

FCA immo emulator, CAN bus:

- Fiat / Alfa Romeo: 2000-up, 50/250/500 kB
- Fiat, AR Giulia, Jeep KL, Jeep Renegade w Rfhub, FCA engines: 500kB
- DODGE RAM 1500: FCA BCU versions, 2017-up, 500kB
- IVECO with BCU (EDC16: 250kB, EDC17: 500kB),
- DUCATO, RAM Promaster: 500kB
etc...

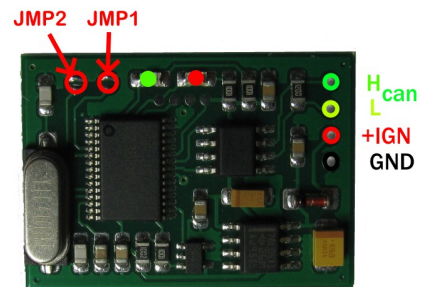
Purpose:

- Designed for ECU start authorization – FIAT authorization scheme based on 6 bytes of SYNC. Alignment methods:
- common: store SYNC into emulator using any CAN logger or MBcan;
 - virgin ECU method may work for older ECUs (SYNC is transferred from emulator to ECU at 1st power-up).

Hardware:

- JMP1 JMP2 both open: 500kB, configuration mode;
- JMP1 JMP2 both short: 500kB, normal operation;
- JMP1 short, JMP2 open: 250kB, normal operation;
- JMP1 open, JMP2 short: 50kB, normal operation.

NOTE: even if 50 kB mode is supported it is recommended to use special hardware based on FT-CAN drivers to avoid CAN bus errors.



Configuration setup using CAN logger:

JMP1, JMP2 both open, may use following two CAN frames (STD ID, 500 kB) for configuration:

- to **request** actually stored SYNC: **770 (7) DD 00 00 00 00 00 00** ;
- to **store** SYNC into emulator: **770 (7) CC xx xx xx xx xx xx** where **xx** are 6 bytes of SYNC,
- response from emulator: **771 (7) EE zz zz zz zz zz zz** in both cases, where **zz** are SYNC bytes actually stored into emulator. If storing SYNC - response must match the request.

Configuration using MBcan hardware:

Emulator must be in configuration mode (JMP1 JMP2 both open), attach MBcan, launch configurator software, choose CAN speed 500 kb, write SYNC.

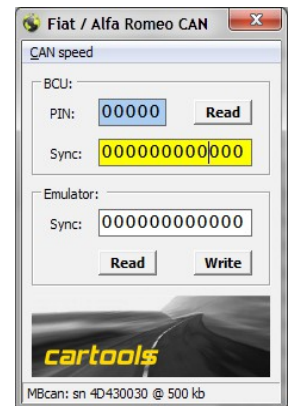
Installation on car:

- set desired CAN speed using solder joints over JMP1 JMP2 (described above),
- device must to be connected directly to PT-CAN and powered from **IGN_ON** (kl.15, hot when ignition switched on).

NOTE: you can read SYNC from emulator using MBcan and configurator software even if emulator is already set for normal operation mode (select CAN speed, read it as BCU).

LED behaviour:

- **GREEN**, **RED** both together: at startup, shortly, always
- **GREEN** long blink: ECU authorized,
- **GREEN**, **RED** alternating for 1 sec: SYNC is accepted by virgin ECU, or SYNC read/write in configuration mode,
- **RED** blinking for 1 second: ECU authorization FAIL,
- no LED activity: NO ECU request / request signature wrong / wrong SYNC etc...



Things to know:

- emulator is silent if wrong SYNC actually stored (what means wrong request from ECU received).
- Usually SYNC in ECU dump is not stored directly, must reorder bytes in some cases. Some examples:
 - IVECO: SYNC **11 22 33 44 55 66** in TC1797 can look like **66 44 22 55 33 11**
 - FIAT/Jeep: SYNC **11 22 33 44 55 66** in TC1793 is stored as **66 55 44 33 22 11** (reverse order).
- If not sure about byte order you may use some symmetric value like **66 66 66 66 66 66** for SYNC, update ECU dump and recalculate ECU checksums.

