Thanks to users **ruthenianboy** and **bojer** of trionictuning.com for their work in reverse-engineering the protocol of the SID.

Interface

- **115200baud** UART over CAN physical layer.

Frame format

- DLC[1] + COMMAND[1] + 0x0 + DATA[x] + CHECKSUM[1], CHECKSUM being the MSB of the sum of all previous bytes.

Communication sequence

1. ICM sends command to SID
2. SID replies with ACK/ERROR or other frame.
3. SID ALWAYS replies.

Reverse-engineering table (DLC and CHECKSUM's removed)

COMMAND BYTE	DATA BYTES DESCRIPTIONS	RESPONSE	DESCRIPTION
0x80	**[0]:** Green LED brightness **[1]:** Orange/RED LED brightness	OK	Adjusts backlight.
0x81		0x82...	Status?
0x83		0x84...	Status?
0x10		OK	
0x11		OK	
0x60		OK	
0x70		OK	

- 0x80,0x80 clear screen / screen off
- 0x80,0x00,0xCE,0x00 (sets backlight for orange portion, last value is brightness)
      0xC, shows only the orange portion.
- 0x80,0x00-x79 screen on, brightess command?
- 0x81,0x00 (gets info from SID, status query?)
- 0x83,0x00 (gets some kind of info from SID, status query?)
- 0x11 < draw data to screen
- 0x70,0x0,0x76,0x0,0x01 < Displays brake light failure icon
- 0x94, some kind of serial code
- 0x96, some other kind of serial code
- 0x9f,0x00 < self test mode

Return values

- 0xff,0x00 (success)
- 0xfe,0x00,0x31 (invalid commmand / command doesn't exist)
- 0xfe,0x00,0x34 (invalid command length, arguments?)
- 0xfe,0x00,0x35 (no idea)
- 0xfe,0x0,0x37 (no idea)

MISC:

- Panel resolution (green) is 384x64 px
- Icon resolution (orange) is 64x64 px
- Temp and light sensors
- 4 font sizes, underscore, solid background, flashing, and align right styles.

ICON DATA CODES:

- dec desc
- 65   !
- 66   washer   ?
- 67   wipers !
- 68   CRUISE
- 69   BREAK Park
- 70   BREAK !
- 71   BREAK ABS
- 72   BATTERY
- 73   COOLANT
- 74   OIL temp
- 75   OIL
- 76   OIL level
- 77   ENGINE
- 78   CAR
- 79   DOOR FL
- 80   DOOR RL
- 81   DOOR FR
- 82   DOOR RR
- 83   BOOT
- 84   LIGHT
- 85   AHL !
- 86   GEARBOX !
- 87   GEARBOX temp
- 88   TURTLE ???
- 89   SERVICE
- 90   PASS
- 91   SRS
- 92   KEY
- 93   KEY battery
- 94   LOCK !
- 95   CAR LOCK !
- 96   SEATS rear
- 97   "P"
- 98   SPA on   ???
- 99   SPA off   ???

- 100 SPA !
- 101 Tire !
- 102 Tire dot
- 103 STP
- 104 SEATS front
- 105 SCL lock
- 106 SCL !
- 107 ESP on
- 108 ESP off
- 109 STP closed ???
- 110 STP !
- 111 STP down ???
- 112 SNOW/ACC off ???
- 113 Fuel lid open ???
- 114 NAV up   arrow
- 115 NAV up right
- 116 NAV up left
- 117 NAV UP   filled
- 118 NAV UP RIGHT   filled
- 119 NAV UP LEFT   filled
- 120 NAV HALF SKEW RIGHT   filled
- 121 NAV HALF SKEW LEFT   filled
- 122 NAV RIGHT   filled
- 123 NAV LEFT   filled
- 124 NAV RIGHT DOWN   filled
- 125 NAV LEFT DOWN   filled
- 126 NAV RETURN right   filled
- 127 NAV RETURN left   filled
- 128 NAV DOT
- 129-135 NAV G right   arrow filled
- 136-142 NAV G left   arrow filled
- 143-156 NAV G background
- 157 NAV TRIANGLE UP   filled
- 158 NAV UP target   filled
- 159 NAV WAYPOINT   filled
- 160 NAV up long
- 161 NAV skew up right
- 162 NAV right
- 163 NAV skew down right
- 164 NAV down
- 165 NAV skew down left
- 166 NAV left
- 167 NAV skew up left
- 168 NAV ROTATE LEFT   filled
- 169 NAV ROTATE RIGHT   filled