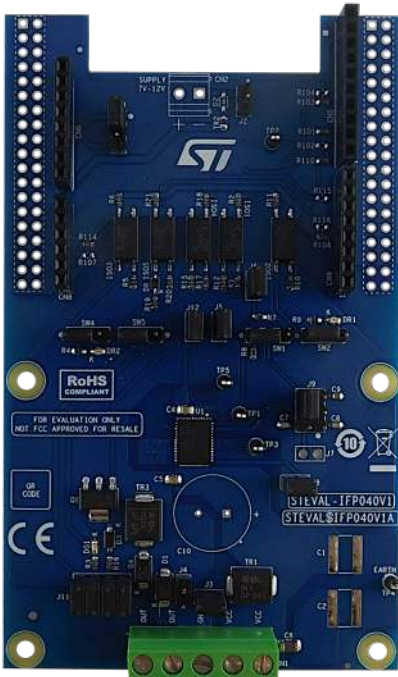


## Industrial digital output expansion board based on IPS1025HF in a QFN48L package



### Features

- Based on the [IPS1025HF](#) single high-side switch, which features:
  - Operating range up to 60 V
  - Low-power dissipation ( $R_{ON(MAX)} = 25\text{ m}\Omega$ )
  - Propagation delay at startup  $< 60\ \mu\text{s}$
  - Fast decay for inductive loads
  - Smart driving of capacitive load
  - Under-voltage lock-out
  - Overload and overtemperature protections
  - QFN48L 8x6 mm package
- Application board operating range: 8-33 V/0-2.5 A
- Extended voltage operating range (J3 open) up to 60 V
- Green LED for output on/off status (J11 close 3-4 and SW5 close 1-2)
- Red LEDs for overload and overheating diagnostics (SW2 and SW4 close 2-3)
- Output voltage on/off status feedback (J11 close 1-2)
- Control signal for fast discharge of output voltage (J11 close 5-6, J12 close)
- External fast discharge circuitry for huge inductive loads (J11 close 7-8)
- 5 kV galvanic isolation
- Supply rail reverse polarity protection
- Compatible with [STM32 Nucleo](#) development boards
- Equipped with [Arduino® UNO R3](#) connectors
- CE certified
- RoHS and China RoHS compliant
- Not FCC approved for resale

Product summary	
Industrial digital output expansion board based on IPS1025HF	STEVAL-IFP040V1
High efficiency, high-side switch with extended diagnostics, smart driving for capacitive loads, and short propagation delay at power-on	IPS1025HFQ
Software expansion for STM32Cube driving industrial digital output based on IPS	X-CUBE-IPS
Applications	Programmable Logic Controllers

### Description

The [STEVAL-IFP040V1](#) is an industrial digital output expansion board. It provides a powerful and flexible environment for the evaluation of the driving and diagnostic capabilities of the [IPS1025HF](#) single high-side, smart power, solid-state relay in a digital output module connected to 2.5 A industrial loads.

The [STEVAL-IFP040V1](#) can interface with the microcontroller on the [STM32 Nucleo](#) via 5 kV optocouplers driven by the GPIO pins and [Arduino® UNO R3](#) connectors.

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

You can also evaluate a system consisting of an [STEVAL-IFP045V1](#) stacked on an [STEVAL-IFP040V1](#) expansion board.

Supplying the [STEVAL-IFP045V1](#) through the main supply rail and the [STEVAL-IFP040V1](#) through the output of the [STEVAL-IFP045V1](#), you can achieve the typical architecture of a single channel digital output for safety systems. The process stages of the two expansion boards result cascaded. The load connected to the [STEVAL-IFP040V1](#) output can be supplied only when both cascaded systems are properly working.

