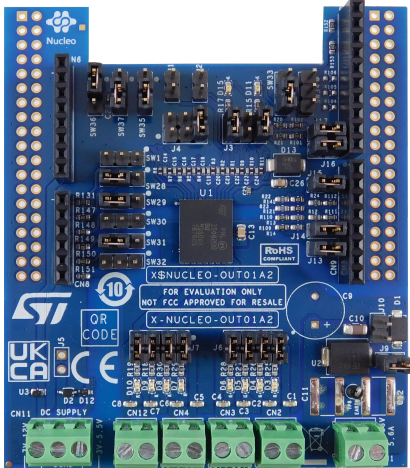


## Industrial digital output expansion board based on ISO8200BQ for STM32 Nucleo



### Features

- Based on the **ISO8200BQ** octal high-side switch, which features:
  - Operating range 10.5 to 36 V
  - Low power dissipation ( $R_{ON(MAX)} = 240\text{ m}\Omega$ )
  - Process side operating current: up to 0.7 A per channel
  - Embedded 2.5k  $V_{RMS}$  galvanic isolation
  - Direct (jitter < 20us) and synchronous (jitter < 6us) control modes
  - Fast decay for inductive loads
  - Undervoltage lock-out
  - Overload and overtemperature protections
  - Loss of ground protection
  - TFQFPN32 package
- Application board process side operating range: 11 (J10 open) to 33 V (J9 closed)
- Extended operating range of process side from 10.5 (J10 closed) up to 36 V (J9 open)
- Application board logic side operating voltage 3.3 to 5 V
- Green LEDs for outputs on/off status (J6 and J7 close 1-2, 3-4, 5-6, 7-8)
- Red LED for common overheating and communication error diagnostic (J3 close 1-2)
- Yellow LED for output enable status signalization (J3 close 5-6)
- Direct control mode (J1 and J2 closed, SW37 close 2-3, SW36 close 1-2)
- Synchronous control mode (J1 and J2 open, SW37 close 2-3, SW36 close 2-3)
- Process and logic supply rails reverse polarity protections
- 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 ISO8200BQ for STM32 Nucleo	X-NUCLEO-OUT01A2
Software expansion for STM32Cube driving industrial digital output based on intelligent power switch (IPS)	X-CUBE-IPS
Galvanic isolated octal high-side power solid state relay for high inductive loads	ISO8200BQTR
Applications	Programmable Logic Controllers

### Description

The **X-NUCLEO-OUT01A2** is an industrial digital output expansion board for **STM32 Nucleo**. It provides a powerful and flexible environment for the evaluation of the driving and diagnostic capabilities of the **ISO8200BQ** octal high-side smart power solid state relay, with embedded galvanic isolation, in a digital output module connected to 0.7 A industrial loads.

The **X-NUCLEO-OUT01A2** directly interfaces with the microcontroller on the **STM32 Nucleo** driven by GPIO pins and Arduino® R3 connectors.

The galvanic isolation between the microcontroller and the process stage is guaranteed by the **ISO8200BQ**.

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-OUT01A2** stacked on other expansion boards.

The board can be configured as the former [X-NUCLEO-OUT01A1](#) by a set of jumpers (open: J13, J14, J15, J16, J17) and switches (close 1-2: SW1, SW28, SW29, SW30, SW31, SW32, SW33, SW35, SW37). In this case, the driving firmware can be only the [X-CUBE-OUT1](#) and the board can be connected to the [X-NUCLEO-PLC01A1](#) to form a powerful industrial PLC with 8 inputs and 16 outputs. Also, wireless communication capabilities can be added with the [X-NUCLEO-IDW01M1](#), which establishes communication on a smart device to manage the PLC remotely. A dedicated ST-PLC app is available for Android™ and iOS™ systems for this purpose.

