

Three-phase brushless DC motor driver expansion board based on L6230 for STM32 Nucleo



Features

- 3-phase driver for BLDC/PMSM motors
- Nominal operating voltage range from 8 V to 48 VDC
- 2.8 A output peak current (1.4 A_{RMS})
- Operating frequency up to 100 kHz
- Non dissipative overcurrent detection and protection
- Cross-conduction protection
- Thermal measuring and overheating protection
- Compatible with STM32 Nucleo boards
- Fully compatible with STM32 Motor Control SDK (X-CUBE-MCSDK-Y)
- Equipped with ST morpho connectors
- Three-shunt and single-shunt configurable jumpers for motor current sensing
- Hall/Encoder motor sensor connector and circuit
- Debug connector for DAC, GPIOs, etc.
- Potentiometer available for speed regulation
- User LED
- RoHS compliant

Description

The X-NUCLEO-IHM07M1 is a three-phase brushless DC motor driver expansion board based on the L6230 for STM32 Nucleo. It provides an affordable and easy-to-use solution for driving three-phase brushless DC motor in your STM32 Nucleo project.

The X-NUCLEO-IHM07M1 is compatible with the ST Morpho connector and supports the addition of other boards which can be stacked with onto a single STM32 Nucleo board.

The user can also mount the Arduino UNO R3 connector. The driver used on this expansion board is the L6230, a DMOS fully integrated driver for three-phase brushless DC motors assembled in a PowerSO-36 package (L6230PD), with overcurrent and thermal protection.

The L6230 driver is optimized for six-step and FOC algorithms thanks to independent current sensing.

| Product summary | |
|---|---|
| Three-phase brushless DC motor driver expansion board based on L6230 for STM32 Nucleo | X-NUCLEO-IHM07M1 |
| DMOS driver for three-phase brushless DC motors | L6230 |
| STM32 Motor Control SDK | X-CUBE-MCSDK-Y |
| Applications | Industrial Motor Control PMSM/BLDC Motor |

1 Schematic diagrams

Figure 1. X-NUCLEO-IHM07M1 circuit schematic (1 of 4)