# 1 Schematic diagrams

Figure 1. STEVAL-IFP040V1 circuit schematic (1 of 2)

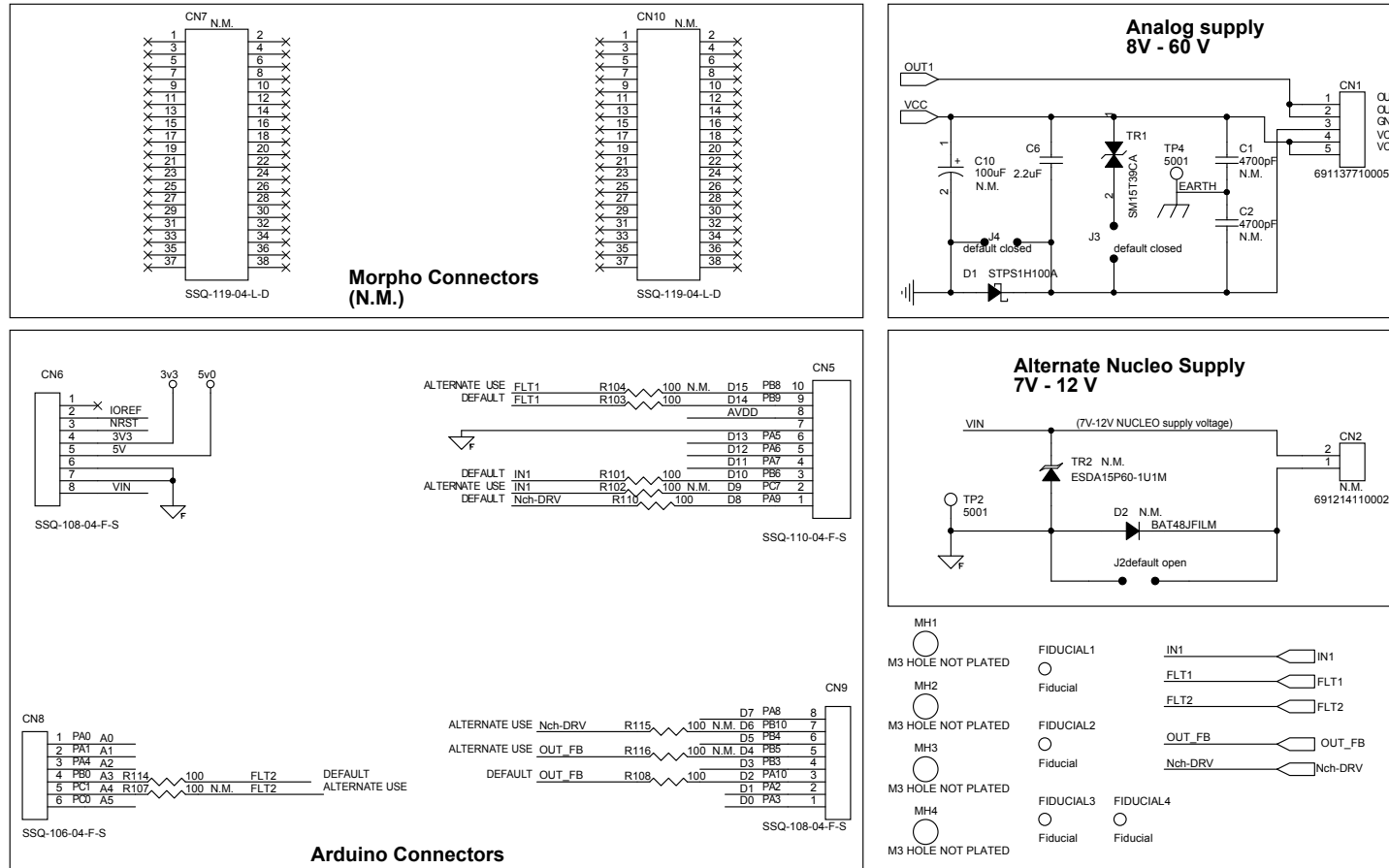
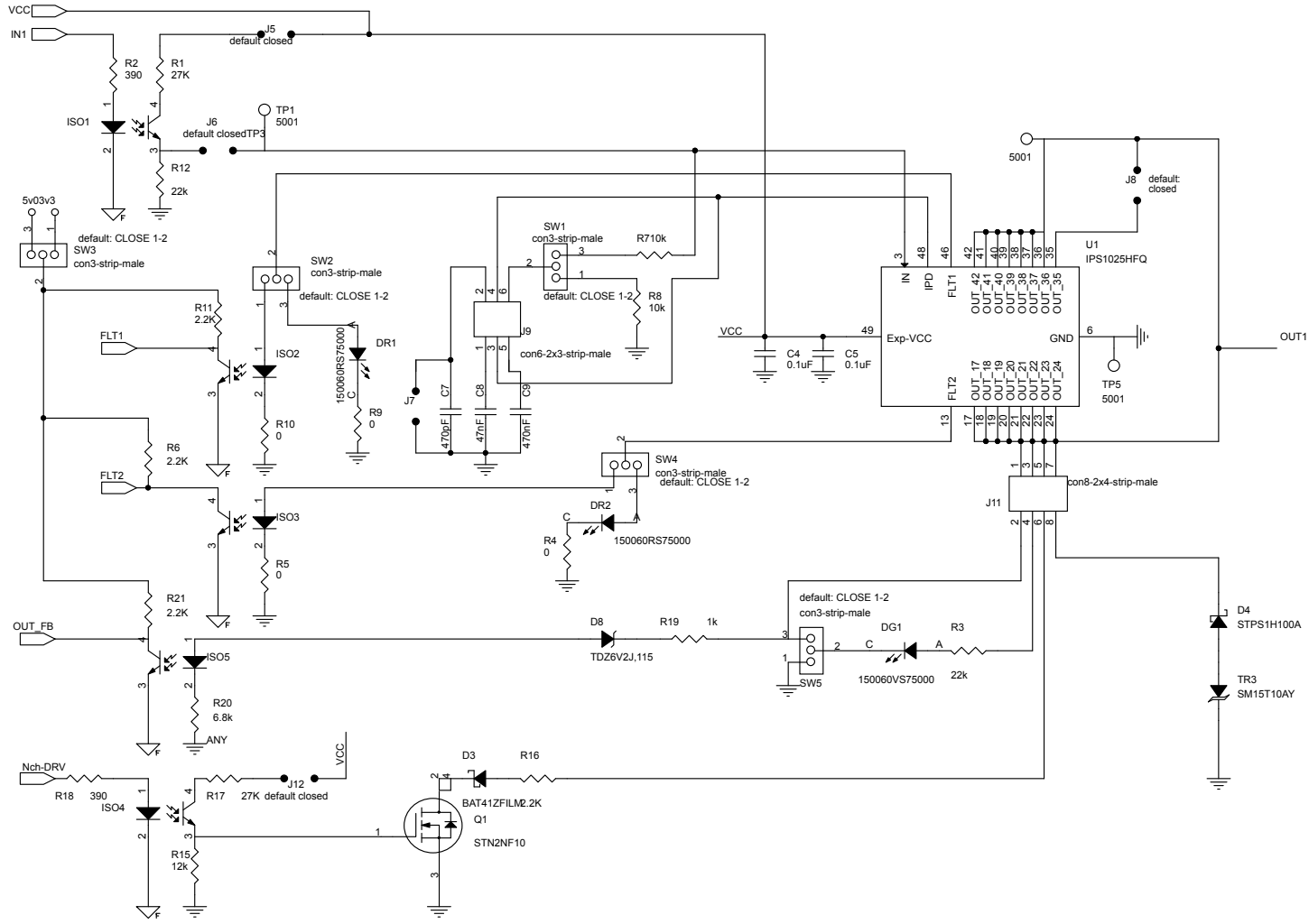


Figure 2. STEVAL-IFP040V1 circuit schematic (2 of 2)



## 2 Board versions

Table 1. STEVAL-IFP040V1 versions

PCB version	Schematic diagrams	Bill of materials
STEVAL\$IFP040V1A <sup>(1)</sup>	STEVAL\$IFP040V1A schematic diagrams	STEVAL\$IFP040V1A bill of materials

1. This code identifies the STEVAL-IFP040V1 evaluation board first version. It is printed on the board PCB.

## Revision history

**Table 2. Document revision history**

Date	Revision	Changes
29-Aug-2022	1	Initial release.

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