

## STEVAL-IHI001V1 demonstration board

### Introduction

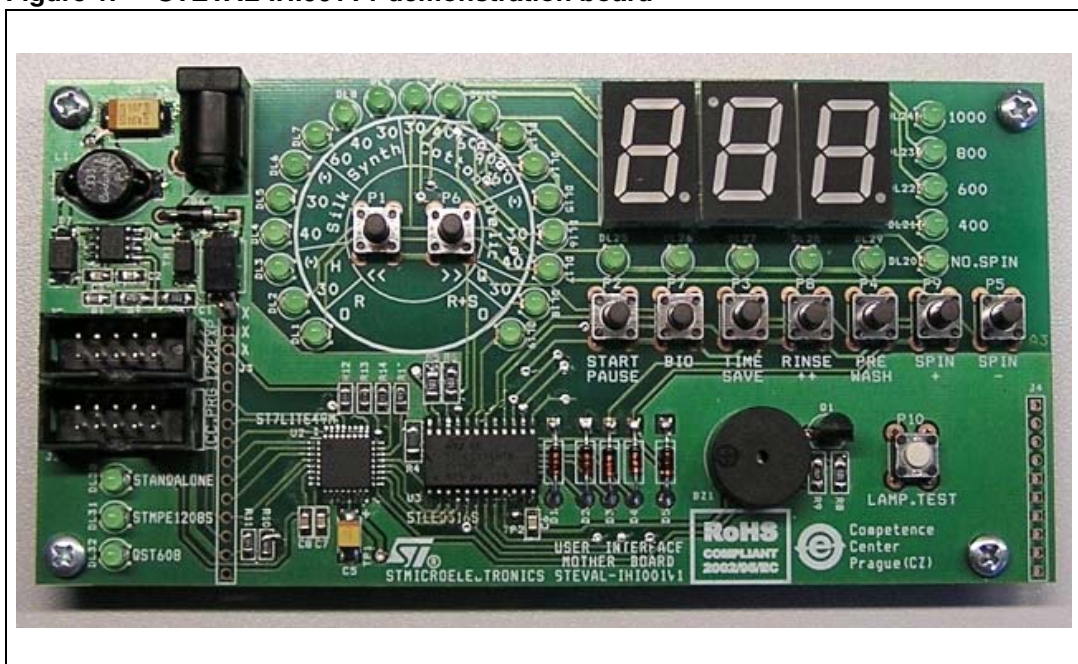
The STEVAL-IHI001V1 is a demonstration board designed to simulate the user interface of a modern washing machine.

From a hardware and software standpoint, the board is ideal to demonstrate the capability of the STLED316S serial interface 6-digit LED controller with key scan.

The user interface features 53 LEDs, 8 keys, a buzzer and extra connectors to eventually connect a daughterboard featuring a capacitive sensing keyboard with buttons, wheel and slide.

The demonstration board is controlled by a low-cost 8-bit ST7LITE49M microcontroller with I<sup>2</sup>C bus interface.

**Figure 1. STEVAL-IHI001V1 demonstration board**



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# 1 Safety instructions

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**Warning:** The STEVAL-IHI001V1 demonstration board must be used in a suitable laboratory by qualified personnel only, familiar with the installation, use, and maintenance of electrical systems.

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## Intended use

The STEVAL-IHI001V1 demonstration board is a component designed for demonstration purposes only, and shall be used neither for domestic installation nor for industrial installation. The technical data as well as the information concerning the power supply and working conditions shall be taken from the documentation included in the package and strictly observed.

## Installation

The installation of the STEVAL-IHI001V1 demonstration board shall be taken from the present user manual and strictly observed.

The components must be protected against excessive strain. In particular, no components are to be bent, or isolating distances altered during transportation, handling or usage.

The STEVAL-IHI001V1 demonstration board contains electrostatically-sensitive components that are prone to damage through improper use. Electrical components must not be mechanically damaged or destroyed (to avoid potential risks and health injury).

## Electrical connection

Applicable national accident prevention rules must be followed when working on the power supply mains. The electrical installation shall be completed in accordance with the appropriate requirements (e.g. cross-sectional areas of conductors, fusing, PE connections).

