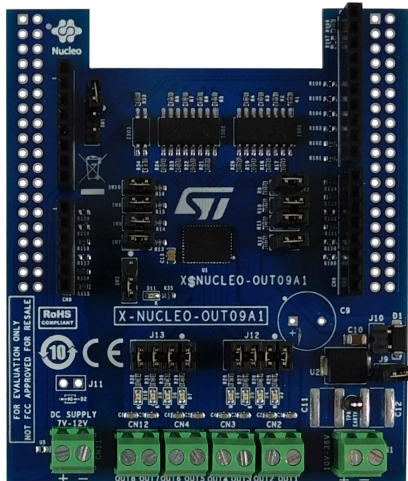


Industrial digital output expansion board based on IPS8160HQ for STM32 Nucleo



Features

- Based on the [IPS8160HQ](#) octal high-side switch, which features:
 - Operating range 10.5 to 36 V
 - Low power dissipation ($R_{ON(MAX)} = 280 \text{ m}\Omega$)
 - Fast decay for inductive loads
 - Undervoltage lock-out
 - Overload and overtemperature protections
 - Loss of ground protection
 - QFN48L 8x6 mm package
- Application board voltage operating range: 15 to 33 V
- Extended voltage operating range (J9 open) up to 36 V
- Operating current: up to 0.7 A per channel
- Green LEDs for outputs on/off status (J12 and J13 close 1-2, 3-4, 5-6, 7-8)
- Red LED for common overheating diagnostic (SW2 close 2-3)
- 3 kV galvanic isolation
- Supply rail reverse polarity protection
- Compatible with [STM32 Nucleo](#) development boards
- Equipped with [Arduino® UNO R3](#) connectors
- RoHS and China RoHS compliant
- CE certified

Product summary	
Industrial digital output expansion board based on IPS8160HQ for STM32 Nucleo	X-NUCLEO-OUT09A1
Software expansion for STM32Cube driving industrial digital output based on intelligent power switch (IPS)	X-CUBE-IPS
Octal high-side smart power solid-state relay	IPS8160HQ
Applications	Programmable Logic Controllers

Description

The [X-NUCLEO-OUT09A1](#) 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 [IPS8160HQ](#) octal high-side smart power solid state relay, in a digital output module connected to 0.7 A industrial loads.

The [X-NUCLEO-OUT09A1](#) interfaces with the microcontroller on the [STM32 Nucleo](#) via 3 kV and 3.7 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 a [X-NUCLEO-OUT09A1](#) stacked on other expansion boards.

1 Schematic diagrams

Figure 1. X-NUCLEO-OUT09A1 circuit schematic (1 of 2)