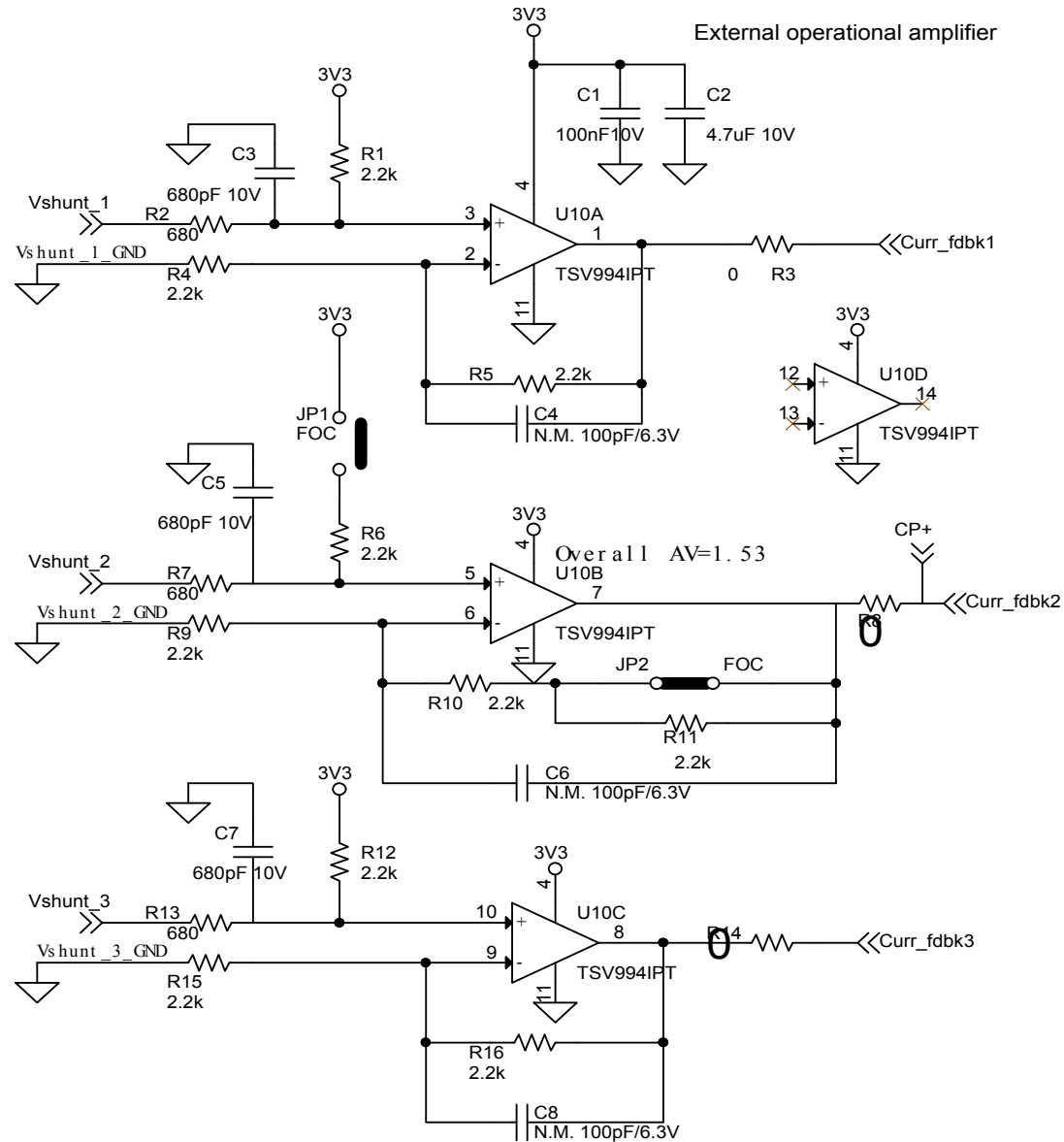


Figure 2. X-NUCLEO-IHM07M1 circuit schematic (2 of 4)

