



STEVAL-IHM024V1

100 W 3-phase inverter using the L6390 and STGDL6NC60DI for vector control

Data brief

Features

- Wide-range input voltage (110 Vac and 230 Vac)
- Maximum power-up to 100 W at 230 Vac input voltage
- Hyper-fast IGBT STGDL6NC60DI (6 A, 600 V)
- +15 V auxiliary power supply connector
- Connector for interfacing with the STM3210B-EVAL board
- RoHS compliant

Applications

- Suitable for refrigerators, compressors and dishwasher pumps

Description

The STEVAL-IHM024V1 demonstration board is a 100 W 3-phase inverter with field-oriented control (FOC) for permanent-magnet synchronous motors (PMSM).

This flexible, high-performance design consists of a 3-phase inverter bridge based on the hyper-fast IGBT STGDL6NC60DI (6 A 600 V) and on the high-voltage half-bridge gate driver L6390. The L6390 device features an integrated comparator to protect hardware against faults such as overcurrent and overtemperature, and an embedded operational amplifier suitable for advanced current sensing.

The board is designed to be compatible with a 110 Vac and 230 Vac mains input, and includes a power supply stage with the VIPer12AS-E (in buck configuration) to generate the +15 V and +3.3 V supply voltage required by the application.

Additionally, using a dedicated connector, the board can be interfaced with the STM3210B-EVAL evaluation board, which is an evaluation platform for STMicroelectronics' ARMTM Cortex-



M3 core-based STM32F10x 128 Kb microcontrollers.

