

1 General

This document provides additional information, corrections and known issues with the GZ16STK and the data on the GZ16STK - CD.

Additionally please take a look on our web site (<http://www.freitag-elektronik.de>) for updates, FAQs and more recent versions.

We are also grateful for any comments and hints regarding errors or ambiguous phrases in the GZ16STK documentation. Please contact us by email: GZ16STK@freitag-elektronik.de

Please, before setting up the board or contacting us by mail read the documentation in the folder "Documentation" on the starter kit CD very carefully and get all updates mentioned here from the web. Maybe our FAQ list on the Web will also answer your question.

2 GZ16 Evaluation Board EB08-GZSBC

2.1 Warning



This board is not protected against electrostatic discharge. All common ESD precautions apply when handling the board.

Most pins are directly connected to the microcontroller. The microcontroller (or an eventually connected monitor mode interface) will be destroyed if a voltage higher than Vcc (+5V) or lower than ground (0V) is connected to the pins. Be careful and check all external connections before switching on power. Never connect or disconnect anything without prior removing power.

The H-Bridge is able to deliver much more current than the polarity protection diode and PCB traces will withstand. If you want to check the H-Bridge at higher currents than 1A reinforce the current carrying traces and replace the polarity protection diode with a higher current type.

Additional information is provided on the starter kit CD as the datasheets of most electronic parts are included. Check all datasheets in the "Datasheets" folder on the starterkit CD regarding maximum values of any electronic part of the starter kit.

2.2 Power Supply

White wire is plus (connect to +BAT on X9), brown wire is minus (connect to -BAT on X9). The power supply is not stabilized, output voltage will be between 8V and 15V depended on load.

	Min	Typ	Max
Operating Voltage between Terminals +BAT and -BAT	7V (below undervoltage IRQ or undervoltage Reset may occur)	12V	27V (see Spec of MC33989 and MC33886)
Maximum Current into +BAT			1A

2.3 Default Settings at Delivery

The flash of the uC is pre-programmed with the Codewarrior example program „simpleCAN“.

The security bytes are FF-FF-FF-FF-FF-FF-FF, as only the reset vector and timer interrupt vector are set in this example.

The solder jumper SJ1 is set up to use the pushbutton SW1 as a general pushbutton connected to port PTA2. Pressing the button will connect PTA2 to ground, internal Pull-Up has to be activated. Alternative setting of SJ1 will set up SW1 to act as reset button.

3 Starter Kit Examples

3.1 Installing and Using the Examples

Copy the appropriate project files from the starterkit CD to any folder on your hard disk.

As the files come from a CDROM they may be marked as "read only" or write protected. Unprotect the files using the „properties“ dialog in the windows explorer or use a more sophisticated tool to do this.

Updated and corrected projects can be downloaded from our web site.

This are the known problems with the examples on the CD:

Break SWI Address



The GZ16asm_break example is only working correct for older mask sets (1L..) if used without modification. This is because the monitor ROM code was changed by Motorola.

The problem can easily be corrected by changing the following piece of code:

Code for Maskset 1L35K	Code for Maskset 4L35K
<pre>EXTISR: brset 0,PTA,nobreak ;if PTA0 = high User Routine ;if not, Break Interrupt waitwhile0: brclr 0,PTA,waitwhile0 ;Wait until PTA0 goes high again ;(End of Break pulse on TxD) jmp \$ff63 ;Jump into Monitor ROM on GZ16 nobreak: ;here the User ext Int ISR can be placed rti</pre>	<pre>EXTISR: brset 0,PTA,nobreak ;if PTA0 = high User Routine ;if not, Break Interrupt waitwhile0: brclr 0,PTA,waitwhile0 ;Wait until PTA0 goes high again ;(End of Break pulse on TxD) jmp \$ff75 ;jump into Monitor ROM on GZ16 nobreak: ;here the User ext Int ISR can be placed rti</pre>

