**1.Vehicle control**

**Description**

The message type 0x0C is a vehicle control message. It allows devices on the IBus to control serveral things in the car. Mostly light commands have been hacked.

**Format**

|  |  |
| --- | --- |
| **Message code** | 0x0C |
| **Message length** | 12 bytes |
| **Data size** | 9 bytes |
| **Frequency** | unknown |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DB1** | **DB2** | **DB3** | **DB4** | **DB5** | **DB6** | **DB7** | **DB8** | **DB9** |
| alway 0x0C | Light signals | Light signals | Light signals | single bulbs | single bulbs | single bulbs | single bulbs | unknown 0x00 |

The Bits of the DB2 byte

|  |  |  |  |
| --- | --- | --- | --- |
| **Bit** | **meaning** | **0** | **1** |
| 7 | ? | x | x |
| 6 | ? | x | x |
| 5 | ? | x | x |
| 4 | emergency blink | x | on |
| 3 | ? | x | x |
| 2 | high beam on | x | x |
| 1 | ? | x | x |
| 0 | ? | x | x |

The Bits of the DB3 byte

|  |  |  |  |
| --- | --- | --- | --- |
| **Bit** | **meaning** | **0** | **1** |
| 7 | indicator blinks left | off | on |
| 6 | indicator blinks right | off | on |
| 5 | light instrument cluster | off | on |
| 4 | ? | x | x |
| 3 | ? | x | x |
| 2 | ? | x | x |
| 1 | ? | x | x |
| 0 | brake backside | off | on |

The Bits of the DB5 byte

|  |  |  |  |
| --- | --- | --- | --- |
| **Bit** | **meaning** | **0** | **1** |
| 7 | ? | x | x |
| 6 | high beam left | off | on |
| 5 | high beam right | off | on |
| 4 | brake tail right | off | on |
| 3 | brake tail left | off | on |
| 2 | ? | x | x |
| 1 | ? | x | x |
| 0 | ? | x | x |

The Bits of the DB6 byte

|  |  |  |  |
| --- | --- | --- | --- |
| **Bit** | **meaning** | **0** | **1** |
| 7 | fog tail right | off | on |
| 6 | fog tail left | off | on |
| 5 | low beam right | off | on |
| 4 | low beam left | off | on |
| 3 | back-up light left | off | on |
| 2 | fog front left | off | on |
| 1 | ? | x | x |
| 0 | Angle eyes left | off | on |

**Example**

to be defined

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Meaning** | IKE | len | BMBT | type | x | x | CS |
| **Value** | 80 | 0F | F0 | 0C | x | x | x |

Retrieved from "[http://ibus.stuge.se/Vehicle\_control](http://web.archive.org/web/20110318190243/http:/ibus.stuge.se/Vehicle_control)"

# 2.LCM (Light Control Module)

## Description

The LCM is the light control module (german: Lichtkontrolmodul or LKM).

The address of the LCM is 0xBF.

The following messages are known

|  |  |
| --- | --- |
| **Code** | **Meaning** |
| 0x76 | [Flash lights](http://web.archive.org/web/20110320052915/http:/ibus.stuge.se/LCM#0x76_Flash_lights) |
| 0x7D | [Windows](http://web.archive.org/web/20110320052915/http:/ibus.stuge.se/LCM#0x7D_Windows) |

## 

## 0x76 Flash lights

The front lights and turn indicators can be flashed with the following message. The sender have to be 0x00 in this case.

Byte 0 has the following bit definition

|  |  |
| --- | --- |
| **Bit** | **Lamp** |
| 7-4 | unknown |
| 3 | high beam |
| 2 | low beam |
| 1 | turn indicators |
| 0 | unknown |

### Example

Flash high beam and turn indicators

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TX** | **LL** | **RX** | **MM** | **Byte 0** | **CS** |
| 0x00 | 0x04 | 0xBF | 0x76 | 0x0A | 0xC7 |

## 0x7D Windows

Windows can be opened, closed locked and unlocked with messages from 0x00 to LCM.

### 

### Sunroof

Byte 0 always has to be 0x00.

Byte 1 has the following bit definition

|  |  |
| --- | --- |
| **Bit** | **Action** |
| 7 | unknown |
| 6 | close (1) / open (0) |
| 5 | on open and close (1) / else (0) |
| 4 | lock after action (0) / else (1) |
| 3-0 | unknown |

If bit 6 and 5 is (0) the window will just lock or unlock.

