## Features BDMIF-LC

- Target connection via 6 pin ribbon cable (standard BDM pinout) or with extended 8 pin connector with MOD A / MOD B lines. These are software configurable for flexible setup of target conditions (usable for HC(S)12 only)
- 9-pin DSUB-Plug (female) to connect to PC serial port
- Supply by external mains adaptor (provided). Target could optionally be supplied by BDMIF-LC.
- Supports low voltage derivatives (2.5 to 5V) with flexible configuration of target supply voltages by DIP switch

Features PC-Software HC08-ISP

- Speed optimized In-Circuit-Programming of flash-memory and EEPROM
- Flexible adoption to different target configuration
- User friendly GUI on WIN32 (95/98/NT/2000/XP)
- Supports many HSC08-types (GB/GT-series, AW
- supports automatic trimming for controllers with internal oscillator
- Optional insertion of date and serial number into flash data
- Setting of Flash block protect register
- Also available as Command Line Programmer for production purposes, integrates into all common Windows programming systems (e.g. Visual Basic, Labview, C / C++)
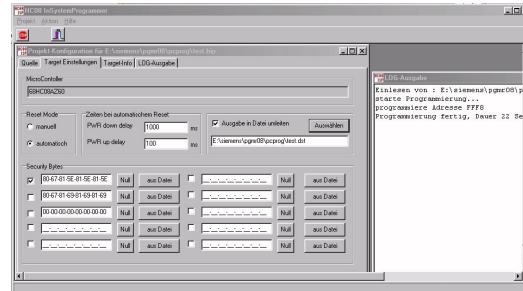
General

The BDM interface BDMIF-LC connects between the PC serial interface and the BDM connections of a HCS08 or HC(S)12 micro controller.
The BDM (Background Debug Mode) supports in-circuit debugging and in-circuit flash programming.
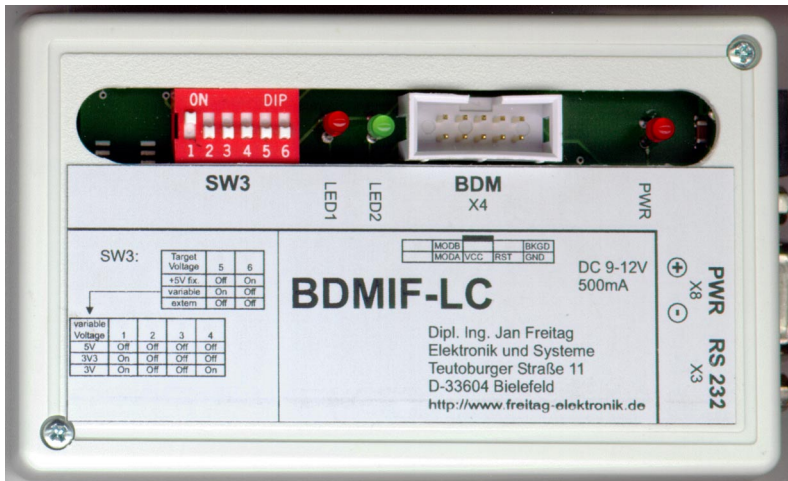
1 Connection and Setup

The BDMIF-LC is connected to the target controller via a 6 pin or 8 pin ribbon cable. Target power supply can be external or internal.
The BDMIF-LC is connected to the PC via 9-pin DSUB RS232 connector.
The interface itself is supplied via an external power supply (wall plug type or similar) with 9 to 12V DC, max. 500mA.

Position of connectors

view from above   View from side

1.1 LEDs

LED 2 (green)	Lights, if BDMIF-LC is ready to receive data
LED 2 (red)	Error Condition
PWR	Lights, if BDMIF-LC is powered

1.2 Supply of the Interface

The power supply is connected to the interface via connector X8.
Voltage of 9 to 12V and current capability of 500mA is required.

1.3 X4 – BDM 10 Pin Connector

X4 – Target Connector 10 Pin	6Pin Target Cable Connector Pin	Signal
1	1	BKGD
2	2	GND
3	3	NC
4	4	RST
5	5	NC
6	6	TVCC Target supply (2.5 to 5V)
7	X	MOD B
8	X	MOD A
9	X	NC
10	X	NC

NC: no connect, do not connect anything here.