Alternatively the universal code that works independent from mask set and controller type can be used:

```
; The address $ff63 may be different for every maskset and for every
; type of micro controller. It must match the content of $fefd and $fefd
; which is the vector address for SWI in monitor mode.
; Therefore, a more universal but bit more complicated solution can be used:
```

```
EXTISR:
    brset 0,PTA,nobreak ;if PTA0 = high User Routine;
                                ;if not, Break Interrupt
waitwhile0
    brclr 0,PTA,waitwhile0 ;Wait until PTA0 goes high again;
                                ;(End of Break pulse on TxD;)
    lda $fefd ;push contents of SWI vector;r
    psha
    lda $fefd
    psha
    rts ;jump to SWI handler

nobreak: ;here the User ext Int ISR can be placed
    rti
```

Simple CAN uses PLL

The Simple CAN example uses the PLL to have sufficient processing power to keep track of every CAN message up to 200kBit/sec. Switching on the PLL will change the monitor mode baudrate and thus makes debugging complicated or even impossible.

A updated example that will not use the PLL will be published on our web site. This example will than require sufficient gaps between successive CAN messages on the bus, as the timer interrupt will check for incoming messages not frequently enough.

3.2 Codewarrior Examples

To use the P&E debugger with MONIF08-LC the class of hardware type is to be class II



In the „attempting to contact target and passing security“ dialog box the class of target hardware type is to be set to class II, even if the text „Motorola ICS without processor,..., 16pin ribbon cable“ seems to be unlikely.

The reason for this is that the circuit inside the MONIF08-LC is compatible with the circuit on the Motorola ICS kits except that no automatic power on reset is provided.

Additional Sub-folder in source folder

Additional folder „cosmic“ under\sources can be deleted. It was accidentally put here, and has no meaning.

3.3 Cosmic Examples

If setting up the Cosmic examples the working directory and the path of the files have to be changed according to your setup.

4 Metrowerks Codewarrior

To work with the Codewarrior a free evaluation key is required. Follow the hints in the Quick Start Guide included in the Codewarrior CD package.

4.1 P&E Debugger

The P&E debugger only works together with the MONIF08-LC if the class of operation ist set to class II (Class 2). The information in „MONIF08_LCen.pdf“ on the starterkit disk regarding the P&E debugger is wrong in this topic.

Also this is not preset correctly in the Codewarrior Examples on the starterkit disk. See 3.2 for more information on this.



The flash algorithm included in the P&E Debugger seems to work wrong for the 'GZ16 (reported on Win2000, on Win98 it may work) .

Please ask P&E for an updated version of the "908_gz16.08p" file. This file is installed/located in "{CodeWarrior install path}\prog\P&E" folder.

In the meantime until the P&E update is available you can program the flash of the GZ16 using our HC08_ISP-software before debugging and skip the flash programming step in the debugger.

4.2 Start08.c



If generating a new project in the Codewarrior IDE via HC08 stationery or via Processor Expert a wrong or no start08.c file is generated.

A solution to this will be presented on our web side.

As a first solution the file start08.c can be copied from "{CodeWarrior install path}\lib\HC08c\src" to the source folder of your project and then added manually to your project.

5 Cosmic

To work with the Cosmic Compiler, the IDE and Cosmic ZAP Monitor Mode debugger a free evaluation key is required. After installing an automatic procedure is started that will generate an email to the Cosmic support. After short time you will receive your license file by email.

5.1 Cosmic ZAP Monitor Mode

The current version will not support flash programming for the 'GZ16.

Debugging is working fine if you select "GP32" as target.

In the future an update that fully supports the 'GZ16 will be available from Cosmic. Please contact the Cosmic support regarding this topic.

In the meantime until the Cosmic update is available you can program the flash of the GZ16 using our HC08_ISP-software before debugging and skip the flash programming step in the debugger. (select the option to load the symbols only in the ZAP)

6 MONIF08-LC

The P&E debugger only works together with the MONIF08-LC if the class of operation ist set to class II (Class 2). The information in „MONIF08_LCen.pdf“ on the starterkit disk regarding the P&E debugger is wrong regarding this topic. See also 3.2

7 HC08-ISP Software

This software is included on the starter kit disk as a limited demo version. The 'GZ16 is fully supported by the demo version. The software can be used to program the flash of the 'GZ16.

