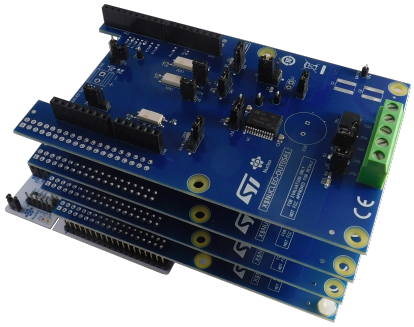
STDES-OUT05DO4

Data brief

60 V/10 A industrial quad digital output based on X-NUCLEO-OUT05A1



Fully assembled board developed for performance evaluation only, not available for sale

Product summary	
60 V/10 A industrial quad digital output based on X-NUCLEO-OUT05A1	STDES-OUT05DO4
Firmware for STDES-OUT05DO4 and STDES-OUT06DO4 on NUCLEO-F401RE	STSW-OUT5D4F4
Firmware for STDES-OUT05DO4 and STDES-OUT06DO4 on NUCLEO-G431RB	STSW-OUT5D4G4
Industrial digital output expansion board based on IPS1025H for STM32 Nucleo	X-NUCLEO-OUT05A1
High efficiency, high-side switch with extended diagnostic and smart driving for capacitive loads	IPS1025H
Applications	Industrial Safety Industrial Tools

Features

- 8 to 33 V/0 to 2.5 A per-channel operating voltage range
- Extended voltage operating range (all J3 open) up to 60 V/2.5 A per channel
- Green LEDs for output on/off status
- Red LEDs for per-channel diagnostic (overload and overheating)
- 5 kV galvanic isolation
- Supply rail reverse polarity protection
- EMC compliance with IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-8
- RoHS and WEEE compliant

Description

The STDES-OUT05DO4 is an application example for a quad-channel digital output module based on the physical stack through the Arduino® connectors of up to four X-NUCLEO-OUT05A1 on a NUCLEO-F401RE running STSW-OUT5D4F4 (or on a NUCLEO-G431RB running STSW-OUT5D4G4).

Each X-NUCLEO-OUT05A1 mounts an IPS1025H and offers a single output channel designed to drive industrial loads with a current capability of up to 2.5 A. The proper configuration of few resistors and jumpers enables the input signal driving and diagnostic signals monitoring of the stacked boards. The stacked boards share the same supply rail by paralleling the connection on CN1[4, 5] (supply rail +) and CN1[3] (ground rail).

The STSW-OUT5D4F4 companion software runs on the NUCLEO-F401RE and enables the control of up to four stacked X-NUCLEO-OUT05A1 and the communication with the STSW-IFAPGUI.

The STSW-OUT5D4G4, which is the companion software designed to run on the NUCLEO-G431RB, ensures the same functionalities and interfacing capabilities.

The STDES-OUT05DO4 is a fully assembled kit developed for performance evaluation only, not available for sale.

1 Multiple-board configuration

You can stack one, two, three, or four X-NUCLEO-OUT05A1 on a NUCLEO-F401RE (or on a NUCLEO-G431RB) to evaluate a single, dual, triple, or quad-channel digital output module.

The expansion boards (board 0, 1, 2, 3 as shown in Table 1) must be properly configured. No configuration is needed for board 0. For board 1, 2, and 3, instead, unsolder four resistors for each board from the default position. Then, solder them back in an alternate position according to Table 1.

Table 1. Per-board configuration of jumpers and resistors

Board no.	IN1	FLT1	FLT2
0	R101	R103	R114
1	R102	R104	R117
2	R115	R116	R107
3	R120	R119	R118

For the resistor position on the expansion board, refer to the schematic diagrams below.

Figure 1. X-NUCLEO-OUT05A1 circuit schematic (1 of 2)

