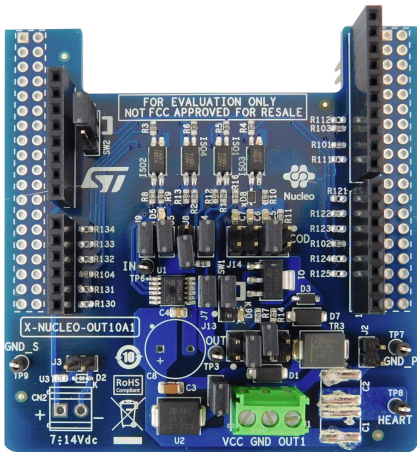


Industrial digital output expansion board based on IPS161HF for STM32 Nucleo



Features

- Based on **IPS161HF** single high-side switch with the following main features:
 - Operating range up to 60 V/0.7 A
 - Low power dissipation ($R_{ON(MAX)} = 120\text{ m}\Omega$)
 - Fast decay for inductive loads
 - Open load detection and diagnostics
 - Overload and overheating protections with thermal shut-down and cut-off
 - PowerSSO-12L package
- Application board operating range: 12 - 33 V, 0 to 0.7 A
- Extended voltage operating range (J1 open) up to 60 V
- Green LED for output ON/OFF status
- Red LED for diagnostics (open load, cut-off and overheating)
- 3 kV galvanic isolation
- Supply rail reverse polarity protection
- Ready for Safety Digital Output Architecture
- EMC compliance according to IEC61000-4-2, IEC61000-4-3, IEC61000-4-5
- Wide application development potential in **STM32 Nucleo** development environment
- Equipped with **Arduino™ UNO R3** connectors
- CE certified
- RoHS and China RoHS compliant

Product summary

Industrial digital output expansion board based on IPS161HF for STM32 Nucleo	X-NUCLEO-OUT10A1
Single high-side switch	IPS161HF
Applications	Industrial Safety Industrial Tools

Description

The **X-NUCLEO-OUT10A1** industrial digital output expansion board for **STM32 Nucleo** provides an affordable and easy-to-use solution for the development of 0.5 A (typ.) digital output modules, letting you easily evaluate the **IPS161HF** driving and diagnostic capabilities with industrial loads.

The **X-NUCLEO-OUT10A1** interfaces with the microcontroller on the **STM32 Nucleo** via 3 kV optocouplers driven by GPIO pins and **Arduino™ UNO R3** (default configuration) and **ST morpho** (optional, not mounted) connectors.

The expansion board should be connected to either a **NUCLEO-F401RE** or **NUCLEO-G431RB** development board, and can be stacked with another **X-NUCLEO-OUT10A1** or an **X-NUCLEO-OUT08A1**.

Two **X-NUCLEO-OUT10A1** expansion boards allows you to evaluate a dual channel digital output module with 0.5 A (typ.) capability each, or a 0.5 A (typ.) single channel safety digital output module. In the second scenario, the first shield output is connected to the supply of the second one. Dedicated on-board hardware can be enabled or disabled to activate fast discharge of high capacitive loads, output voltage sensing and additional surge pulse output line protection.

1 Schematic diagrams

Figure 1. X-NUCLEO-OUT10A1 circuit schematic (1 of 2)