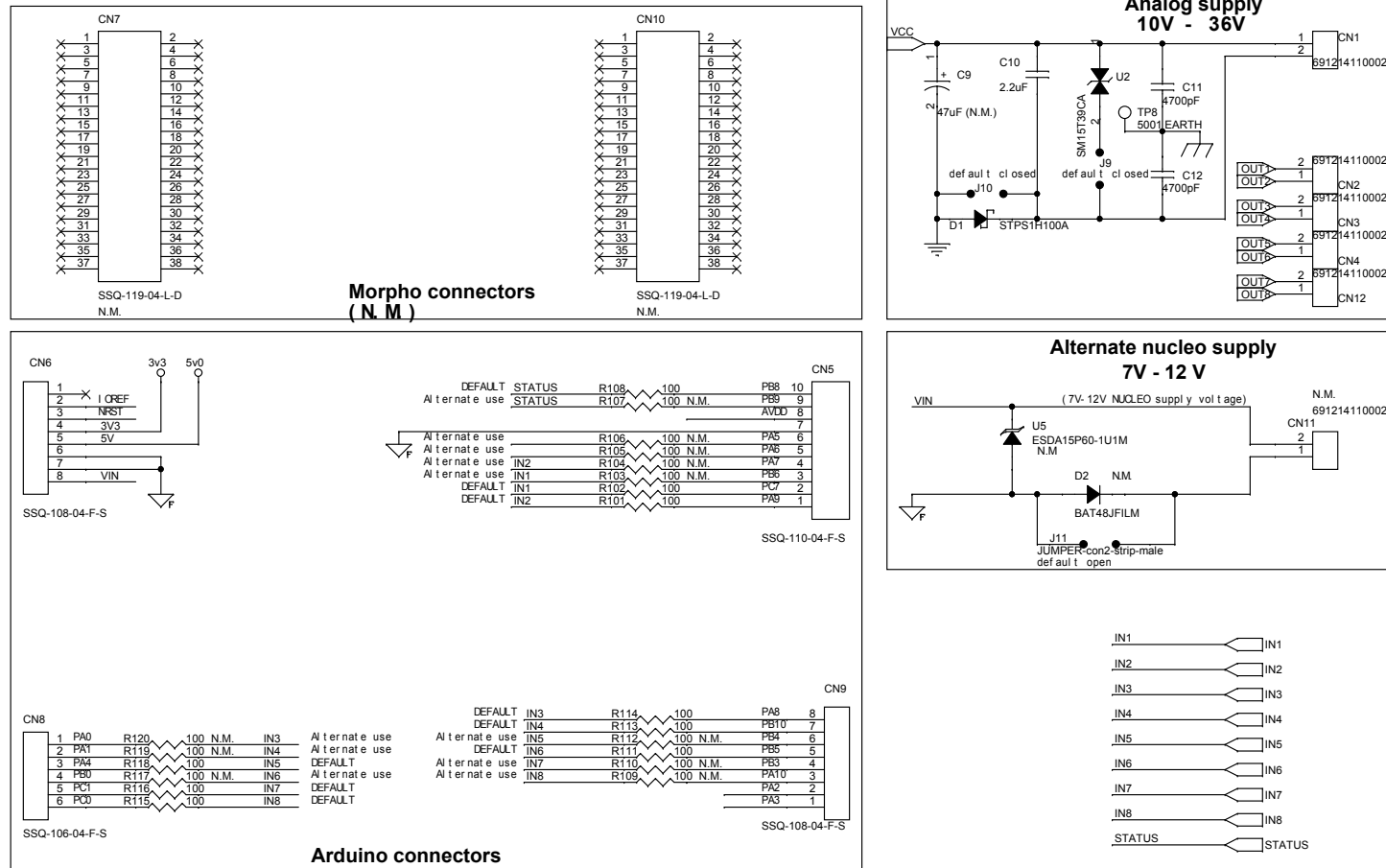
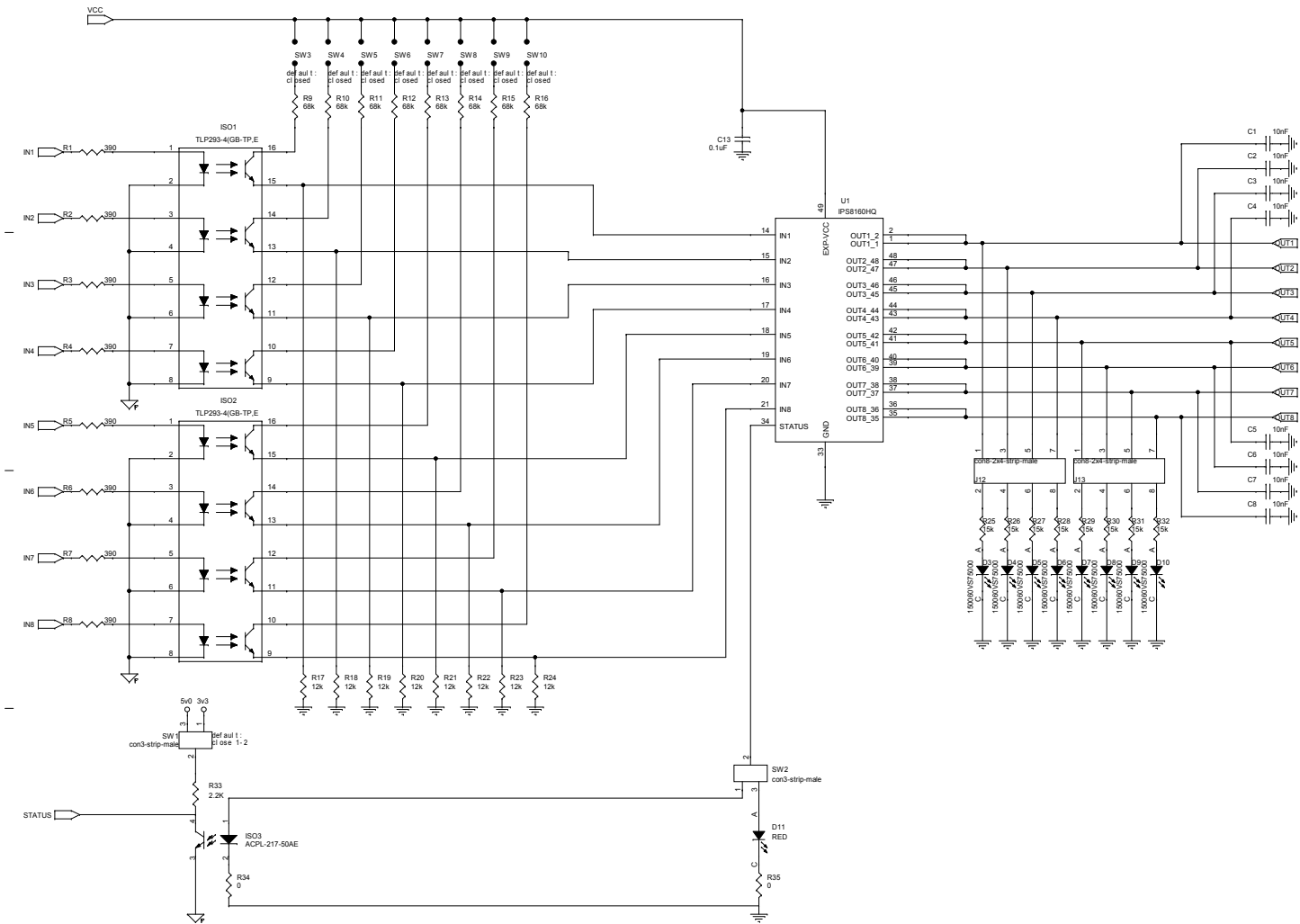


Figure 2. X-NUCLEO-OUT09A1 circuit schematic (2 of 2)



2 Board versions

Table 1. X-NUCLEO-OUT09A1 versions

Finished good	Schematic diagrams	Bill of materials
X\$NUCLEO-OUT09A1 ⁽¹⁾	X\$NUCLEO-OUT09A1 schematic diagrams	X\$NUCLEO-OUT09A1 bill of materials

1. This code identifies the X-NUCLEO-OUT09A1 evaluation board first version.

Revision history

Table 2. Document revision history

Date	Revision	Changes
14-Oct-2022	1	Initial release.