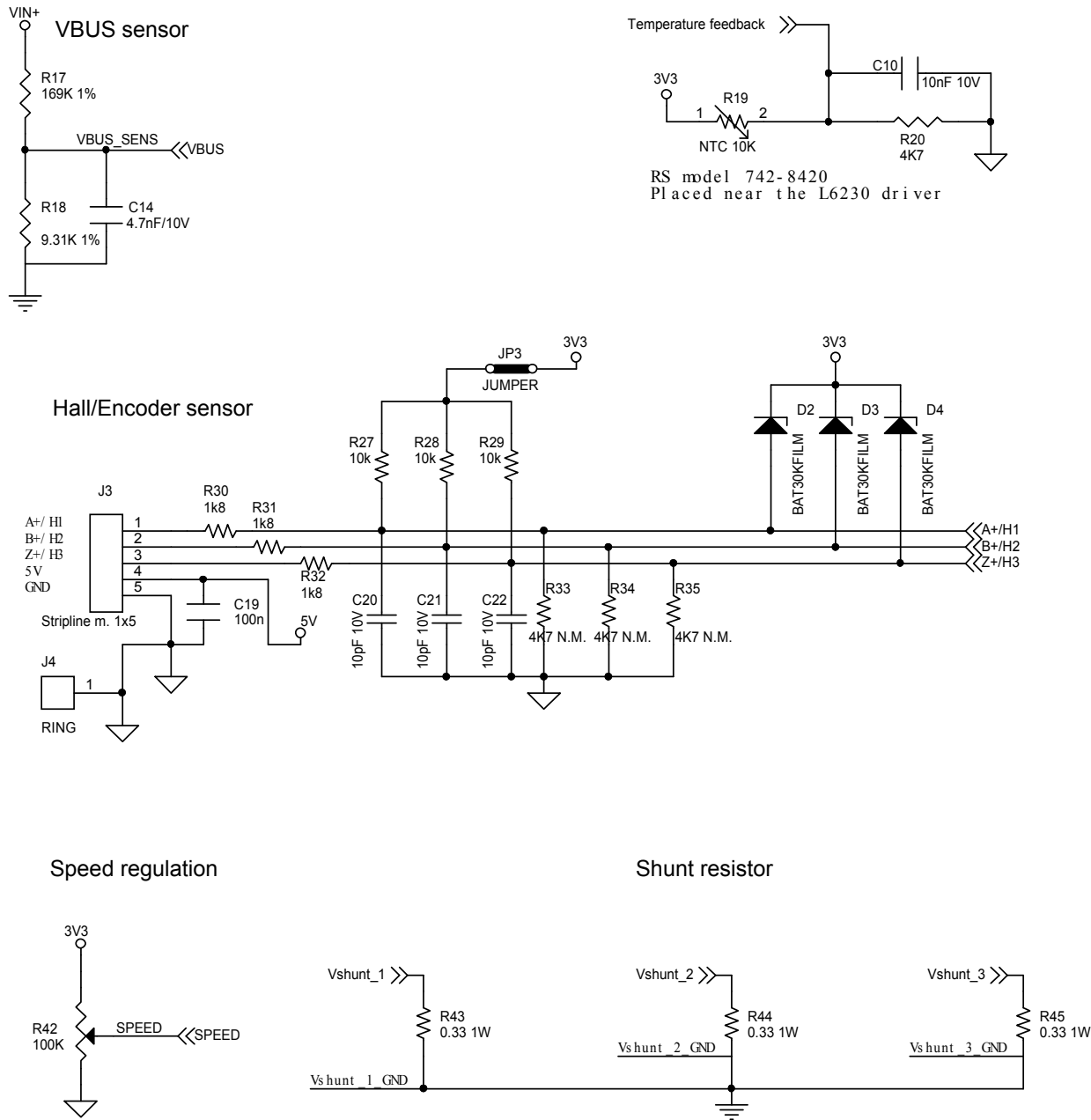
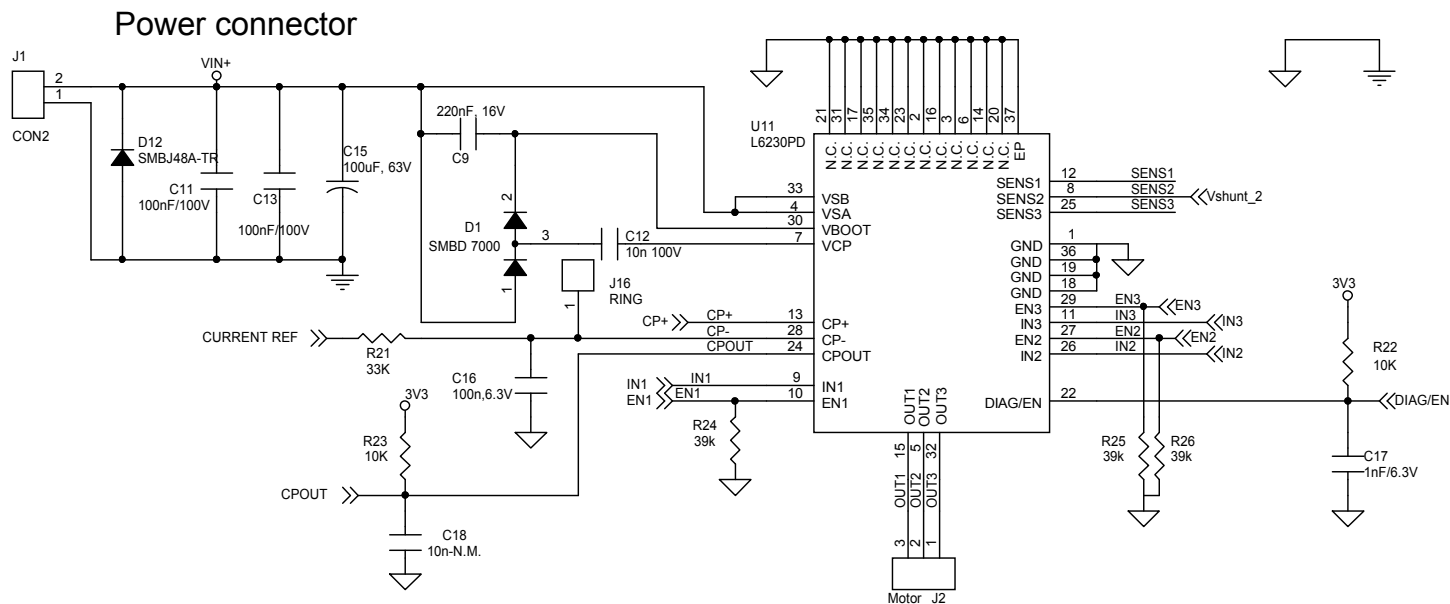
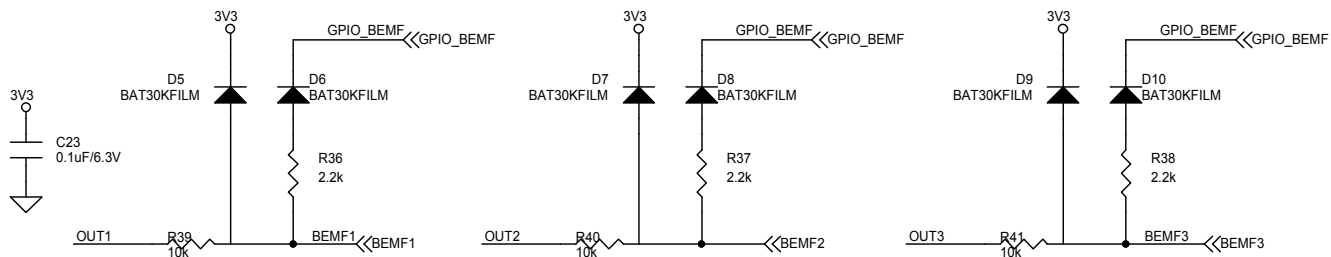