## Board operation

A system architecture which supplies power to the demonstration board shall be equipped with additional control and protective devices in accordance with the applicable safety requirements (e.g. compliance with technical equipment and accident prevention rules).

## 2 Installation and plug-in

STEVAL-IHI001V1 needs an input voltage in the range 5 V-30 V DC to operate properly.

Plug any AC adapter working in the range specified above into the J1 connector. A notebook AC adapter should work as well.

Please check if the AC adapter you are about to plug into the J1 connector is compatible with the input voltage range specified above.

An AC adapter is not provided with the demonstration board package.

Once the AC adapter is plugged in, the board immediately operates.

### 3 Main features

**Electronic features:**

- SMPS to connect directly to a notebook AC adapter
- New 8-bit ST7Lite49M MCU with I<sup>2</sup>C bus to control the system
- New STLED316S to drive display, LEDs and a 10-key keyboard
- 3 displays and 32 LEDs as graphic interface
- Automatic daughterboard detection
- ICC connector and extra I<sup>2</sup>C bus connector
- Standalone functionality when no daughterboard connected

**Features dedicated to washing machines:**

- Wheel with 19 wash programs with various times and features
- Additional program settings including BIO, Time save, Rinse+, Pre-Wash
- 5-level adjustable SPIN speeds, including a NO-SPIN function
- Adjustable LED brightness
- Buzzer to acknowledge key pressing
- Lamp-test button
- Standalone washing machine simulation

## 4 Wash programs

While the demonstration board is in pause (DL25 is off which is located over the P2 button), the user may change the wash program, as described below in [Table 1](#):

**Table 1. Wash programs (example)**

Program	Time (hh:mm)	BIO	Time save	Rinse++	Spin
Rinse	00:20	-	-	+00:10	400/1000+NS
Hand wash 30	01:10	-	-00:30	+00:10	400/1000+NS
Hand wash cold	01:20	-	-00:30	+00:10	400/1000+NS
Silk / wool 40	01:10	-	-00:30	+00:10	400/1000+NS
Silk / wool 30	01:10	-	-00:30	+00:10	400/1000+NS
Silk / wool cold	01:20	-	-00:30	+00:10	400/1000+NS
Synthetic 60	01:40	+00:10	-00:30	+00:10	400/1000+NS
Synthetic 40	01:30	-	-00:30	+00:10	400/1000+NS
Synthetic 30	01:30	-	-00:30	+00:10	400/1000+NS
Cotton 30	02:40	-	-00:30	+00:10	400/1000+NS
Cotton 40	02:40	-	-00:30	+00:10	400/1000+NS
Cotton 60	02:50	+00:10	-00:30	+00:10	400/1000+NS
Cotton 90	03:00	+00:10	-00:30	+00:10	400/1000+NS
Cotton 60 ECO	03:00	+00:10	-00:30	+00:10	400/1000+NS
Delicate cold	01:20	-	-00:30	+00:10	400/1000+NS
Delicate 30	01:10	-	-00:30	+00:10	400/1000+NS
Delicate 40	01:10	-	-00:30	+00:10	400/1000+NS
Quick 30	00:40	-	-	+00:10	400/1000+NS
Rinse + Spin	00:30	-	-	+00:10	400/1000

Once the program has been set, pressing the P2 button starts the countdown (the LEDs in the display start to blink).

The countdown is for demonstration purposes only. Once the counter reaches zero, the demonstration board returns to pause.

## 5 Brightness control and lamp test

When the demonstration board is not in pause (DL25 is on which is located over the P2 button), the brightness of the LEDs may be changed by repeatedly pressing the P9 and P5 buttons.

The user may perform a lamp test and check the functionality of the LEDs by pressing P10 at any time.

## 6 STEVAL-IHI002V1 daughter demonstration board

The STEVAL-IHI001V1 has been designed to host an external daughter demonstration board. The STEVAL-IHI002V1 daughter demonstration board can be connected to the motherboard through the J3 and J4 connectors. It features a capacitive sensing keyboard made of a wheel, slide and 5 buttons.

