

Industrial digital output expansion board based on IPS1025H for STM32 Nucleo



Features

- Based on the [IPS1025H](#) single high-side switch, which features:
 - Operating range up to 60 V
 - Low-power dissipation ($R_{ON(MAX)} = 25\text{ m}\Omega$)
 - Fast decay for inductive loads
 - Smart driving of capacitive loads
 - Under-voltage lock-out
 - 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 LED for output on/off status
- Red LEDs for overload and overheating diagnostics
- 5 kV galvanic isolation
- Supply rail reverse polarity protection
- EMC compliance with IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-8
- Compatible with [STM32 Nucleo](#) development boards
- Equipped with Arduino UNO R3 connectors
- CE certified:
 - EN 55032:2015 + A1:2020
 - EN 55035:2017 + A11:2020
- RoHS and China RoHS compliant

Description

The [X-NUCLEO-OUT05A1](#) 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 [IPS1025H](#) single high-side smart power solid state relay, in a digital output module connected to 2.5 A industrial loads.

The [X-NUCLEO-OUT05A1](#) interfaces with the microcontroller on the [STM32 Nucleo](#) via 5 kV optocouplers driven by GPIO pins and Arduino R3 connectors.

The expansion board can be connected to either a [NUCLEO-F401RE](#) or a [NUCLEO-G431RB](#) development board.

It is also possible to evaluate a system composed of up to four stacked [X-NUCLEO-OUT05A1](#) expansion boards.

As an example, a system with four [X-NUCLEO-OUT05A1](#) expansion boards allows you to evaluate a quad channel digital output module.

Product summary	
Industrial digital output expansion board based on IPS1025H for STM32 Nucleo	X-NUCLEO-OUT05A1
Industrial digital output software expansion for STM32Cube	X-CUBE-OUT5
Single high-side smart power solid state-relay	IPS1025H
Applications	Programmable Logic Controllers

1 Schematic diagrams

Figure 1. X-NUCLEO-OUT05A1 circuit schematic (1 of 2)

