

ST7MC-KIT/BLDC

Softec's complete motor control starter kit for ST7MC

Data brief

Features

Motor control board

- Motor and board input power stage
- Optoisolation board
- Auxiliary power supply and voltage rectification
- Push buttons, trimmers for standalone operation
- Hall sensor input
- Three-phase outputs to motor
- Tachometer input for closed-loop controlled AC motors
- 10-pin ICC connector for in-circuit programming and in-circuit debugging
- Prototyping area
- RS-232 connector

■ Control panel software

- Parameter configuration for BLDC and 3phase induction motors
- Basic settings interface for configuring motor, start-up and real time parameters
- Advanced settings interface for configuring frequency, speed range, stop conditions, etc.
- Outputs header files for your application taking into account modifications to the configuration

■ STXF-INDART/USB

- 10-pin ICC connection
- USB connection to host PC
- Two breakpoints
- Advanced breakpoints on data, access type, access range, stack.

Description

The Softec motor control starter kit for ST7MC (ST ordering code: ST7MC-KIT/BLDC) is an integrated system designed to provide you with a complete, ready-to-use motor control application for the ST7MC family of microcontrollers. It allows real-time control of three-phase brushless DC and AC motors in all control topologies from a PC-based GUI, or in standalone operation.

The control panel software provides an easy-touse interface to configure, start and run the motor, modify parameters and evaluate ST7FMC motor control features, then generate header files for your own motor control application.

The kit also comes with the STXF-INDART/USB in-circuit debugger/programmer and STVD7 integrated development environment that allow you to take advantage of the ST7FMC's on-chip resources for in-circuit programming and in-circuit debugging.

For further information about the motor control starter kit, please refer to www.st.com/mcu, or the Softec internet site www.softecmicro.com.

For more information about inDART in-circuit debuggers/programmers, please refer to the *ST7xxxx-INDART Data Brief*.

Figure 1. Motor control starter kit for ST7



November 2011 Doc ID 11587 Rev 2 1/5

Starter kit architecture ST7MC-KIT/BLDC

Starter kit architecture 1

1.1 Motor control evaluation board

Application board with ST7FMC, built-in power stage and optoisolation board, is designed to directly drive AC and DC motors. It also includes USART/LIN, EEPROM, potentiometers, sensor inputs for your application.

Brushless DC motor 1.2

The included 24 VDC motor is ready for direct connection to the motor control evaluation board.

1.3 **Control panel**

Graphical user interface on your host PC that allows you start up and run the motor in just minutes, then fine tune parameters and output header files for your own application.

_ | X Motor Type © Current AMETEK Motor @ Open Loop • C Voltage C Closed Loop C Other BLPMDC Moto -Start-Up Setting ₽ A 1500 \$ Rpm /s Final Current e ma 728 **\$** A Electrical 32.5 Hz Number of Z events before auto switched mode • Total Duration 853 + Z Event Sampling Method At end of the PWM Low state Switches PWM Fred Feedback Power Stage Status (a) Heatsink Over ter T Switches PWM Minimum Off Time 2.5 Complementary PWM Signal Zero Crossing Hz Motor Over-Current Alter D Blanking Window Bus Over-Voltage Z Event Counter Filter Motor Status G Statt-up Fails Delay Computation Z Event Protection TART Threshold Voltage - V Speed Range After C Blanking Window Advanced Settings. Generate Source Files... D Event Counter Filter C All Hardware Current Loop 0 Current Blanking Window Current Event Counter Filter Stop Condition
Free Wheeling C DC Current Braking 1000 • KHz Grounded • Sampling Clock (ISCF) 0 Unused MCIx Input Cancel

Figure 2. Control panel settings interface

ST7MC-KIT/BLDC Starter kit architecture

1.4 STXF-INDART/USB

In-circuit debugging and in-circuit programming tool that provides the hardware interface with the host PC via USB and with your ST7FMC via 10-pin in-circuit communication (ICC) connection.

1.5 STVD7 for inDART

Integrated development environment for writing, building and debugging your application.

1.6 Optoisolation board

Board with two 10-pin ICC connectors (In/Out) provides galvanic isolation between the incircuit debugging/programming tool and any target board supplied by high voltage. It is included with the motor control starter kit, or can be ordered separately (ST ordering code: ST7-ICC/OPTOISOL).

1.7 Induction motor

240V/800W Selni three-phase induction motor for use with the motor control starter kit using induction motor default values (for evaluation purposes). It is not included with the kit, but can be ordered separately (ST ordering code: ST7MC-MOT/IND).

ECOPACK® ST7MC-KIT/BLDC

2 ECOPACK®

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: *www.st.com*. ECOPACK[®] is an ST trademark.

3 Revision history

Table 1. Document revision history

Date	Revision	Changes
30-Aug-2005	1	Initial release.
17-Nov-2011	2	Document formatting updated.

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 TWO AUTHORIZED ST REPRESENTATIVES, 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.

© 2011 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



Doc ID 11587 Rev 2