Dual channel IO-Link device expansion board based on L6364Q for STM32 Nucleo

Features

- Based on the L6364Q IO-Link device dual transceiver in QFN package with the following main characteristics:
    - 2-channel (CQ and DIO) IO-Link PHY layer
    - IO-Link DLL (M-sequence handler and checksum)
    - Wake-up detection
    - Interrupt diagnostic pin
    - SPI and UART interfaces
    - 50 mA 3.3 V and 5.0 V linear regulators
    - 50 mA adjustable (5.0 ÷ 10.8 V) buck converter
    - Overload protection with adjustable intervention threshold
    - Overheating protection with adjustable shutdown threshold
    - Full reverse polarity on process side
    - Ground and V_{CC} wire break protections
    - QFN-20L (4 x 4 x 0.9 mm) package
- 5 to 35 V operating voltage range
- Red LED and green LED for status diagnostics
- Radiated Emissions (EM Fields 30 MHz-1 GHz) < 40dB µV/m
- Immunity to conducted disturbance (150 kHz-80 MHz) ≤ 10 V
- Immunity to RF EM Fields (80 MHz-1 GHz) ≤ 10 V/m
- Immunity to RF EM Fields (1 GHz-2.7 GHz) ≤ 3 V/m
- Immunity to SURGE pulse (500 Ohm coupling) ≤ ± 1.2 kV
- Immunity to ESD contact/air ≤ ±3 kV
- Immunity to BURST noise ≤ ±1 kV
- Compatible with STM32 Nucleo development boards
- Equipped with Arduino UNO R3 connectors
- RoHS and WEEE compliant

Product summary

Dual channel IO-Link device expansion board based on L6364Q for STM32 Nucleo	X-NUCLEO-IOD02A1
Industrial digital output software expansion for STM32Cube	X-CUBE-IOD02
Dual channel SIO and IO-Link PHY device	L6364Q
Motion MEMS and microphone MEMS expansion board for STM32 Nucleo	X-NUCLEO-IKS02A1
Applications	Factory Automation IO-Link modules

Description

The X-NUCLEO-IOD02A1 expansion board for STM32 Nucleo is based on the L6364Q dual channel SIO and IO-Link PHY device transceiver embedding 50 mA 3.3 V and 5.0 V voltage regulators, DC-DC converter and M-sequence management.

The expansion board provides an affordable and easy-to-use solution for the development of SIO and IO-Link industrial sensor applications, letting you easily evaluate the L6364Q communication features and robustness.

The X-NUCLEO-IOD02A1 communicates with the STM32 controller via SPI and GPIO pins and it is compatible with the Arduino UNO R3 (default configuration) and ST morpho (optional, not mounted) connectors (when connected to a NUCLEO-L073RZ or NUCLEO-G071RB development board).

Communication via IO-Link can be performed in either Multi-byte and Single-byte modes with SPI control of IC configuration and bidirectional sensor data transmission, or in Transparent mode with SPI control of IC configuration and UART interfacing for bidirectional sensor data transmission.

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The switches on the X-NUCLEO-IOD02A1 conveniently allow you to configure L6364Q and expansion board settings such as transmission mode and DC-DC converter enable/disable according to application requirements.

You can also perform evaluation of comprehensive industrial sensor modules by connecting the X-NUCLEO-IOD02A1 to the X-NUCLEO-IKS02A1 sensor shield.