#### 

#### **Example**

Close sunroof and unlock

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **TX** | **LL** | **RX** | **MM** | **Byte 0** | **Byte 1** | **CS** |
| 0x00 | 0x05 | 0xBF | 0x7D | 0x00 | 0x70 | 0xB7 |

Just lock sunroof

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **TX** | **LL** | **RX** | **MM** | **Byte 0** | **Byte 1** | **CS** |
| 0x00 | 0x05 | 0xBF | 0x7D | 0x00 | 0x00 | 0xC7 |

**List of IBus Messages**

Listed in blocks of 16 (0x0F) for clarity.

0x01: Device status request

0x02: Device status ready

0x03: "Bus status request"

0x04: "Bus status"

0x06: "DIAG read memory"

0x07: "DIAG write memory"

0x08: "DIAG read coding data"

0x09: "DIAG write coding data"

0x0C: Vehicle control

0x10: "Ignition status request"

0x11: Ignition status

0x12: "IKE sensor status request"

0x13: "IKE sensor status"

0x14: "Country coding status request"

0x15: Country coding status

0x16: "Odometer request"

0x17: "Odometer"

0x18: Speed/RPM

0x19: Temperature

0x1A: "IKE text display/Gong"

0x1B: "IKE text status"

0x1C: "Gong"

0x1D: Temperature request

0x1F: UTC time and date

0x23: Update MID

0x24: Update ANZV

0x34: DSP Equalizer Button

0x38: CD status request

0x39: CD status

0x40: Set On-Board Computer Data

0x41: On-Board Computer Data Request

0x48: BMBT buttons

0x49: BMBT buttons

0x4F: RGB Control

0x5A: Lamp state request

0x5B: Lamp state

0x53: Vehicle data request

0x54: Vehicle data status

0x5B: Lamp Status

0x71: Rain sensor status request

0xA0: "DIAG data"

