

## Industrial digital output expansion board based on ISO808-1 for STM32 Nucleo



### Features

- Based on the **ISO808-1** octal high-side switch, which features:
  - Operating range 9.2 to 36 V
  - Low power dissipation ( $R_{ON(MAX)} = 260\text{ m}\Omega$ )
  - Process side operating current: up to 1 A per channel
  - Embedded  $2\text{ k V}_{RMS}$  galvanic isolation
  - Direct (jitter < 20 us) and synchronous (jitter < 6 us) control modes
  - Fast decay for inductive loads
  - Undervoltage lock-out
  - Overload and overtemperature protections
  - Loss of ground protection
  - PowerSO36 package
- Application board process side operating range: 10 (J10 open) to 33 V (J9 closed)
- Extended operating range of process side from 9.2 (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 common output enable status signalization (J3 close 5-6)
- Direct control mode (J1, J2 closed)
- Synchronous control mode (J1, J2 open)
- 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-OUT13A1** 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 **ISO808-1** octal high-side smart power solid state relay, with embedded galvanic isolation, in a digital output module connected to 1.0 A industrial loads.

The **X-NUCLEO-OUT13A1** 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 **ISO808-1**.

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-OUT13A1** stacked on other expansion boards.

Product summary	
Industrial digital output expansion board based on ISO808-1 for STM32 Nucleo	<b>X-NUCLEO-OUT13A1</b>
Software expansion for STM32Cube driving industrial digital output based on intelligent power switch (IPS)	<b>X-CUBE-IPS</b>
Galvanic isolated octal high-side power solid state relay for high inductive loads	<b>ISO808TR-1</b>
Applications	<b>Programmable Logic Controllers</b>

# 1 Schematic diagrams

Figure 1. X-NUCLEO-OUT13A1 circuit schematic (1 of 2)

