

UM1683 User manual

STEVAL-VNH5180A Evaluation board

Introduction

STEVAL-VNH5180A offers dedicated power stage and controls suitable for electric DC motor driving. This evaluation board features the VNH5180A. It is an H-bridge belonging to the VNH Motor Driver series based on VIPower® proprietary technology. Typical applications are door lock and dead lock.

This evaluation board consists of a motherboard (STM8 Universal Board) and a daughterboard. The motherboard, based on STM8 microcontroller, provides the logic section for monitoring and driving the VNH5180A assembled in the daughter-board. With the aim of simplifying board usage and settings, ST provides dedicated and user-friendly software including a Graphic User Interface (GUI). The GUI allows setting VNH5180A parameters (PWM, Motor direction...), while showing real time device diagnostic information, such as current output evolution, battery voltage monitoring, board temperature and much more.

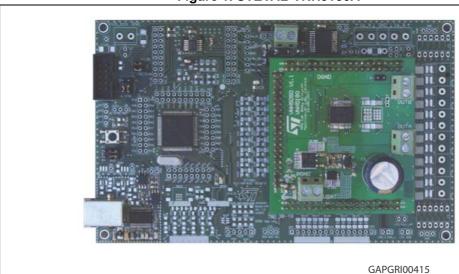


Figure 1. STEVAL-VNH5180A

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1 Hardware description and setup

This section provides a description of the main components of this evaluation kit, giving instruction for a quick setup of the motor control system.

1.1 Components description

The evaluation kit consists of two main components:

- Mother board based on STM8A microcontroller, interfacing host PC with H-Bridge controller. The communication with the PC is established through isolated USB.
- Daughter board assembling VNH5180A and the reverse battery protection. The DC motor has to be connected to this module.

The daughter board and the mother board are provided already properly plugged

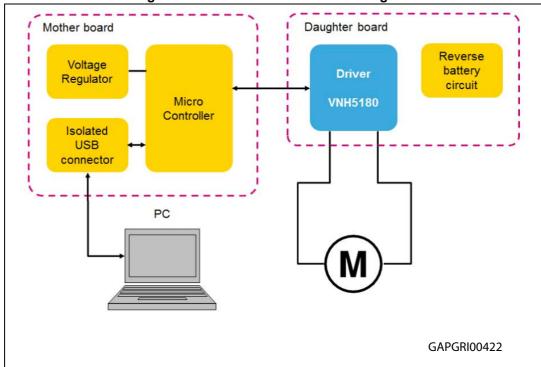


Figure 2. STEVAL-VNH5180A block diagram

1.2 Board connections and setup

Below figure shows the placement of the connectors to be used for supplying the evaluation board, plugging the electric DC motor and connecting with a host PC through USB cable.

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Mother Board Supply (12V)

DC Motor – Phase A

DC Motor – Phase B

Daughter Board Supply (12V)

USB connector

GAPGRI00416

Figure 3. STEVAL-VNH5180A connections

Jumpers are already set in their default position.

Table 1. Motherboard jumper configuration

		· · · · · · · · · · · · · · · · · · ·		
Jumper	Description	Default position		
JP2	+ 5 V_DB	Not present		
JP2	+ 5 V_STM8	Present		
JP4	RxD	USART		
JP5	TxD	USART		
JP6	Reset	STM8		
JP7	Swim	STM8		

UM1683 Software installation

Software installation 2

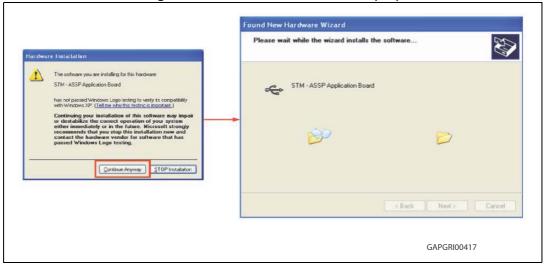
2.1 **USB** Driver installation

The following installation procedure starts automatically after plugging the Evaluation Board to the host PC.

₩ Found New Hardware STM - VIP Application Board Select drivers folder included in the STEVAL-VNH5050 software installation package. Please choose your search and installation This wizard helps you install software for Search for the best driver in these locations STM - ASSPApplication Board Use the check boxes below to limit or expand the paths and removable media. The best driver four If your hardware came with an installation CD or floppy disk, insert it now. C\My\Projects\USB - FTDI\Driver\D2xx-driver-&SS 🐷 Browse What do you want the wizard to do? Opon't search. I will choose the driver to install ☐ Install from a list or specific location [Advanced] Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware. Click Next to continue. < Back Next > Cancel < Back GAPGRI00409

Figure 4. Driver installation window (1/2)





UM1683 Software installation

2.2 Graphical User Interface (GUI) installation

Launching Setup.exe, GUI installs to the destination folder indicated by the wizard.