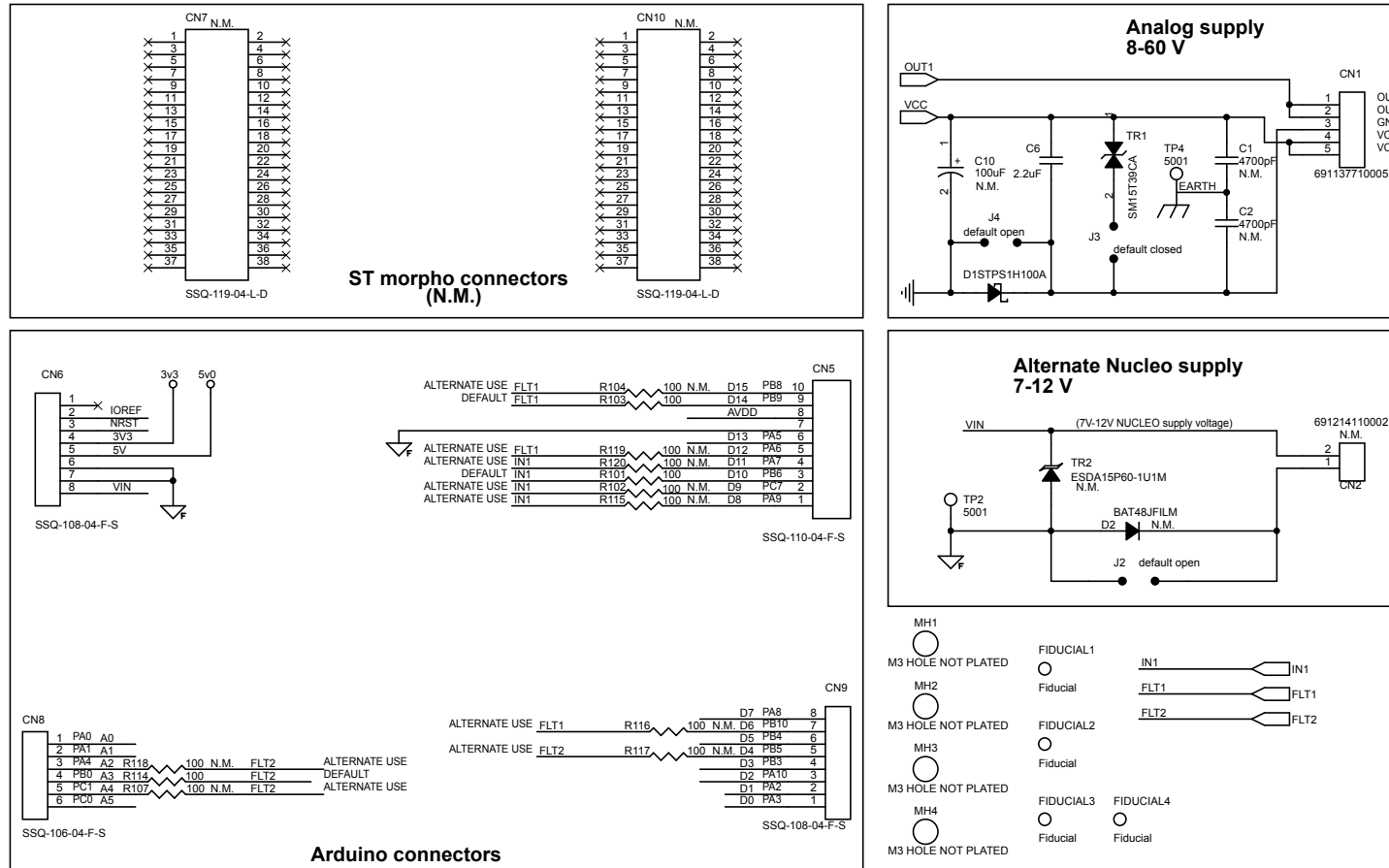
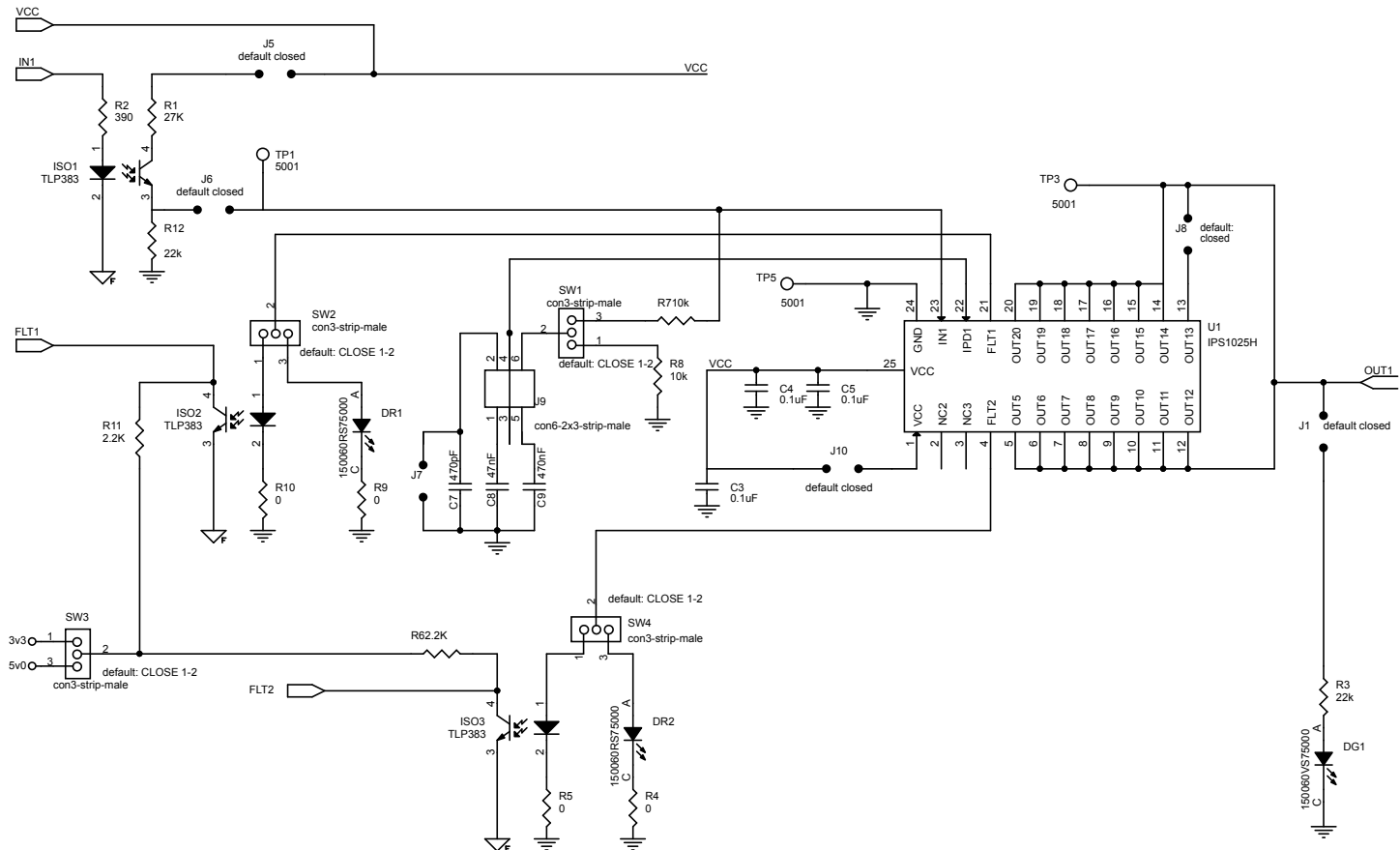


Figure 2. X-NUCLEO-OUT05A1 circuit schematic (2 of 2)



2 Board versions

Table 1. X-NUCLEO-OUT05A1 versions

Finished good	Schematic diagrams	Bill of materials
X\$NUCLEO-OUT05A1 ⁽¹⁾	X\$NUCLEO-OUT05A1 schematic diagrams	X\$NUCLEO-OUT05A1 bill of materials

1. This code identifies the X-NUCLEO-OUT05A1 evaluation board first version.

Revision history

Table 2. Document revision history

Date	Version	Changes
24-Mar-2022	1	Initial release.

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