

Programming MGC3030/3130 in Production

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RECOMMENDED WORK FLOW

The recommended work flow to apply a project-specific firmware is shown in [Figure 1](#).

With the final design (GestIC electrodes, PCB layout, as well as mechanics) available, the MGC3X30 firmware parameters have to be adjusted ([Step 1: Parameterization of the Firmware](#)). This is done using the parameterization wizard of Aurea software and results in a new parameterized firmware which is saved to a file ([Step 2: Saving Customer-Specific Firmware](#)). The file must be programmed to the MGC3X30 device before assembly or to the assembled module during the series production ([Step 3: Programming MGC3X30 in Production](#)).

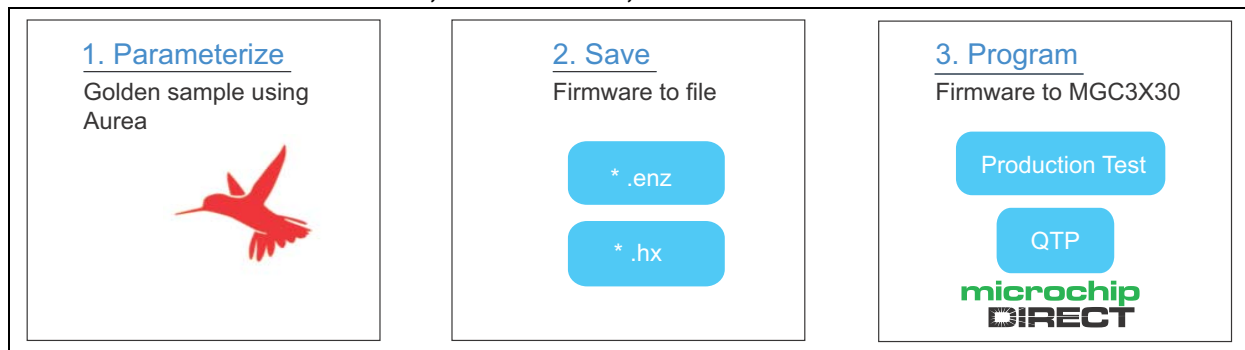
INTRODUCTION

MGC3030 and MGC3130 devices are shipped with a bootloader (Library loader). The processing firmware (GestIC[®] Library) needs to be loaded to the device to be functional.

The GestIC Library is provided by Microchip and is parameterized by the customer to accommodate the specific design.

The latest GestIC Library is part of the latest Aurea software package, which is available for download on the Microchip web site (www.microchip.com/gesticresources). It is exemplary parameterized for the electrode included in the DM160218 Hillstar and the DM160226 Woodstar Development Kits.

FIGURE 1: PARAMETERIZE, SAVE TO FILE, PROGRAM



STEP 1: PARAMETERIZATION OF THE FIRMWARE

Connecting the MGC3X30 to Aurea

The parameterization of the MGC3X30 firmware is done by the Aurea software. Thus, it is necessary to provide a connection between the MGC3X30 sensor and the PC running Aurea.

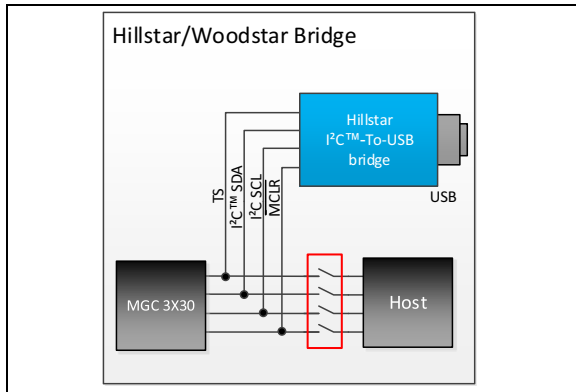
Please use one of the following methods:

- Using I²C[™]-to-USB bridge from the DM160218 Hillstar or the DM160226 Woodstar Development Kits ([Figure 2](#)). The bridge is documented in the User's Guide of the respective kit.

To use the I²C-to-USB bridge, the SDA, SCL, TS and MCLR lines need to be connected. The host controller needs to be disconnected from these lines.

