to check that except engine actually starts or not).

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