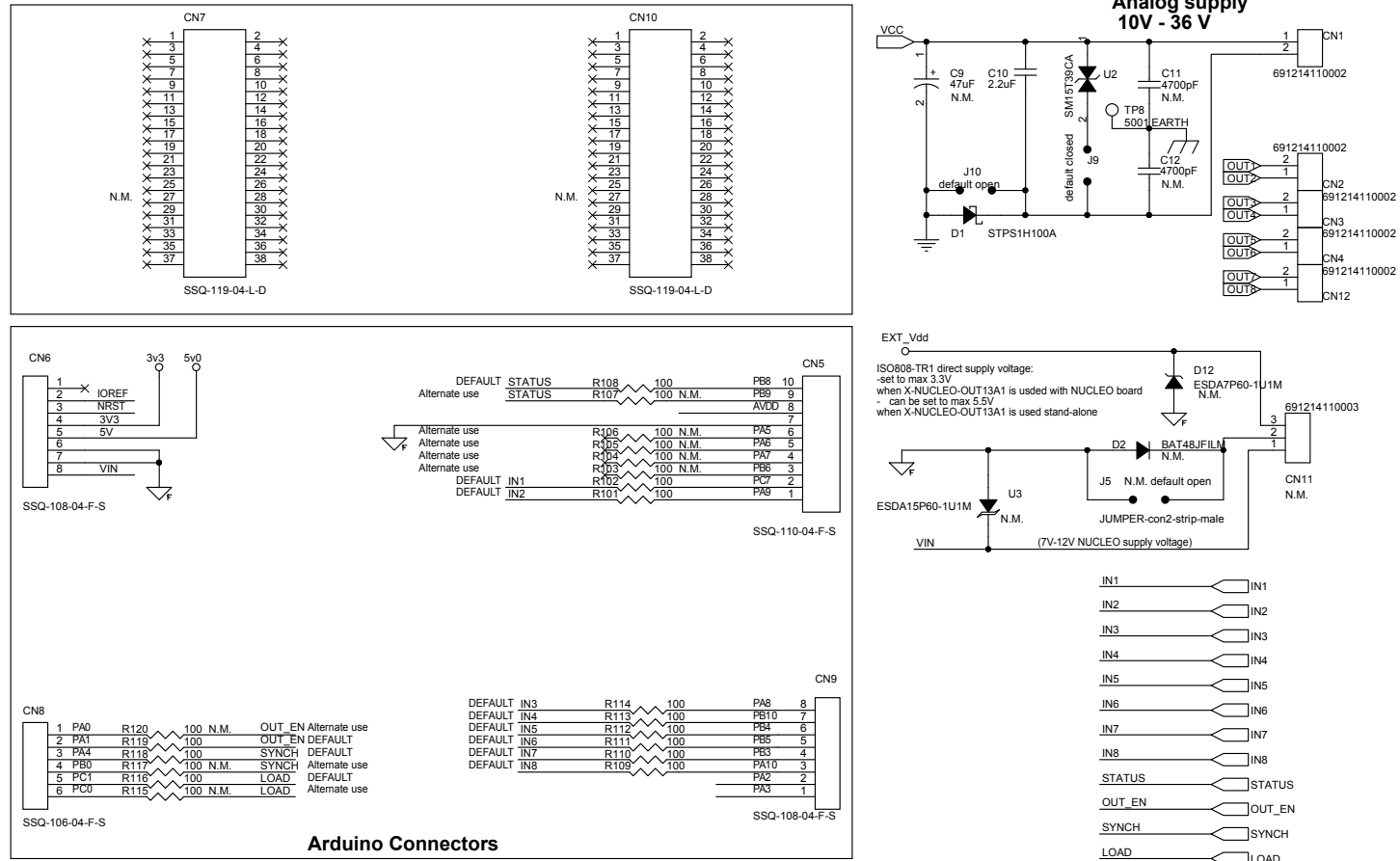
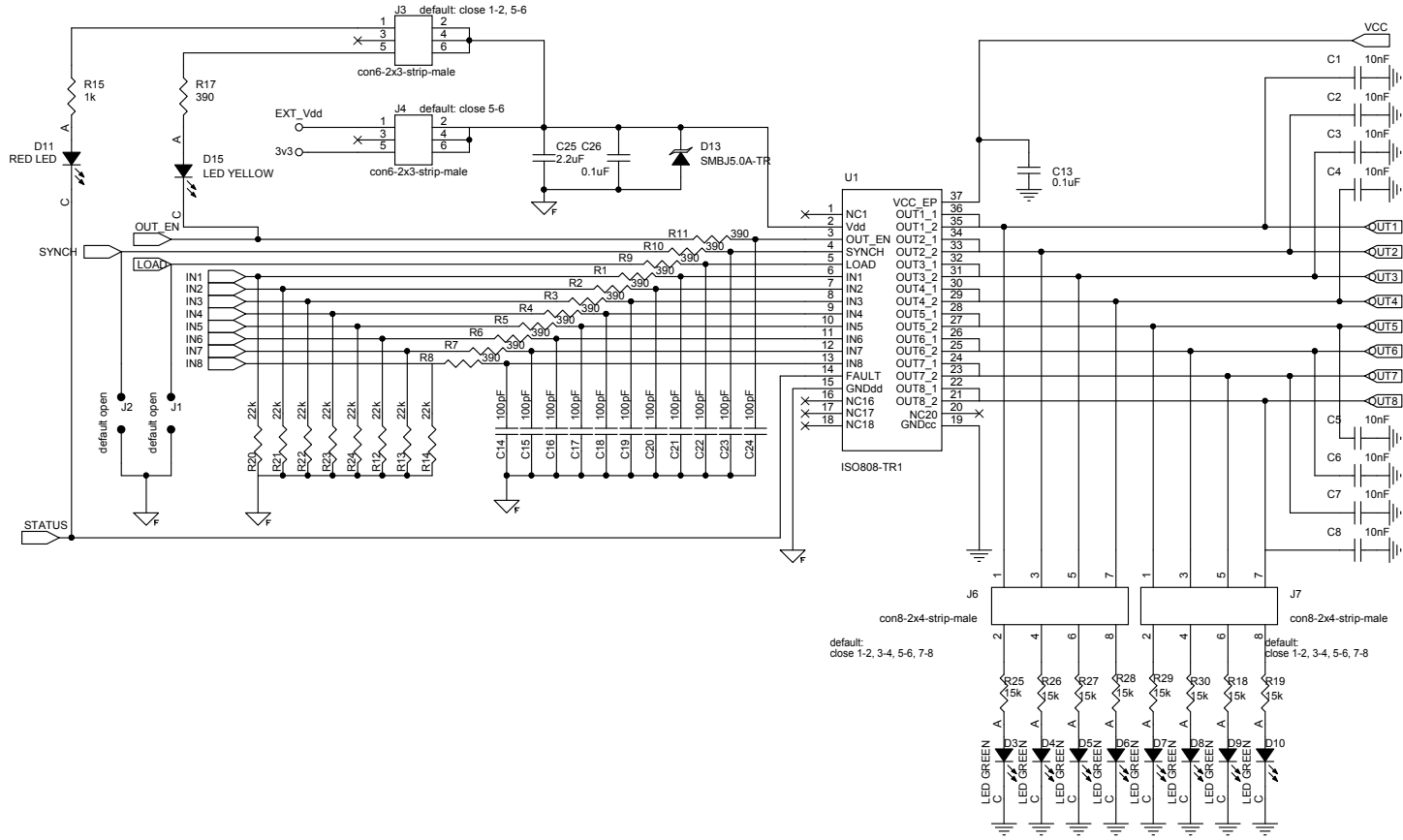


Figure 2. X-NUCLEO-OUT13A1 circuit schematic (2 of 2)



## 2 Board versions

**Table 1. X-NUCLEO-OUT13A1 versions**

Finished good	Schematic diagrams	Bill of materials
X\$NUCLEO-OUT13A1 <sup>(1)</sup>	X\$NUCLEO-OUT13A1 schematic diagrams	X\$NUCLEO-OUT13A1 bill of materials

1. This code identifies the X-NUCLEO-OUT13A1 evaluation board first version.

## Revision history

**Table 2. Document revision history**

Date	Revision	Changes
21-Dec-2022	1	Initial release.
23-May-2023	2	Minor text changes.

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