1

Figure 1. Power supply

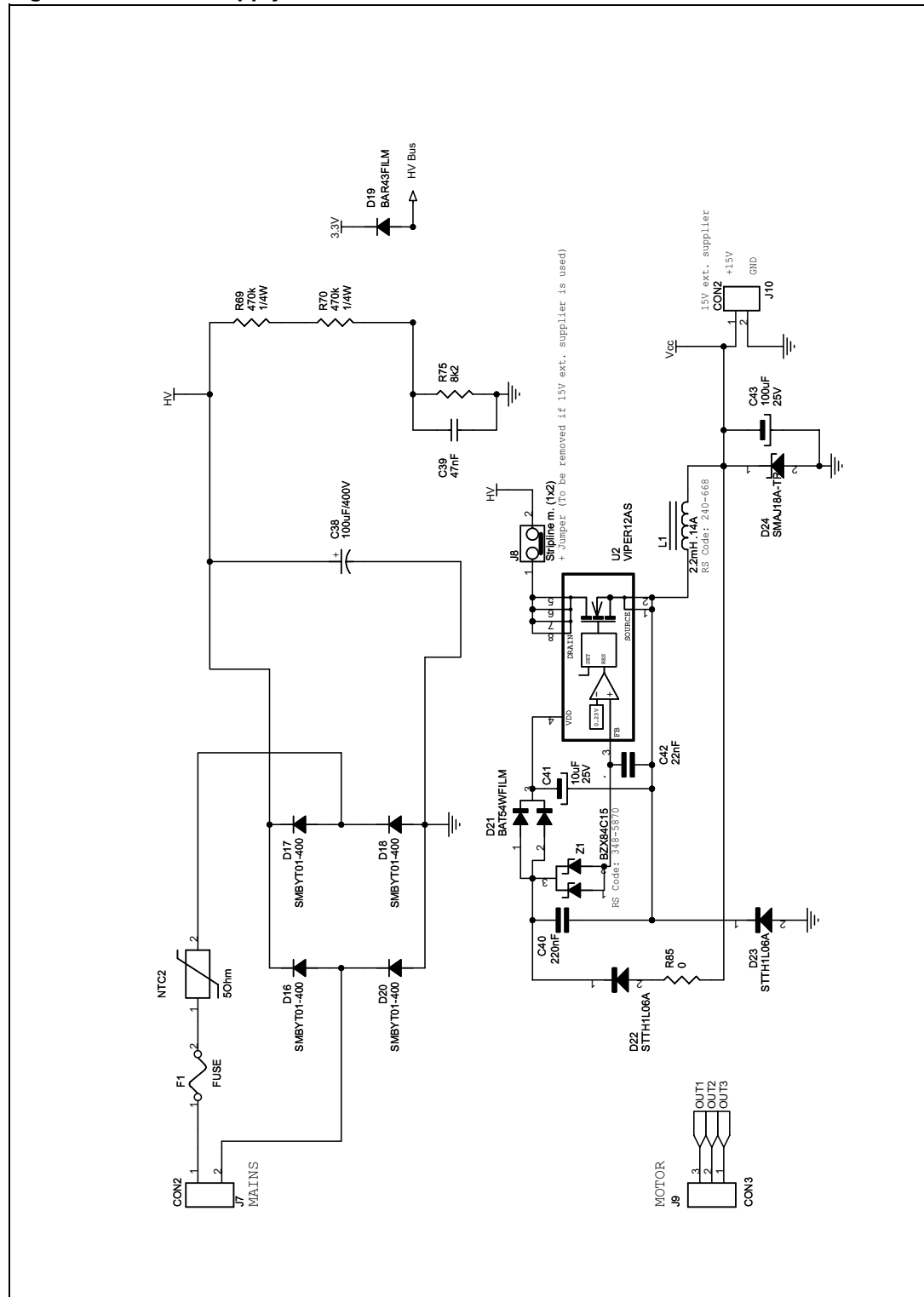
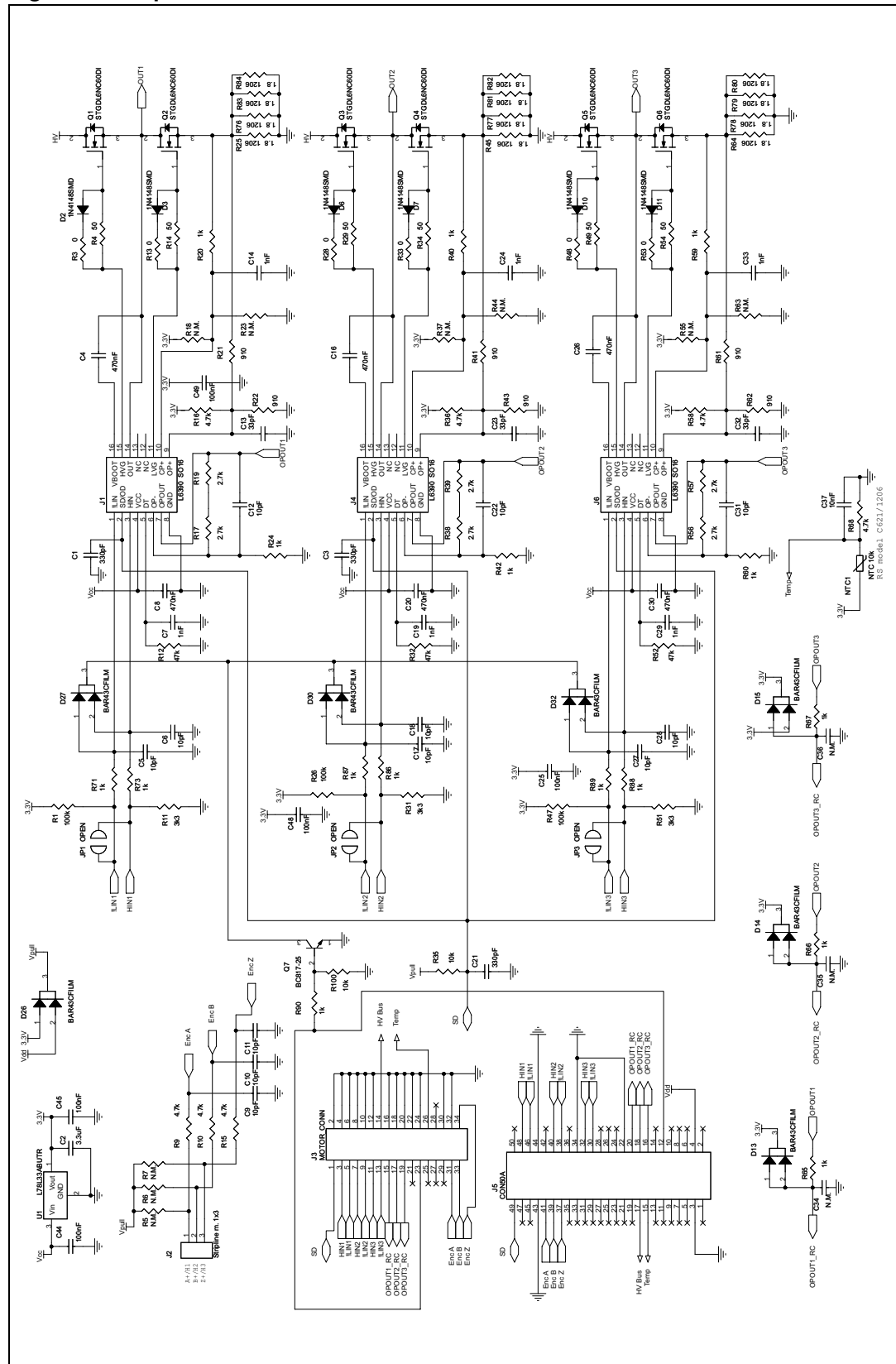


Figure 2. 3-phase inverter



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
29-Oct-2009	1	Initial release.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2009 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com