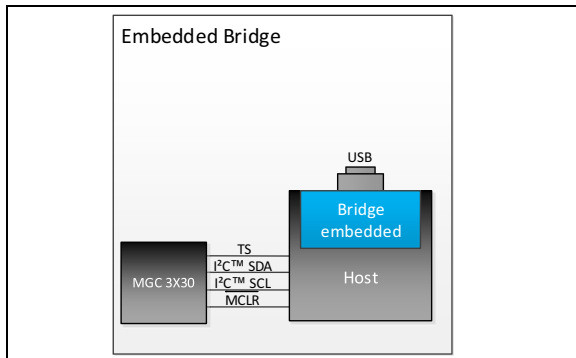
Alternatively, and most common, the host can be held in Reset or the I/O pins of the host are set to high-impedance.

FIGURE 2: PROGRAMMING THROUGH EMBEDDED BRIDGE



- The host controller acts as I²C-to-USB bridge (Figure 3). The reference code for the MGC3X30 I²C access is part of the MGC3030/3130 Software Development Kit and can be combined with the USB stack of the host controller.

FIGURE 3: HARDWARE PROGRAMMING ACCESS



MGC3X30 Parameterization with Aurea

For individual parameterization steps, refer to the built-in Aurea help pages or the GestIC video tutorials (www.microchip.com/videohmidtutorials).

STEP 2: SAVING CUSTOMER-SPECIFIC FIRMWARE

The Aurea parameterization wizard will generate a customer-specific firmware file. Aurea merges the MGC3X30 core firmware with customer-specific parameters before saving it to a file.

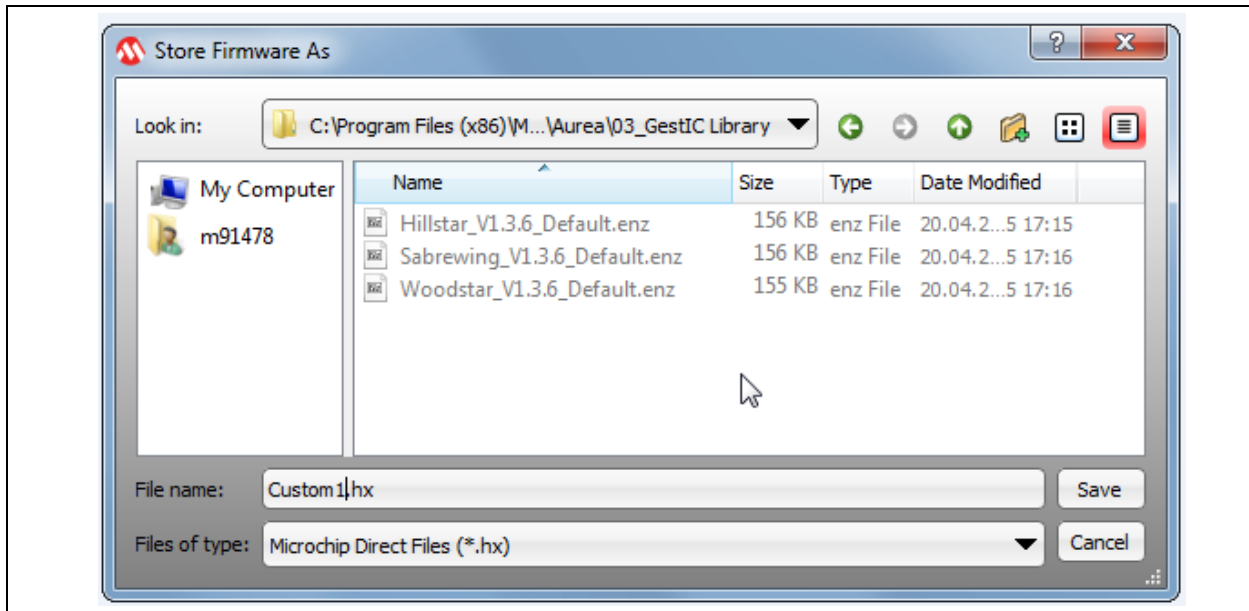
By default, the firmware will be stored as a *.enz file. To support microchipDIRECT Programming Service or Quick Turn Programming Service (QTP), the Save File dialog box allows the choice of file type "Microchip Direct Files (*.hx)" (Figure 4).

