Industrial digital output expansion board based on IPS2050H for STM32 Nucleo

Features

- Based on IPS2050H dual high-side switch, which features:
  - Operating range up to 60 V/2.5 A
  - Low power dissipation ($R_{ON(MAX)} = 50 \, \text{mΩ}$)
  - Fast decay for inductive loads
  - Smart driving of capacitive load
  - Under-voltage lock-out
  - Per-channel overload and over-temperature protection
  - PSSO24 package

- Application board operating range: 8 to 33 V/0 to 2.5 A
- Extended voltage operating range (J3 open) up to 60 V
- Green LEDs for output on/off status
- Red LEDs for per-channel diagnostic (overload and overheating)
- 5 kV galvanic isolation
- Supply rail reverse polarity protection
- EMC compliance with IEC61000-4-2, IEC61000-4-3, IEC61000-4-5
- Compatible with STM32 Nucleo development boards
- Equipped with Arduino UNO R3 connectors
- CE certified
- RoHS and China RoHS compliant

Description

The X-NUCLEO-OUT03A1 industrial digital output expansion board for STM32 Nucleo provides a powerful and flexible environment for the evaluation of the driving and diagnostic capabilities of the IPS2050H (dual high-side smart power solid state relay) in a digital output module connected to 2.5 A (max.) industrial loads.

The X-NUCLEO-OUT03A1 interfaces with the microcontroller on the STM32 Nucleo via 5 kV optocouplers driven by GPIO pins, Arduino UNO R3 (default configuration) and ST morpho (optional, not mounted) connectors.

The expansion board can be connected to either a NUCLEO-F401RE or NUCLEO-G431RB development board.

It is also possible to evaluate a system composed by up to four stacked X-NUCLEO-OUT03A1 expansion boards.

As an example, a system with four X-NUCLEO-OUT03A1 expansion boards allows you to evaluate an eight-channel digital output module with 2.5 A (max.) capability each.

Product summary

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For further information contact your local STMicroelectronics sales office.

www.st.com
Figure 1. X-NUCLEO-OUT03A1 circuit schematic (1 of 2)

**ST morpho connectors (N.M.)**

**Arduino connectors**

**Analog supply**
- 8 V - 60 V

**Alternate Nucleo supply**
- 7 V - 12 V

(7V-12V NUCLEO supply voltage)
Figure 2. X-NUCLEO-OUT03A1 circuit schematic (2 of 2)
## Revision history

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<td>04-Aug-2021</td>
<td>1</td>
<td>Initial release.</td>
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