7.1 Limitations of the GZ16 Starter Kit Version of HC08-ISP

This version is limited be used with MONIF08-LC and will only support the 'GZ16 as target. A full unlimited version is available and will support QT/QY, AZ, GP, AB, SJ, JK, JL, JB,..... derivatives of HC908 controllers and our other monitor mode interfaces. Some of them are also suitable for production lines. Please contact us by mail if you have any questions regarding this.

7.2 Known Problems

All known problems will be solved in future versions.

Wrong HC08 ISP Batch demo has a wrong license file

The HC08 ISP Batch demo has a wrong license file on the starter kit CD.

If you want to evaluate the functions of the command line version HC08ISP, you need another license file. Please download it from our web site, copy it to the HC08ISP program directory and overwrite the old license.txt.

Wrong error message

If the MONIF08-LC is not connected or not powered the misleading error message „MONIF08-G not found“ appears. This will be fixed in future releases of the software, and has no other effect than just a wrong message.

Unable to find Help File after installation

Sometimes the help system doesn't work after the first start after installation.

To use the help just after installation, start the program, close it and start it again.

This procedure is only required once after installation.

Wrong format in Source-Files (S19 or Intel Hex)

S19 Files are only allowed to have S0, S1 and S9 records. Hex-Files are not allowed to have extended records. Memory range ist to be between 0x0000 and 0xffff.

If not, this will kill the HC08ISP with a blue screen.

Missing S9 record

If the S9-record is missing the program hangs, but can be terminated regularly. Programming the flash will not work without s9 record.

8 CANdyBug

The GZ16STK-Hardware works together with this PC software as a CAN Analyzer Tool.

All required hardware and software is included in the starterkit. The EB08GZSBC is connected to the PC via the serial interface (SCI) using the MONIF08-LC as level converter.

The .s19-File candybug_gz.s19 (found in the starterkit disk, directory CANdyBug Demo) is to be loaded into the 'GZ16 before the software can be used.

The CANdyBUG Software requires Microsoft Windows 2000 or XP and the Microsoft .NET runtime environment (included on the Starter kit CD)

Microsoft Windows NT4.0 is currently not tested, but may work. Unfortunately Windows 98 and ME are currently not supported. Future versions will also work on Win98 /ME. Please send us an email if you need a version that runs under Win98 or ME.

If you have suggestions for additional functions in CANdyBug you are missing please send us an email with your ideas.

9 Additional Options for the GZ16STK – LIN Interface

We are currently working on a LIN interface that can easily be connected to the starterkit using the 10 pin connector. This interface can be purchased at reasonable cost and offers the possibility to use the GZ16 starterkit as a CAN to LIN bridge or as LIN to PC serial interface bridge.

10 Additional Options for the MONIF08-LC**10.1 Using SCI while Debugging in Monitor Mode**

With one MONIF08-LC you can use either the SCI or the monitor mode.

Using a special setup using a second MONIF08-LC or a RS232-TTL-Adapter and a specially configured 10 pin ribbon cable this limitation can be overcome.

For this purpose a RS232-TTL-Adapter plus the special cable can be purchased from us (order No. MONIF08-LC Opt. 002). Price will be about 25 EUR, plus shipping costs and taxes (VAT) depended on shipping destination.

10.2 Connecting to targets with 16 pin MON08 (P&E Cyclone) connector

An optional adapter is available. Part No. MON08-LC Opt. 001 Adapter Board 10 pin to 16 pin MON08 / P&E Cyclone connector layout

10.3 Full version of the HC08-ISP software

To support any other HC08 microcontroller with our flash programming software and the MONIF08-LC you have to purchase the full version of the HC08-ISP.

10.4 Clock generator

On the back side of the PCB of the MONIF08-LC a standard canned oscillator with disable input can be soldered. This oscillator can be switched on and off via its disable input.

This oscillator is intended for debugging, programming and trimming of HC08 controller with internal oscillator module (ICG) or for derivatives that need an external clock for other reasons.

With the full version of the HC08ISP software, additional config commands for switch on and off can be sent. Switch state is stored in flash for use with debugging tools.

If you want to purchase any of the mentioned options, please send us an email for detailed pricing and the address of you nearest distributor.