0xAA: Navigation Control

## Command Index

| **Command** | **Description** |
| --- | --- |
| 0x01 | Ping |
| 0x02 | [Pong & Announce](https://github.com/piersholt/wilhelm-docs/blob/master/02.md) |
| 0x10 | [Ignition Request](https://github.com/piersholt/wilhelm-docs/blob/master/ike/10.md) |
| 0x11 | [Ignition](https://github.com/piersholt/wilhelm-docs/blob/master/ike/11.md) |
| 0x12 | [Sensors Request](https://github.com/piersholt/wilhelm-docs/blob/master/ike/12.md) |
| 0x13 | [Sensors](https://github.com/piersholt/wilhelm-docs/blob/master/ike/13.md) |
| 0x14 | [Language & Region Request](https://github.com/piersholt/wilhelm-docs/blob/master/ike/14.md) |
| 0x15 | [Language & Region](https://github.com/piersholt/wilhelm-docs/blob/master/ike/15.md) |
| 0x16 | Mileage Request |
| 0x17 | Mileage |
| 0x18 | Speed |
| 0x19 | [Temperature](https://github.com/piersholt/wilhelm-docs/blob/master/ike/19.md) |
| 0x1a | [Check Control Message](https://github.com/piersholt/wilhelm-docs/blob/master/lcm/1a.md) |
| 0x1b | Check Control Priority |
| 0x1d | [Temperature Request](https://github.com/piersholt/wilhelm-docs/blob/master/ike/1d.md) |
| 0x1f | [GPS Time](https://github.com/piersholt/wilhelm-docs/blob/master/nav/1f.md) |
| 0x20 | MID Button |
| 0x21 | Menu Text: [Telephone](https://github.com/piersholt/wilhelm-docs/blob/master/telephone/21.md) |
| 0x22 | Menu Text Buffer |
| 0x23 | Title Text: [Radio](https://github.com/piersholt/wilhelm-docs/blob/master/radio/23.md) / [Telephone](https://github.com/piersholt/wilhelm-docs/blob/master/telephone/23.md) |
| 0x24 | Property Text: [IKE](https://github.com/piersholt/wilhelm-docs/blob/master/ike/24.md) / [Telephone](https://github.com/piersholt/wilhelm-docs/blob/master/telephone/24.md) |
| 0x27 | IKE → MID (TBC) |
| 0x2a | [OBC Status](https://github.com/piersholt/wilhelm-docs/blob/master/ike/2a.md) |
| 0x2b | [Telephone LEDs](https://github.com/piersholt/wilhelm-docs/blob/master/telephone/2b.md) |
| 0x2c | [Telephone Status](https://github.com/piersholt/wilhelm-docs/blob/master/telephone/2c.md) |
| 0x31 | Menu Button |
| 0x32 | [BMBT Volume](https://github.com/piersholt/wilhelm-docs/blob/master/bmbt/32.md) & [MFL Volume](https://github.com/piersholt/wilhelm-docs/blob/master/mfl/32.md) |
| 0x34 | DSP Control |
| 0x36 | [Radio EQ](https://github.com/piersholt/wilhelm-docs/blob/master/radio/36.md) |
| 0x37 | [Radio Tone/Select](https://github.com/piersholt/wilhelm-docs/blob/master/radio/37.md) |
| 0x38 | CDC Request |
| 0x39 | [CDC Status](https://github.com/piersholt/wilhelm-docs/blob/master/cdc/39.md) |
| 0x3b | [MFL Buttons](https://github.com/piersholt/wilhelm-docs/blob/master/mfl/3b.md) |
| 0x40 | [OBC Input](https://github.com/piersholt/wilhelm-docs/blob/master/gt/40.md) |
| 0x41 | [OBC Control](https://github.com/piersholt/wilhelm-docs/blob/master/gt/41.md) |
| 0x42 | [OBC Remote Control](https://github.com/piersholt/wilhelm-docs/blob/master/ike/42.md) |
| 0x45 | [Set Radio UI](https://github.com/piersholt/wilhelm-docs/blob/master/gt/45.md) |
| 0x46 | [Request Radio UI](https://github.com/piersholt/wilhelm-docs/blob/master/radio/46.md) |
| 0x47 | [BMBT "Soft" Buttons](https://github.com/piersholt/wilhelm-docs/blob/master/bmbt/47.md) |
| 0x48 | [BMBT Buttons](https://github.com/piersholt/wilhelm-docs/blob/master/bmbt/48.md) |
| 0x49 | [BMBT Navigation Dial](https://github.com/piersholt/wilhelm-docs/blob/master/bmbt/49.md) |
| 0x4a | Tape Control/Radio LED |
| 0x4b | Tape Status |
| 0x4e | GT → Radio (TBC) |
| 0x4f | [BMBT Monitor Control](https://github.com/piersholt/wilhelm-docs/blob/master/bmbt/4f.md) |
| 0x50 | Check Control Status Request |
| 0x51 | [Check Control Status](https://github.com/piersholt/wilhelm-docs/blob/master/lcm/51.md) |
| 0x52 | Check Control Message Relay |
| 0x53 | [Redundant Data Request](https://github.com/piersholt/wilhelm-docs/blob/master/ike/53.md) |
| 0x54 | [Redundant Data](https://github.com/piersholt/wilhelm-docs/blob/master/ike/54.md) |
| 0x55 | [Replicate Data](https://github.com/piersholt/wilhelm-docs/blob/master/ike/55.md) |
| 0x57 | [Cluster Buttons](https://github.com/piersholt/wilhelm-docs/blob/master/ike/57.md) |
| 0x58 | RLS → GM (TBC) |
| 0x59 | Rain/driving Lights Status |
| 0x5a | [Cluster Indicators Request](https://github.com/piersholt/wilhelm-docs/blob/master/lcm/5a.md) |
| 0x5b | [Cluster Indicators](https://github.com/piersholt/wilhelm-docs/blob/master/lcm/5b.md) |
| 0x5c | Instrument Backlighting (58G) |
| 0x5d | Instrument Backlighting (58G) Request |
| 0x61 | EHC → GLO (TBC) |
| 0x70 | MRS → GLO (TBC) |
| 0x71 | Remote (Keyless) Entry Request |
| 0x72 | Remote (Keyless) Entry |
| 0x73 | Key Status Request |
| 0x74 | Key Status |
| 0x75 | RLS → GM (TBC) |
| 0x76 | [Visual Indicators](https://github.com/piersholt/wilhelm-docs/blob/master/gm/76.md) |
| 0x77 | GM → RLS (TBC) |
| 0x78 | Memory |
| 0x79 | [Door/Lid Status Request](https://github.com/piersholt/wilhelm-docs/blob/master/gm/79.md) |
| 0x7a | [Door/Lid Status](https://github.com/piersholt/wilhelm-docs/blob/master/gm/7a.md) |
| 0x7c | SHD → GLO (TBC) |
| 0x7d | GM → SHD (TBC) |
| 0x82 | IHKA → GLO (TBC) |
| 0x83 | IHKA → IKE (TBC) |
| 0x86 | IHKA → Nav. (TBC) |
| 0x87 | Nav. → IHKA (TBC) |
| 0x9e | GT → RCM (TBC) |
| 0xa2 | [Telematics Coordinates](https://github.com/piersholt/wilhelm-docs/blob/master/nav/a2.md) |
| 0xa4 | Telematics Location |
| 0xa5 | Body Text: [Telephone](https://github.com/piersholt/wilhelm-docs/blob/master/telephone/a5.md) / Radio |
| 0xa6 | [SMS Icon](https://github.com/piersholt/wilhelm-docs/blob/master/telephone/a6.md) |
| 0xa7 | Traffic Management Channel Request |
| 0xa8 | Traffic Management Channel |
| 0xa9 | BMW Assist Data |
| 0xaa | Rear Nav. Control |
| 0xab | Forward Nav. Control |
| 0xaf | Nav. → SES (TBC) |