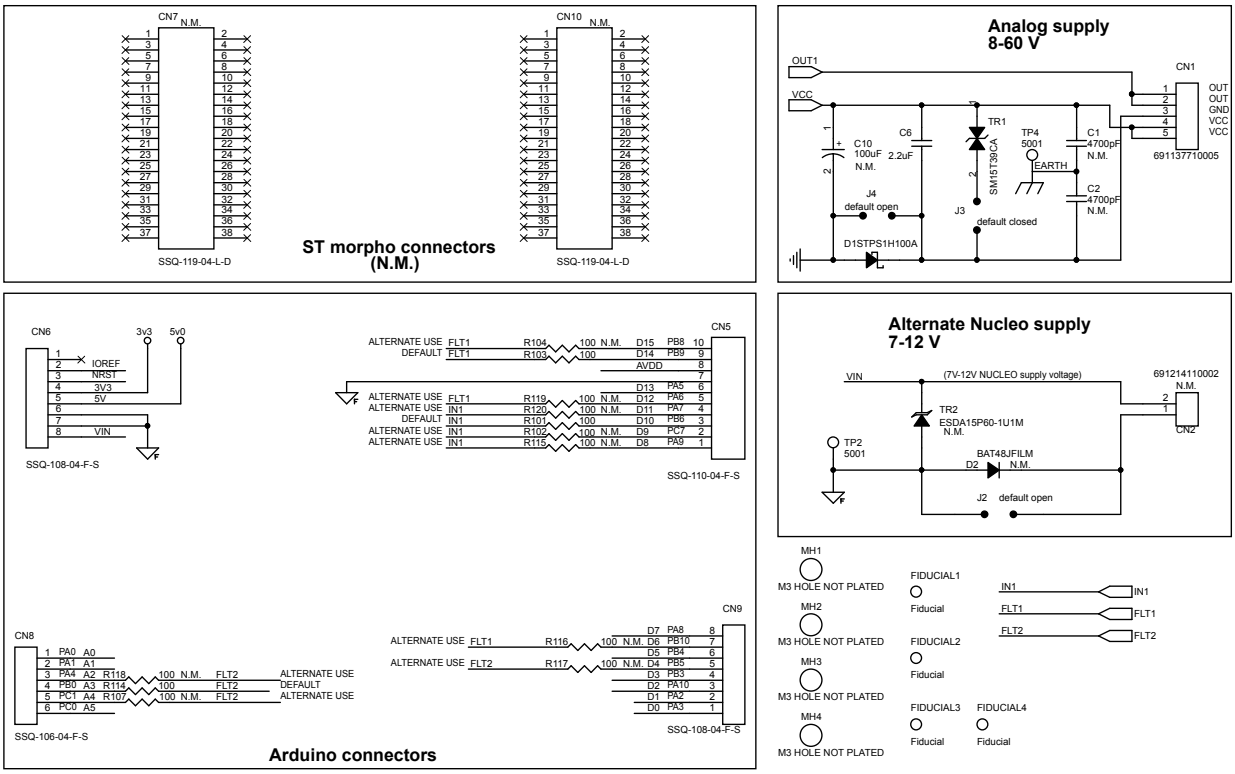
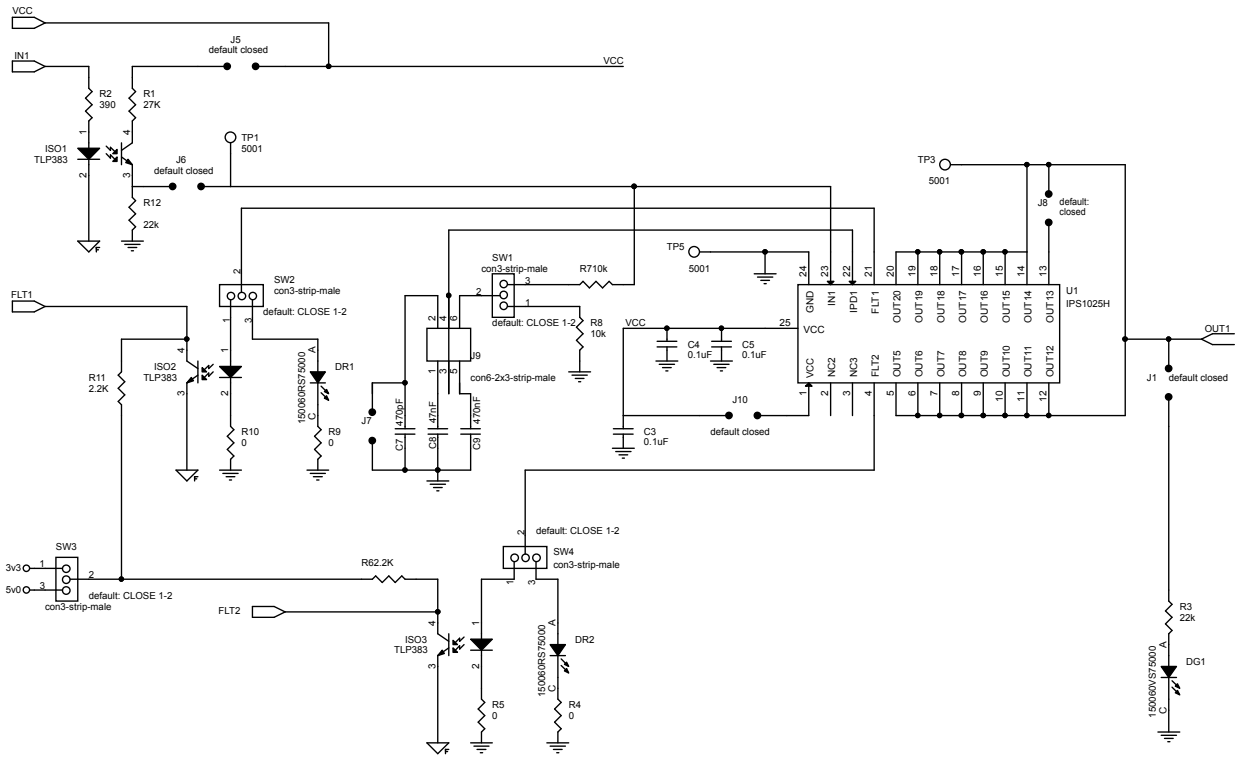


Figure 2. **X-NUCLEO-OUT05A1 circuit schematic (2 of 2)**



2 Schematic diagrams

Note: The STDES-OUT05DO4 consists of a stack of up to four X-NUCLEO-OUT05A1 expansion boards and a NUCLEO-F401RE or a NUCLEO-G431RB. You can find their detailed schematic diagrams at the related web pages:

- *X-NUCLEO-OUT05A1 schematic diagrams*
- *NUCLEO-F401RE schematic diagrams*
- *NUCLEO-G431RB schematic diagrams*

Revision history

Table 2. **Document revision history**

Date	Revision	Changes
25-May-2022	1	Initial release.