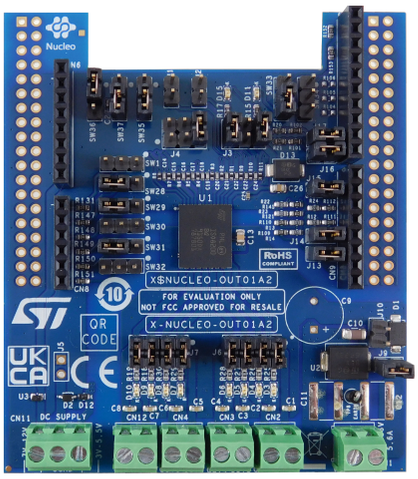
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X-NUCLEO-OUT01A2

Data brief

Industrial digital output expansion board based on ISO8200BQ for STM32 Nucleo



STM32 Nucleo

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

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 mΩ)
  - 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

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.

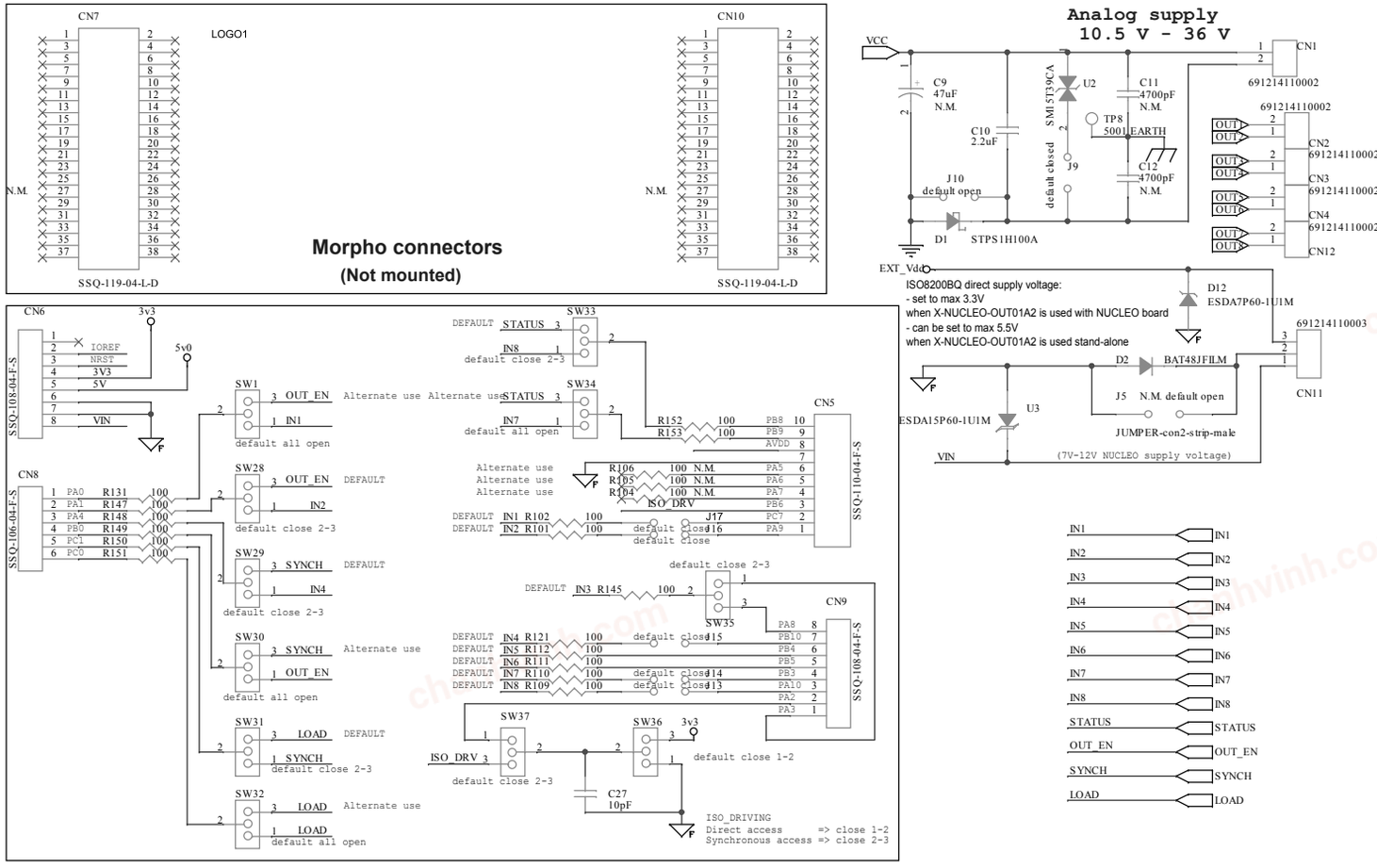
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The board can be configured as the former X-NUCLEO-OUT01A1 by a set of jumpers (open: J13, J14, J15, J16, J17) and switches (close 1-2: SW1, SW28, SW29, SW30, SW31, SW32, SW33, SW35, SW37). In this case, the driving firmware can be only the X-CUBE-OUT1 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.