# 1 Schematic diagrams

Figure 1. X-NUCLEO-OUT01A2 circuit schematic (1 of 2)

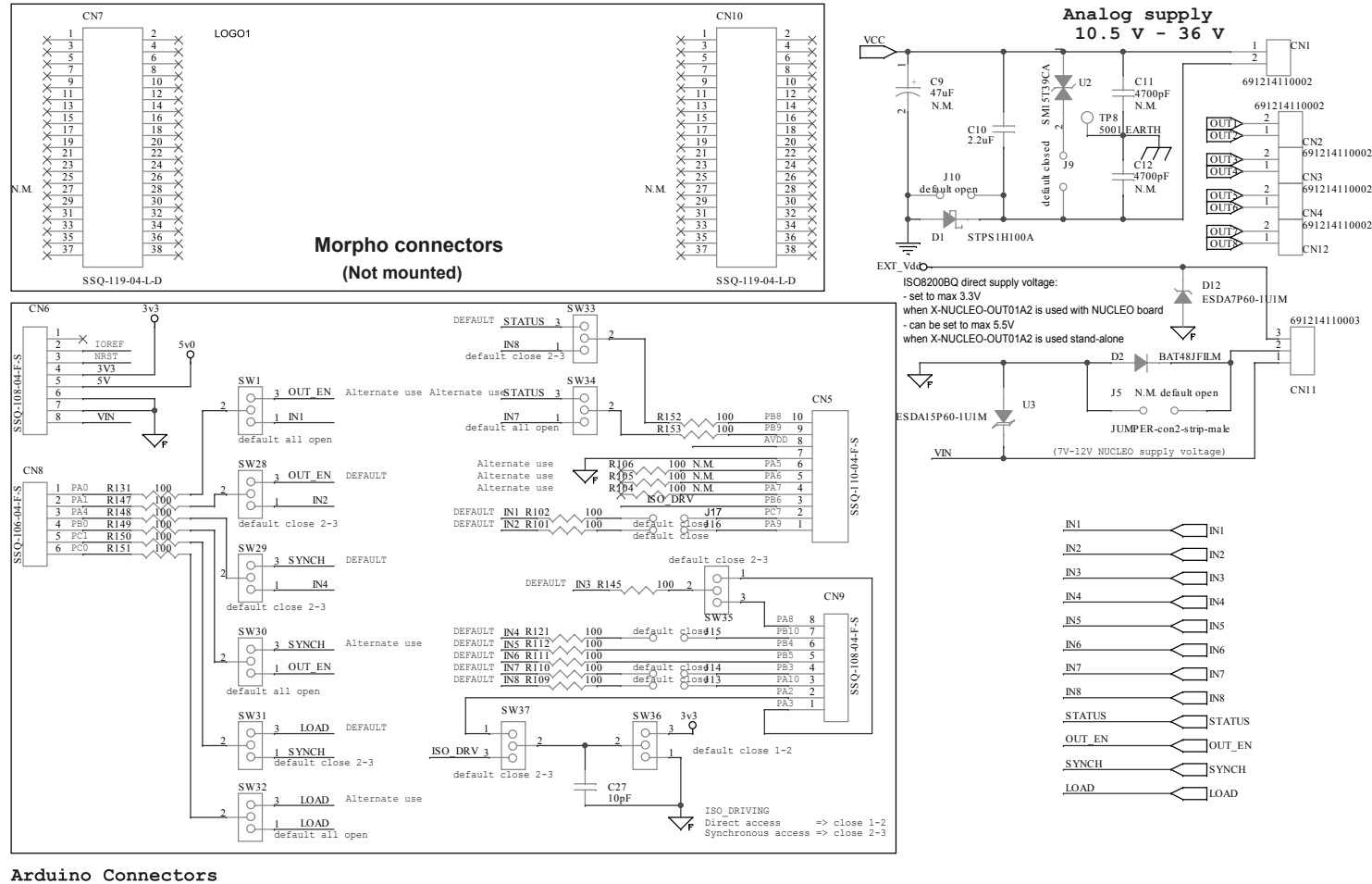
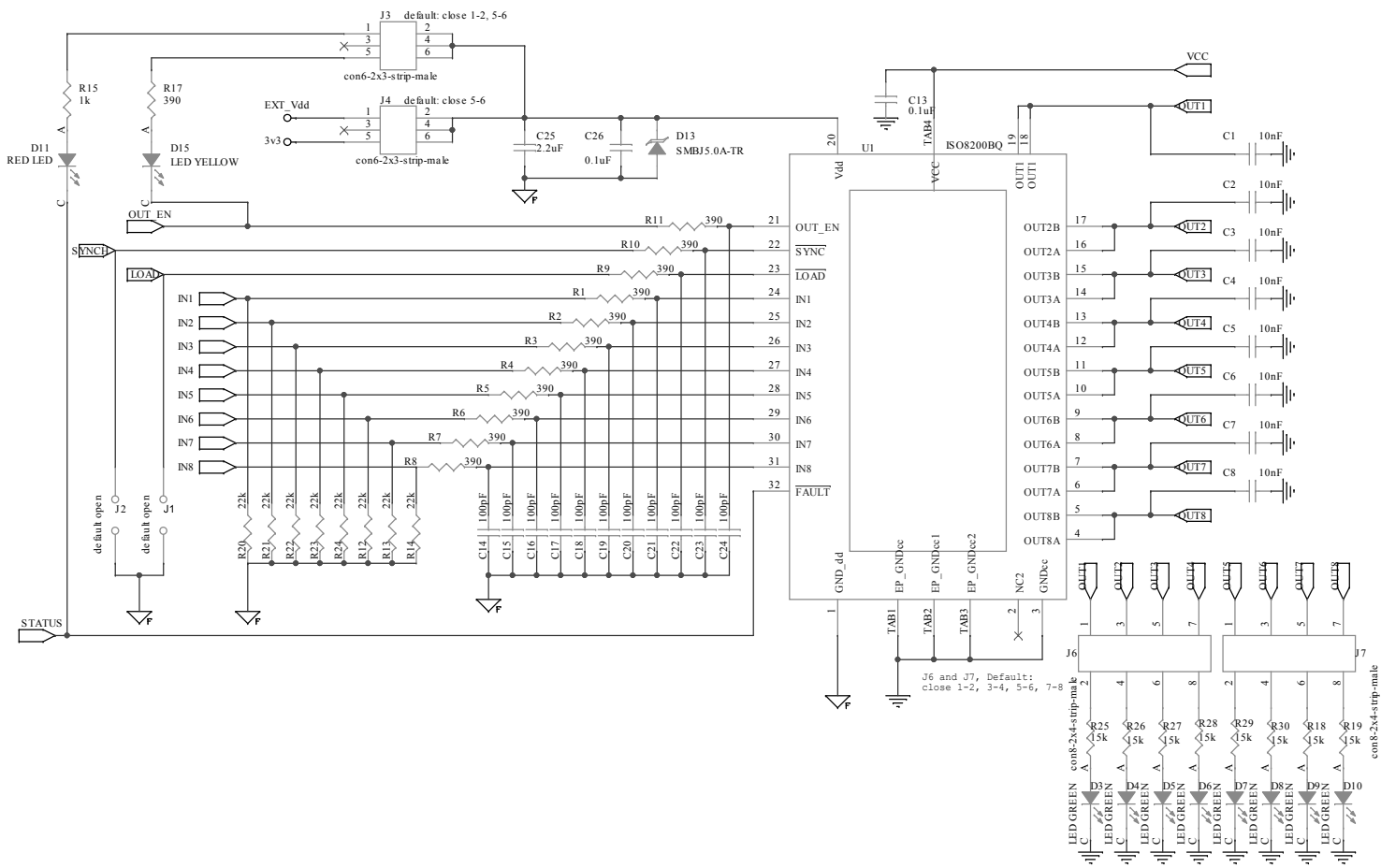


Figure 2. X-NUCLEO-OUT01A2 circuit schematic (2 of 2)



## 2 Board versions

**Table 1. X-NUCLEO-OUT01A2 versions**

PCB version	Schematic diagrams	Bill of materials
X\$NUCLEO-OUT01A2 <sup>(1)</sup>	X\$NUCLEO-OUT01A2 schematic diagrams	X\$NUCLEO-OUT01A2 bill of materials

1. This code identifies the X-NUCLEO-OUT01A2 evaluation board first version. It is printed on the board PCB.

## Revision history

**Table 2. Document revision history**

Date	Revision	Changes
26-May-2023	1	Initial release.

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