The motherboard detects the daughterboard automatically. The STMPE1208S LED turns on, while the standalone LED turns off.

Mechanical keys also work while the capacitive sensing keyboard is connected.

Figure 2. STEVAL-IHI002V1 daughter demonstration board

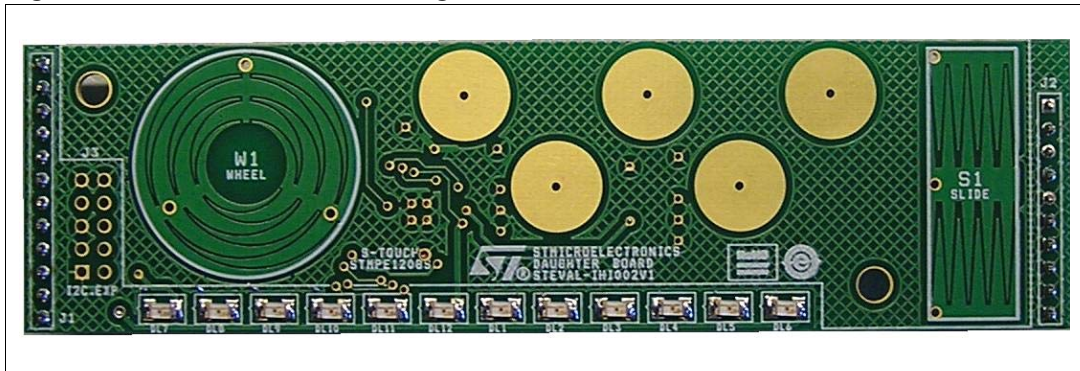
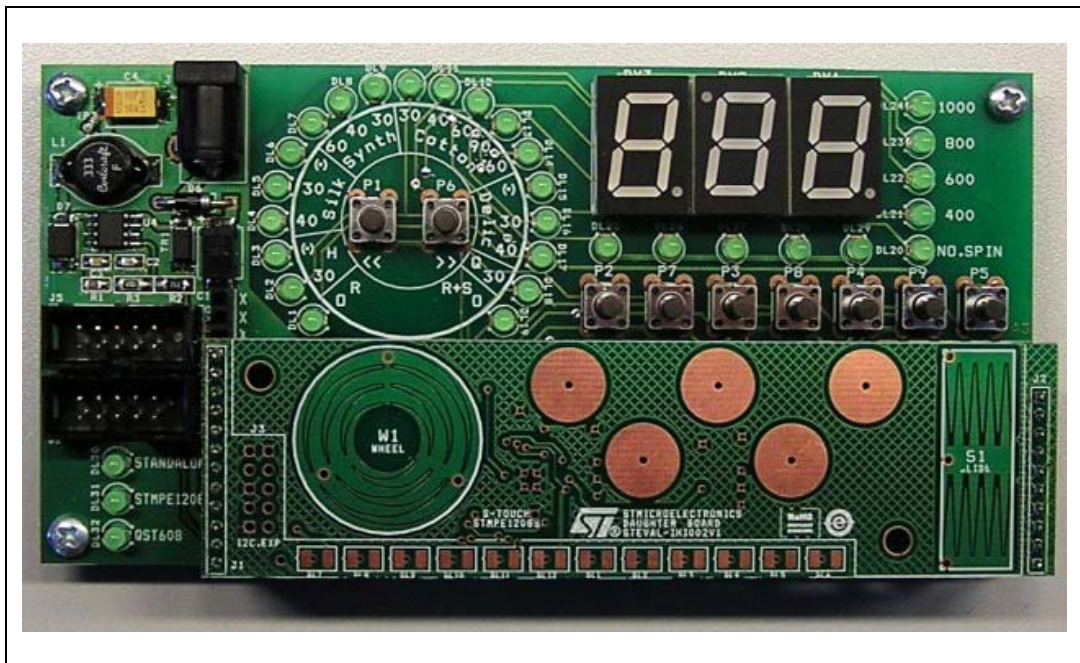


Figure 3. Daughter demonstration board connected to the mother demonstration board





## 7 Revision history

**Table 2. Document revision history**

Date	Revision	Changes
21-Aug-2008	1	Initial release

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