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1 Schematic diagrams

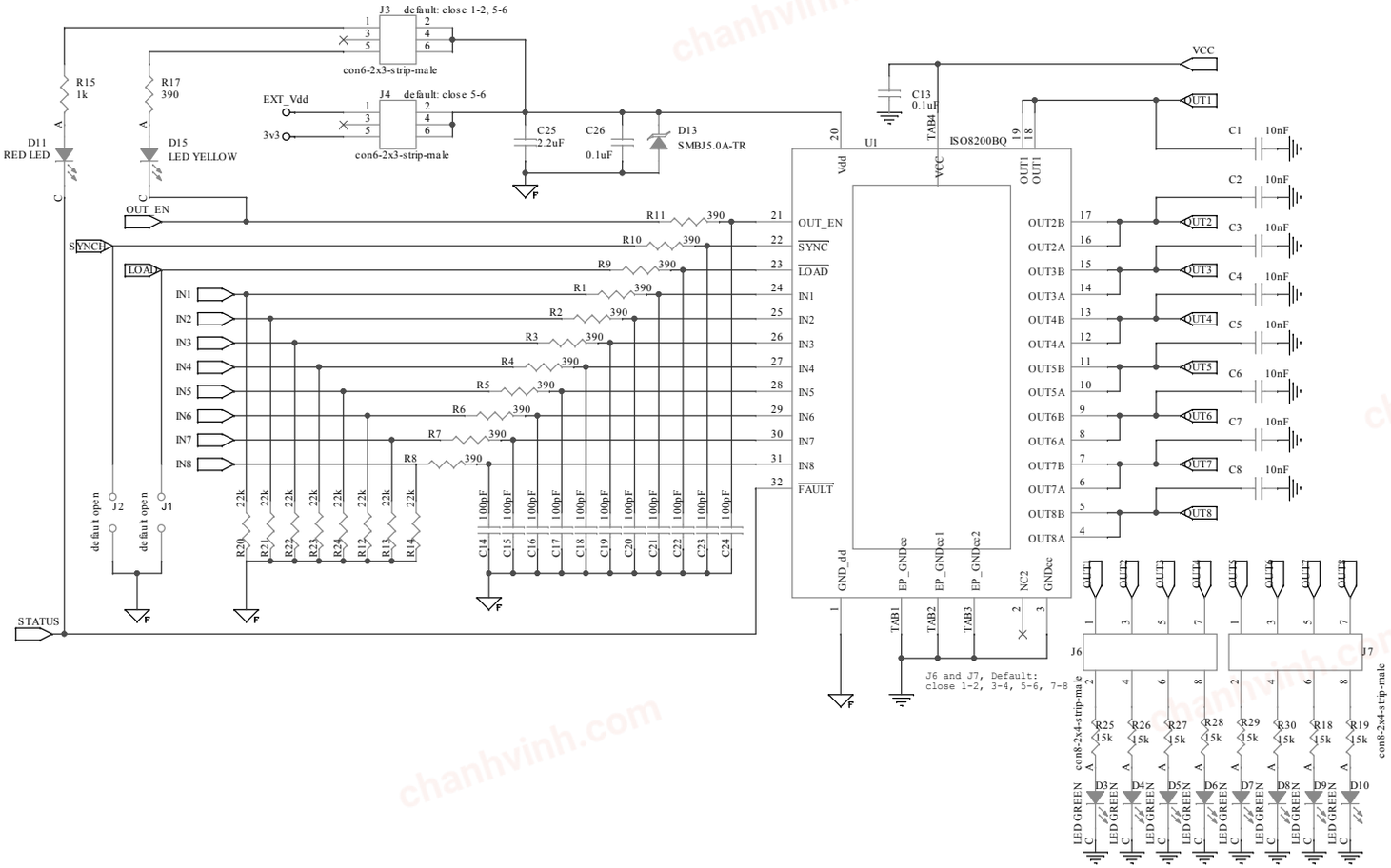
Figure 1. **X-NUCLEO-OUT01A2 circuit schematic (1 of 2)**



Arduino Connectors

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



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2 Board versions

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

PCB version	Schematic diagrams	Bill of materials
X$NUCLEO-OUT01A2 (1)	X$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.*

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Revision history

Table 2. **Document revision history**

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

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