Default folder is "C:\Program Files(x86)\VNHFULLBridge", but the user is free to indicate another path name and folder.

Figure 6. GUI installation (1/2)

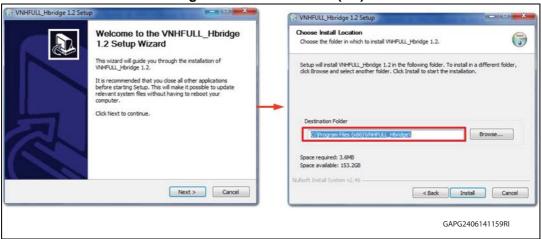
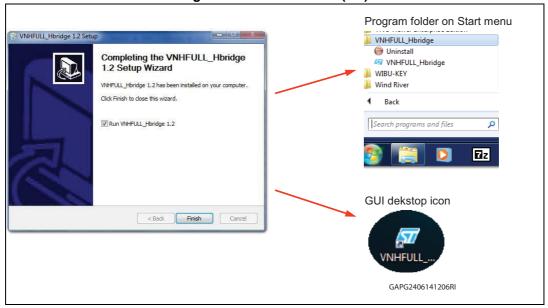


Figure 7. GUI installation (2/2)

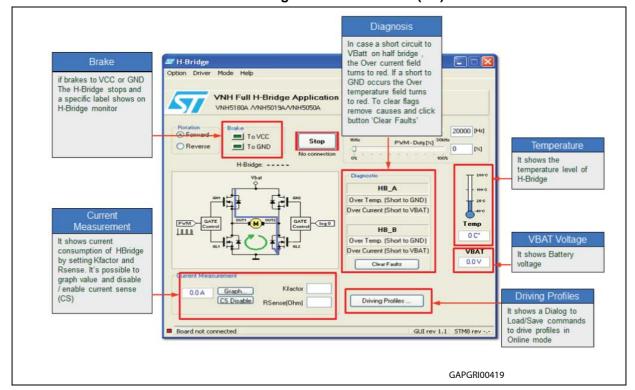


3 **Graphical user interface**

If the user starts the motor with PWM 0% then the Edit Box blink with Red color VNH Full H-Bridge Application board PWM settings Frequency [Hz] 20000 [Hz] To VCC Rotation, Brake, Start/Stop Duty Cycle [%] Stop Automatic Device identification. OUT MOUTE GATE leg 0 HB_A Over Temp. (Short to GND) (every daughter board has Over Current (Short to VBAT) HB_B 0.0 Over Temp. (Short to GND)
Over Current (Short to VBAT) VBAT Clear Faults Driving Profiles ... Depending from the settings of 'rotation' the screen shows how current is physically flowing through the H-GAPGRI00418

Figure 8. Main Window (1/2)

Figure 9. Main Window (2/2)





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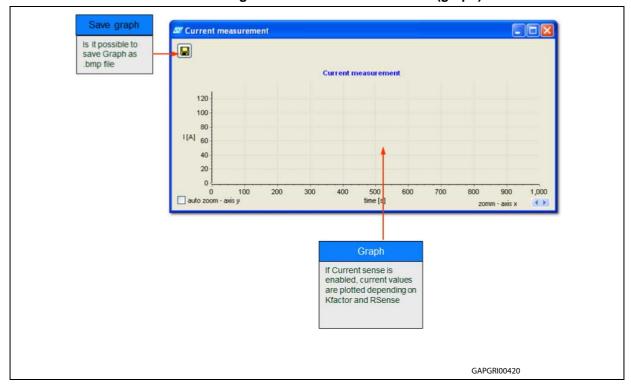
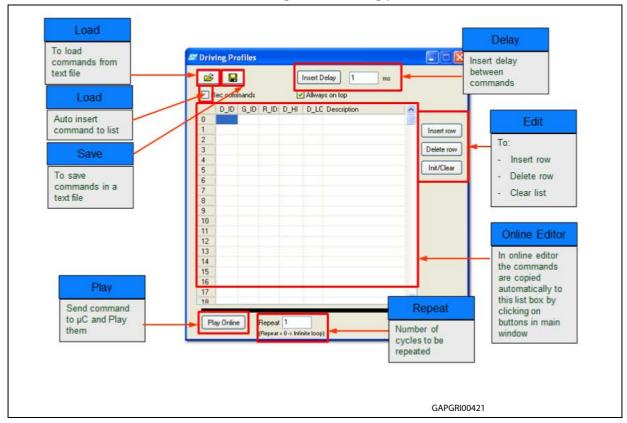


Figure 10. Current measurement (graph)





Revision history UM1683

4 Revision history

Table 2. Document revision history

Date	Revision	Changes	
20-Oct-2013	1	Initial release.	
24-Jun-2014	2	Added Section 2.1 and Section 2.2.	

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