### K/I-Bus

| **Device** | **Bus** | **Description** |
| --- | --- | --- |
| 0x00 | K | General Body Electronics (ZKE 3/4/5) |
| 0x08 | K | Tilt/Slide Sunroof (SHD) |
| 0x18 | K/I | CD Changer (CDC) |
| 0x24 | K | Trunk Lid Module (HKM) [E38] |
| 0x28 | I | Radio Clock Control (RCC) [E38] |
| 0x2e | K | Electronic Damper Control (EDC) |
| 0x30 | I | Check Control Module (CCM) [E38] |
| 0x3b | I | Graphics Stage (GT) |
| 0x3f | K/I | Diagnostics (via [gateway](https://github.com/piersholt/wilhelm-docs#gateway)) |
| 0x40 | K | Remote Control for Central Locking (FBZV) [E31] |
| 0x43 | I | Unconfirmed: Rear Graphics Stage (GT) [E38] |
| 0x44 | K | Drive Away Protection System (EWS) |
| 0x45 | K | Anti-Theft System (DWA) |
| 0x46 | I | Central Information Display (CID) [E83, E85] |
| 0x47 | I | Rear Control Panel (FONT\_BT) [E38] |
| 0x48 | ? | Telephone (Japan) |
| 0x50 | K/I | Multifunction Steering Wheel (MFL) |
| 0x51 | K | Mirror Memory: Passenger [E46] |
| 0x53 | K/I | Unconfirmed: Multicast 📣 |
| 0x5b | K | Automatic Heating/Air Conditioning (IHKA) |
| 0x60 | K/I | Park Distance Control (PDC) |
| 0x66 | K | Active Light Control (ALC) |
| 0x68 | K/I | Radio |
| 0x69 | K | Electronic Body Module (EKM) [E31] |
| 0x6a | K/I | Digital Sound Processor (DSP) |
| 0x6b | K | Auxiliary Heater "Webasto" |
| 0x70 | K | Tire Pressure Control (RDC), Deflation Warning System (DWS) |
| 0x71 | K | Seat Memory: Driver [E31, E34] |
| 0x72 | K | Seat Memory: Driver [E46, E53] |
| 0x76 | K | CD Player (Business) |
| 0x7f | K/I | Navigation |
| 0x80 | K/I | Instrument Cluster (IKE/KOMBI) |
| 0x9a | K/I | Automatic Headlight Vertical Aim Control (LWR) |
| 0x9b | K | Mirror Memory: Driver [E46], Convertible soft top module (CVM) [E36] |
| 0x9c | K | Convertible Soft Top Module (CVM) [E46] |
| 0x9d | K | Electronic disconnecting switch (ETS) [E38] |
| 0xa0 | I | Rear Multi-functional Display (MID) [E38] |
| 0xa4 | K | Multiple Restraint System (MRS) |
| 0xa7 | K | Rear Compartment Heating/Air Conditioning |
| 0xac | K | Electronic Height Control (EHC) |
| 0xb0 | K/I | Speech Input System (SES) |
| 0xb9 | K | Compact Remote Control (RF/IR) |
| 0xbb | K/I | Navigation (Japan) |
| 0xbf | K | Broadcast 📣 |
| 0xc0 | K/I | Multi-functional Display (MID) |
| 0xc8 | K/I | Telephone |
| 0xcd | K | Multi-functional Display (OBC) [E31] |
| 0xda | K | Seat Memory: Passenger [E46] |
| 0xd0 | K/I | Lamp Check Module (LCM), Light Switch Center (LSZ) |
| 0xe0 | K | Integrated Radio and Information System (IRIS) |
| 0xe7 | K/I | Multicast: Displays 📣 |
| 0xe8 | K | Rain/Driving Light Sensor (RLS) |
| 0xea | I | DSP Controler [E38] |
| 0xed | I | Video Module |
| 0xf0 | I | On-board Computer Control Panel (BMBT) |
| 0xf5 | K | Center Console Switch Center (SZM), Lamp control module (LKM2) [E31] |
| 0xff | K/I | Broadcast 📣 |