Schematic diagrams
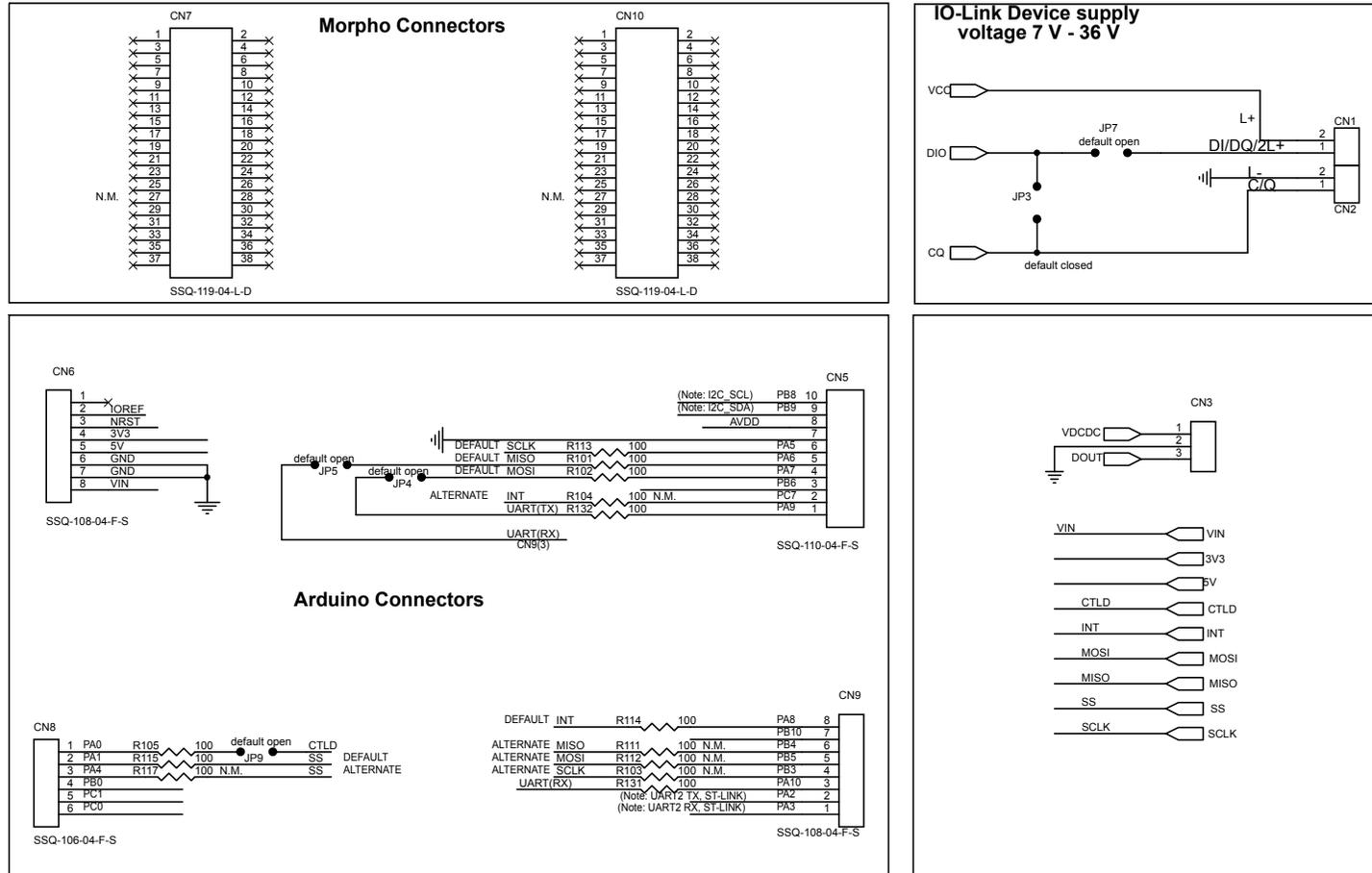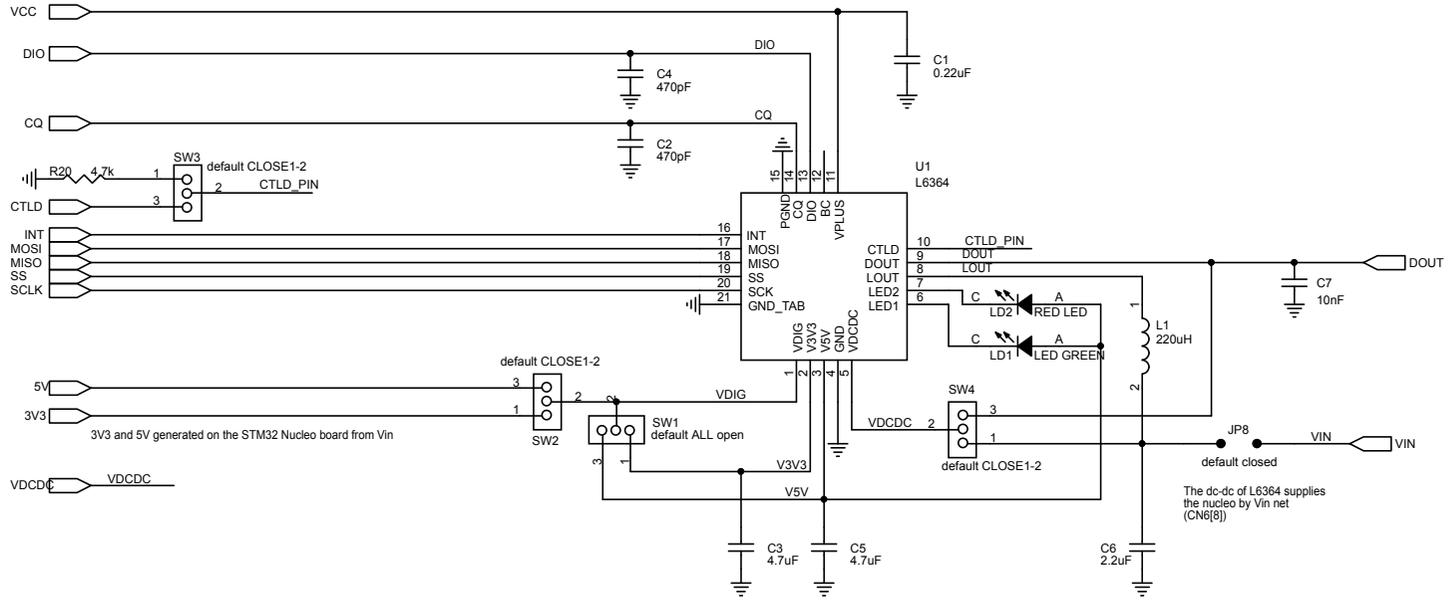
Figure 1. X-NUCLEO-IOD02A1 circuit schematic (1 of 2)

Figure 2. X-NUCLEO-IOD02A1 circuit schematic (2 of 2)

Revision history

Table 1. Document revision history

Date	Version	Changes
01-Sep-2020	1	Initial release.

IMPORTANT NOTICE – PLEASE READ CAREFULLY