Along with the *.hx, file, the text file (*.txt) containing version numbers and a 32-bit checksum will be saved (Example 1).

EXAMPLE 1: LISTING OF custom01.txt

```
2015-02-10 18:46:33
*****
Custom01.hx saved successfully
*****
Custom01.txt saved successfully
*****
Version: 1.2.4, Platform: Hillstar V1.0,
Customized ID: 'Custom01'
*****
CRC Checksum: 0x7a429db8
*****
```

FIGURE 4: AUREA FILE EXPORT



Note 1: Both files (*.hx and *.enz) contain the same information. Files ending with *.enz can later be reloaded to Aurea.

2: microchipDIRECT Programming Service allows a 16-bit checksum only. Until the service is updated it is recommended to leave the checksum field open.

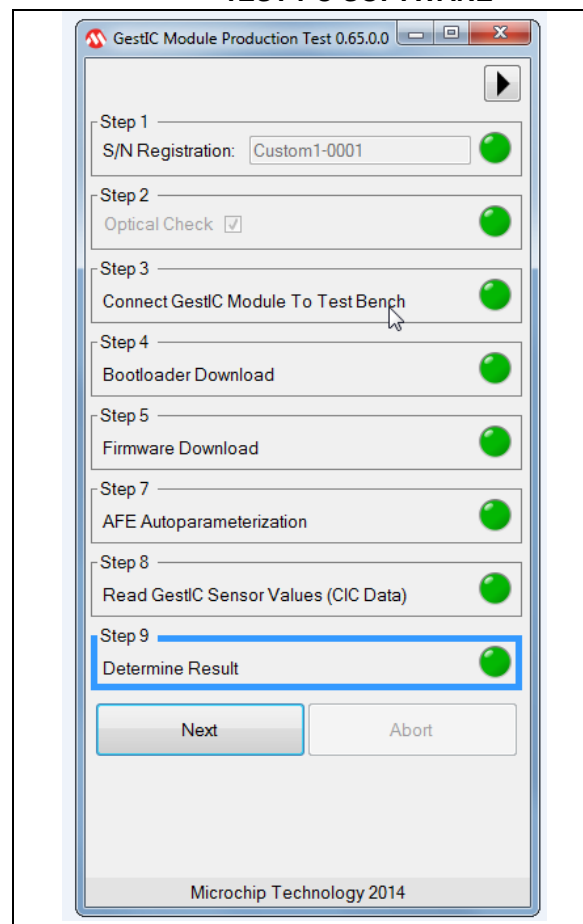
STEP 3: PROGRAMMING MGC3X30 IN PRODUCTION

MGC3X30 Production Test Software

The MGC3X30 Production Test Software (Figure 5) was developed for the automatized GestIC module test in production environments. Among many other features, the Production Test Tool offers functional performance tests and upload of the MGC3X30 firmware.

The software runs on a Windows® PC and requires an I²C-to-USB bridge interface, as shown in Section “Connecting the MGC3X30 to Aurea”. For the software, contact your local Microchip support team.

FIGURE 5: MGC3X30 PRODUCTION TEST PC SOFTWARE



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Production Test Features:

- Firmware Download
- Checksum Support
- Functional Test
- Statistics
- Configurable

Download via Embedded Host Controller

This option requires an embedded host controller which performs the firmware download on a I²C level using the MGC3X30 message interface. The GestIC library is hereby stored in the host's memory. A complete code reference is provided in the MGC3030/3130 Software Development Kit (www.microchip.com/gesticresources).

Order Pre-programmed Parts

Pre-programmed MGC3X30 parts can be ordered through:

- microchipDIRECT Programming Center. Go to www.microchipdirect.com/programming/ for further information;
- Microchip Quick Turn Programming Service for large quantities of parts with unique part number. Contact your local Microchip sales office.

In both cases, programming is based on the .hex file generated by the Aurea (see [Step 2: Saving Customer-Specific Firmware](#)).

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ISBN: 978-1-63277-397-5

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