Figure 3. X-NUCLEO-IHM07M1 circuit schematic (3 of 4)
L6230 DMOS driver for three-phase brushless DC motor



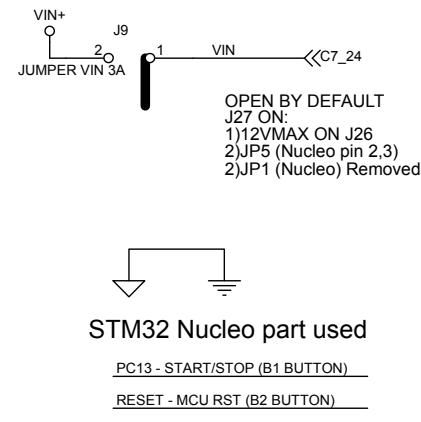
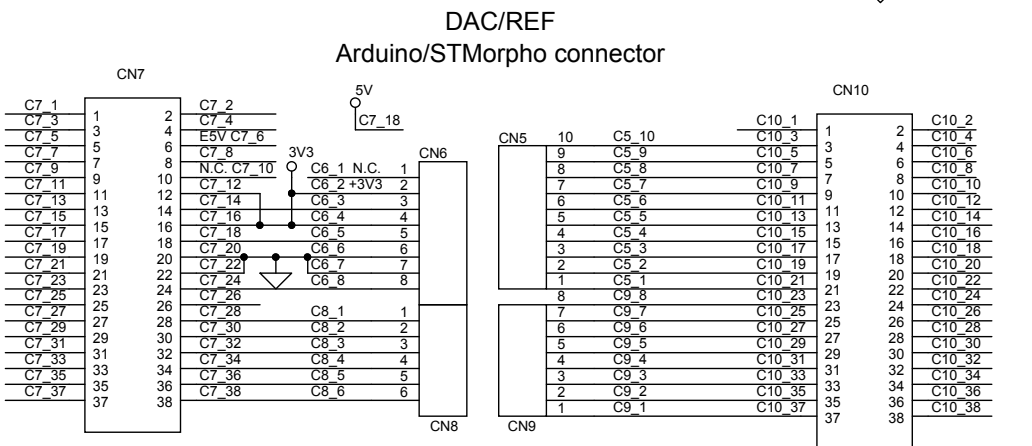
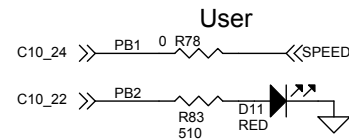
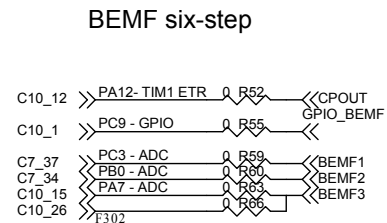
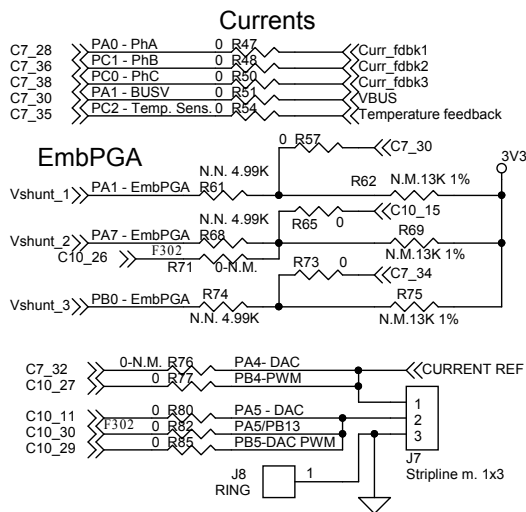
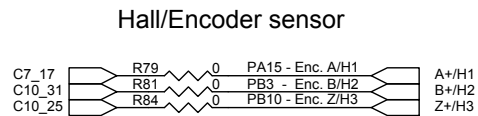
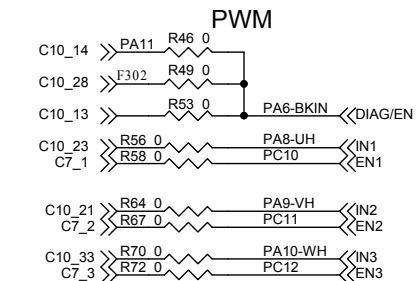
BEMF detection - six step



Single/three shunt configuration



Figure 4. X-NUCLEO-IHM07M1 circuit schematic (4 of 4)



Revision history

Table 1. Document revision history

| Date | Version | Changes |
|-------------|---------|---|
| 27-Aug-2015 | 1 | Initial release. |
| 20-Jul-2021 | 2 | Updated cover page features. Added cover page product summary table. |

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