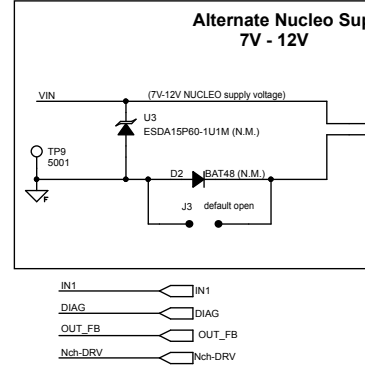
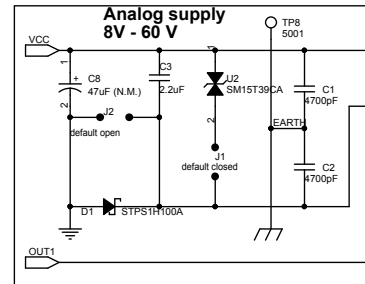
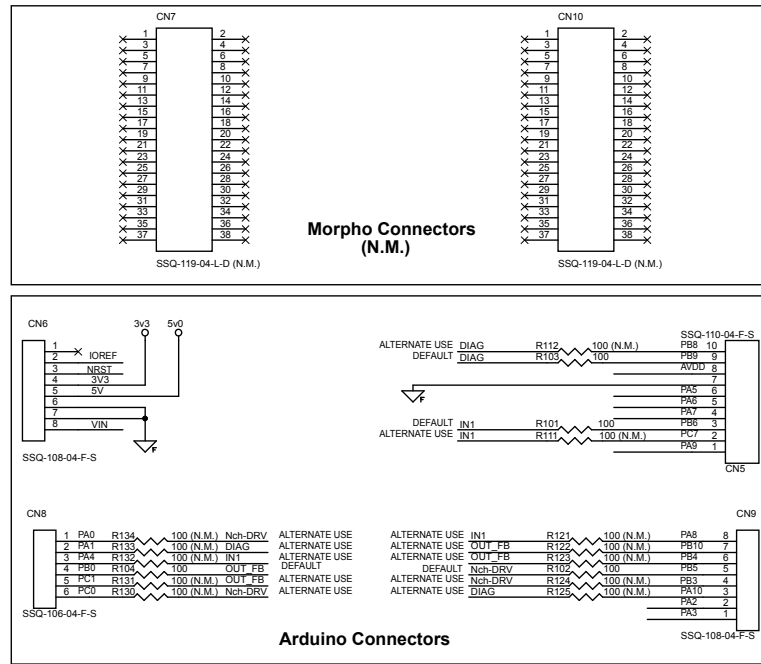
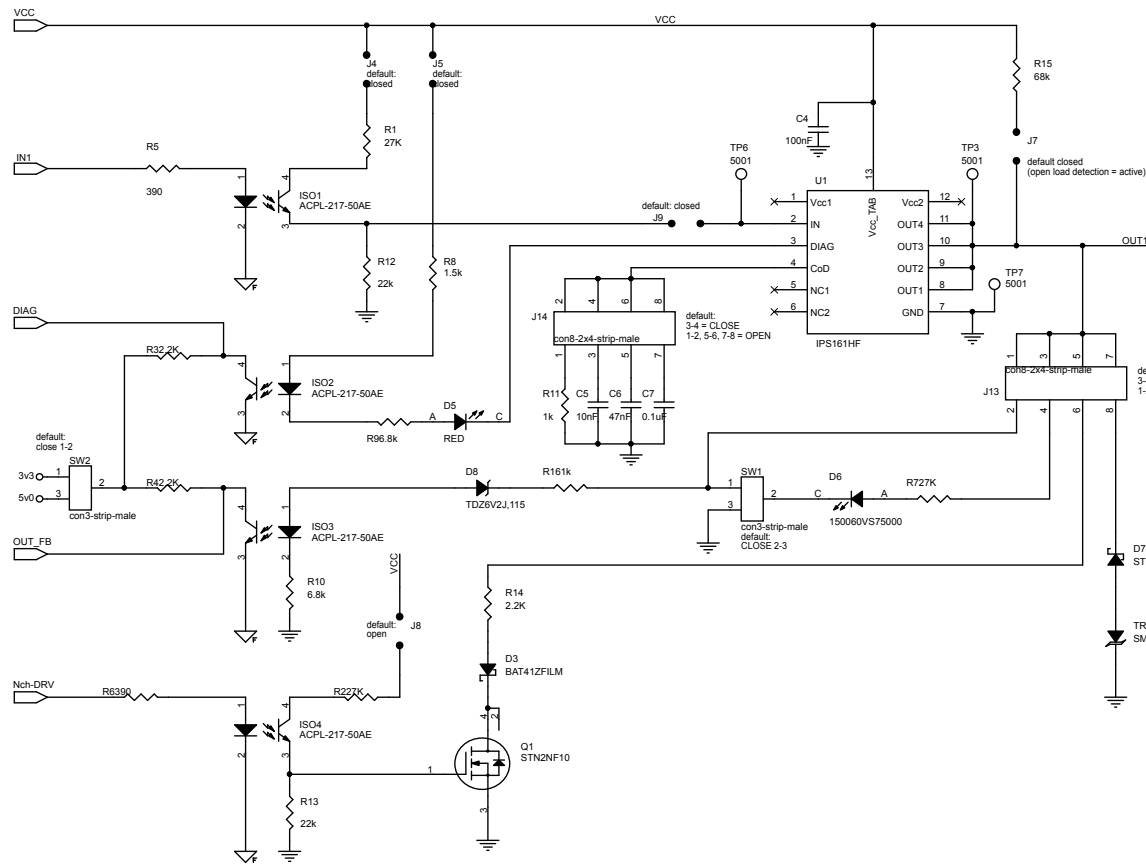


Figure 2. X-NUCLEO-OUT10A1 circuit schematic (2 of 2)



Revision history

Table 1. Document revision history

Date	Version	Changes
12-Jun-2020	1	Initial release.

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2020 STMicroelectronics – All rights reserved

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Power Management IC Development Tools](#) *category:*

Click to view products by [STMicroelectronics](#) *manufacturer:*

Other Similar products are found below :

[EVAL-ADM1168LQEBZ](#) [EVB-EP5348UI](#) [MIC23451-AAAYFL EV](#) [MIC5281YMME EV](#) [DA9063-EVAL](#) [ADP122-3.3-EVALZ](#) [ADP130-0.8-EVALZ](#) [ADP130-1.2-EVALZ](#) [ADP130-1.5-EVALZ](#) [ADP130-1.8-EVALZ](#) [ADP1714-3.3-EVALZ](#) [ADP1716-2.5-EVALZ](#) [ADP1740-1.5-EVALZ](#) [ADP1752-1.5-EVALZ](#) [ADP1828LC-EVALZ](#) [ADP1870-0.3-EVALZ](#) [ADP1871-0.6-EVALZ](#) [ADP1873-0.6-EVALZ](#) [ADP1874-0.3-EVALZ](#) [ADP1882-1.0-EVALZ](#) [ADP199CB-EVALZ](#) [ADP2102-1.25-EVALZ](#) [ADP2102-1.875EVALZ](#) [ADP2102-1.8-EVALZ](#) [ADP2102-2-EVALZ](#) [ADP2102-3-EVALZ](#) [ADP2102-4-EVALZ](#) [ADP2106-1.8-EVALZ](#) [ADP2147CB-110EVALZ](#) [AS3606-DB](#) [BQ24010EVM](#) [BQ24075TEVM](#) [BQ24155EVM](#) [BQ24157EVM-697](#) [BQ24160EVM-742](#) [BQ24296MEVM-655](#) [BQ25010EVM](#) [BQ3055EVM](#) [NCV891330PD50GEVB](#) [ISLUSBI2CKIT1Z](#) [LM2744EVAL](#) [LM2854EVAL](#) [LM3658SD-AEV/NOPB](#) [LM3658SDEV/NOPB](#) [LM3691TL-1.8EV/NOPB](#) [LM4510SDEV/NOPB](#) [LM5033SD-EVAL](#) [LP38512TS-1.8EV](#) [EVAL-ADM1186-1MBZ](#) [EVAL-ADM1186-2MBZ](#)