Layout of corresponding pinheader, view from above

	K			
9	7	5	3	1
10	8	6	4	2

K: Coding interleave
Pin 1 is marked with an arrow

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1.4 DSUB RS232 Connector

The 9pin DSUB connector is to be connected to the PC COM interface with a 1:1 (straight) cable.

1.5 Target Circuit Power Supply

The target circuit can be supplied in 3 different ways, dependent on the actual setup:

- external (that is, the target has its own supply and supplies some part of the target connected electronics of the BDMIF-LC),
- internal (target is supplied from the BDMIF-LC)
- separated (the target has its own supply, and the of the target connected electronics of the BDMIF-LC are supplied from the BDMIF-LC itself, supplies are not connected except GND connection)

1.5.1 Internal supply

Internal supply is useful if the target circuit does't not need more than about 250mA during programming, and if it is possible to supply the circuit with only the logic supply. This is possible, for example, using our evaluation boards EBS8-xx.

Switch SW3.5 is to be switched to "on" position. SW3.6 is to be set to "off" position.

For the setup of the target supply voltage the switches SW3.1 to SW3.4 are to be setup according to this table:

Switch Position				
SW3.1	SW3.2	SW3.3	SW3.4	Voltage
On	on	On	on	1,25
On	on	On	off	1,50
On	on	off	on	1,75
On	on	off	off	2,00
On	**off**	**on**	**on**	**2,50**
On	off	on	off	2,75
On	**off**	**off**	**on**	**3,00**
On	**off**	**off**	**off**	**3,30**
Off	on	on	on	2,90
Off	on	on	off	3,20
Off	on	off	on	3,40
Off	on	off	off	3,60
Off	off	on	on	4,10
Off	off	on	off	4,40
Off	off	off	on	4,60
Off	**off**	**off**	**off**	**5,00**

Tolerance of voltage settings is about 3%.

1.5.2 External Supply

For external supply the logic supply voltage is generated in the target circuit and supplied to the BDMIF-LC. Switch SW3.5 and SW3.6 are to be switched to "off".

1.5.3 Supply of BDMIF-LC from target Circuit

If the Target supply voltage is 5V the BDMIF-LC can be supplied from the target circuit, and needs no external power supply in this case.

To select this mode, SW3.6 must be set to the "on" position. All other switches are to be set to "off".

2 PC Software Setup

2.1 Flash Programming with HC08-ISP

HC08-ISP is used for flash programming.

Installation is explained in the readme.txt file on the installation disk.
The HC08_ISP offers a quick start guide as part of the help system.

2.2 Debugging with Cosmic ZAP / Metrowerks / NOICE

This mode is currently under development.

3 Precautions

MOS devices in general are sensitive to electrostatic discharge.
The BDMIF-LC itself is protected by means of protection diodes. Nevertheless, be sure to perform a potential equalization (connect ground first) before connecting the BDMIF-LC to the target circuit. This protects the target controller and the interface from damage.
The MONIF-E3 gets its supply voltage from the target supply for the external supply setup. The typical current consumption is less than 20mA. The tolerable voltage is 2.5 to 5V+/- 10%. Always check the correct polarity and supply voltage level before switching on power. Especially higher voltages (even on the signal lines) may destroy the device.
Always disconnect power before connecting the interface.
The PC and the power supply of the target circuit have to meet the requirements of a SELV-circuit (safety extra low voltage circuits) as described in EN60950 / UL950.
The allowed temperature range is 10..30°C.

4 Package content

Basic device BDMIF-LC
Target-Connection-Cable ca. 25cm, one end with 10pin Crimp-Plug, the other end with 6 pin Connector
This user documentation
1:1-RS232-Cabel 9pin (male-female) for longer RS232 connections (1,8m long)
Power supply 9.5V 500mA stabilized, wall plug type for European (Schuko) outlets

5 Contact

If you have questions about the product or application, please feel free to contact us.
We are also grateful for hints regarding errors or ambiguous phrases in this document.

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