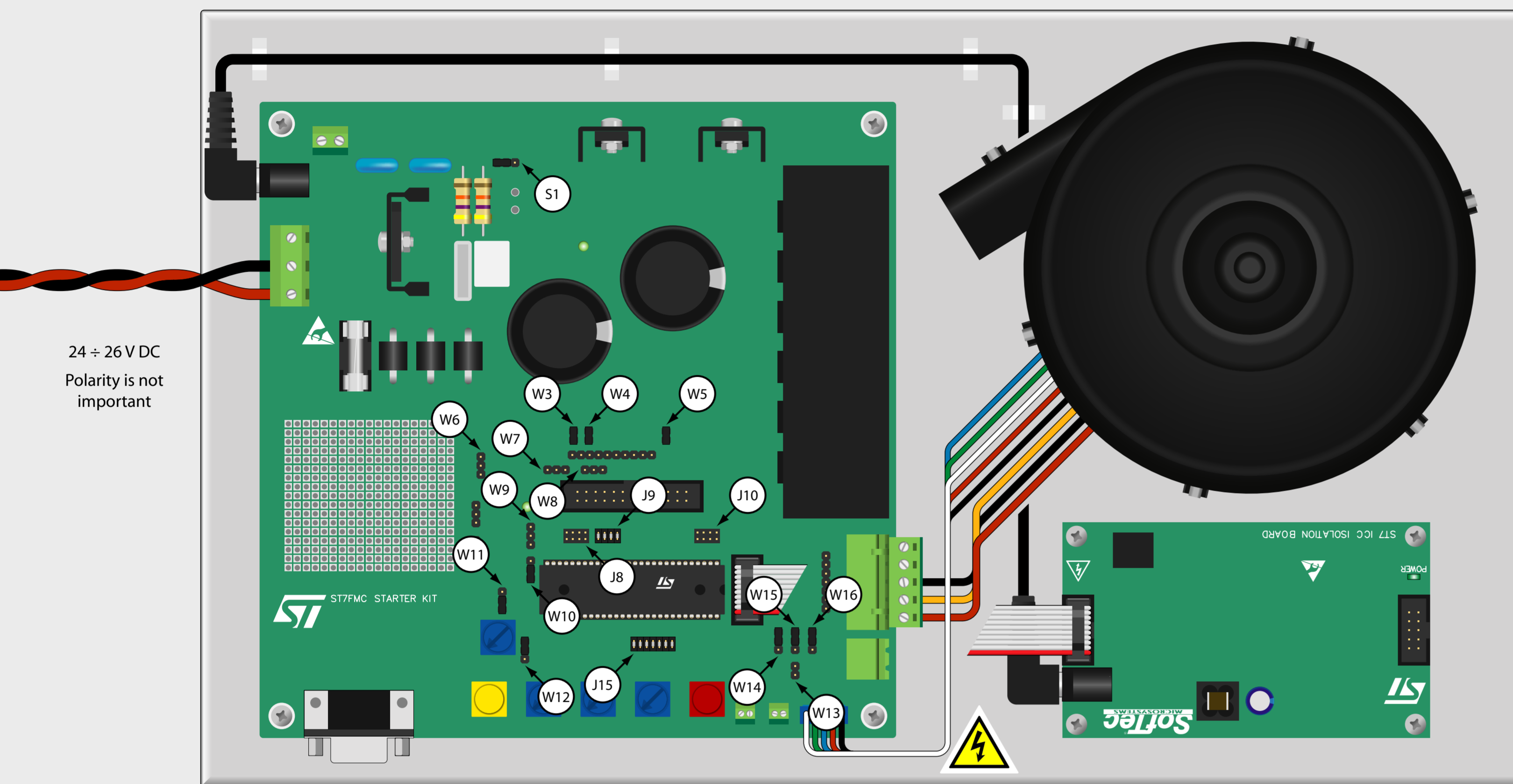


AK-ST7FMC Quickstart Tutorial



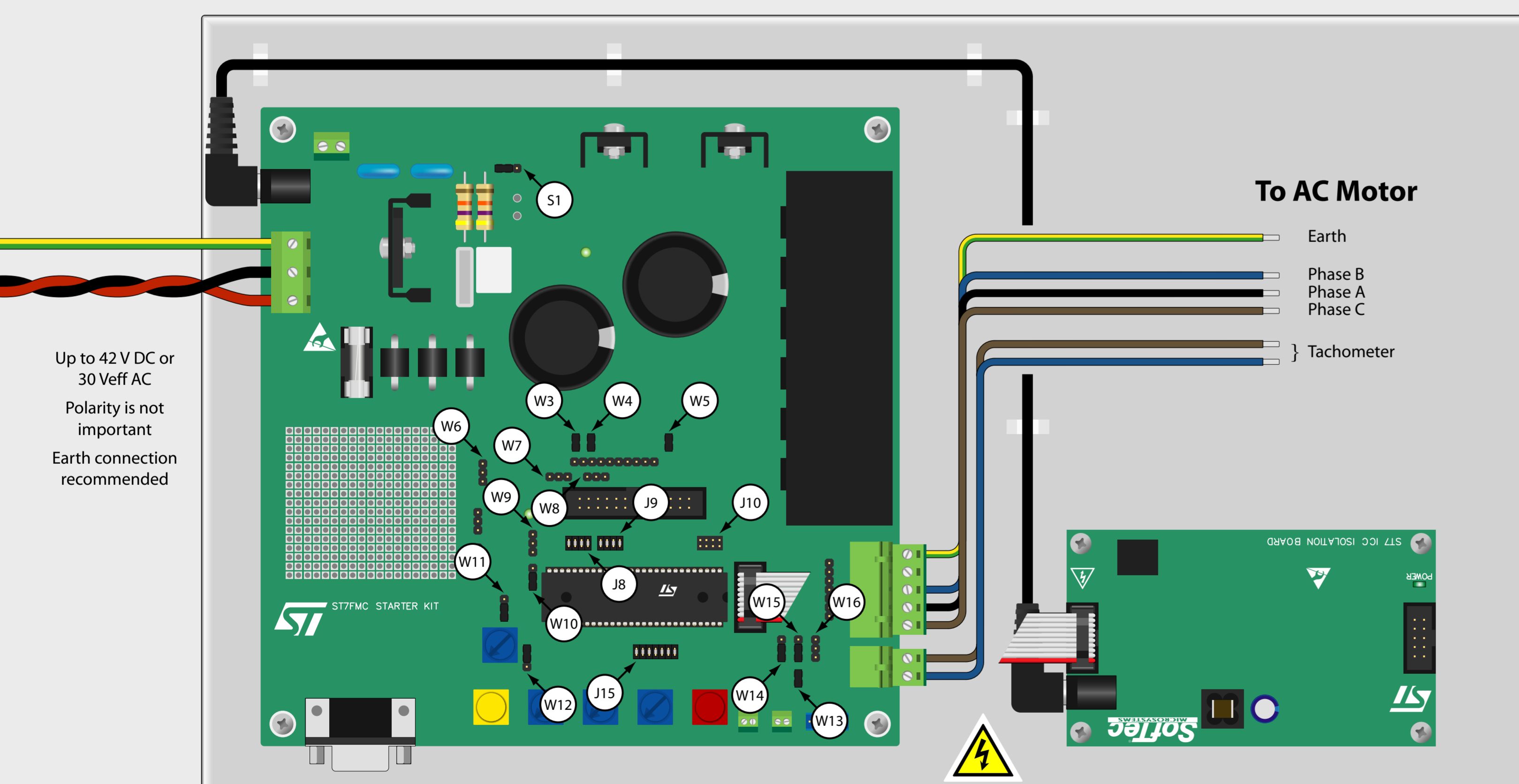
Jumper Settings and Connections for the Provided AMETEK BLDC Motor



Jumper	Position
S1	"< 35V ONLY" (*)
W3	Present
W4	Present
W5	Present
W6	Not Present
W7	Not Present
W8	Not Present
W9	Not Present
W10	Lower position
W11	Lower position
W12	"VARIABLE"
W13	Not Present
W14	Sensorless mode (default): all jumpers in upper position Sensor mode: all jumpers in lower position
W15	
W16	
J8	No jumper present
J9	All jumpers present
J10	No jumper present
J15	All jumpers present

(*) Note: when using a BLDC motor that requires < 18 V DC, remove the S1 jumper.
When using a BLDC motor that requires > 35 V DC, set the S1 jumper to the "HIGH VOLTAGE" position.

Typical Jumper Settings and Connections for a Generic AC Motor



Jumper	Position
S1	"<35V ONLY" or "HIGH VOLTAGE"
W3	Present
W4	Present
W5	Present
W6	Not present
W7	Not present
W8	Not present
W9	Not present
W10	Lower position
W11	Lower position
W12	"VARIABLE"
W13	Present
W14	Lower position
W15	Lower position
W16	Not present
J8	All jumpers present
J9	All jumpers present
J10	No jumper present
J15	All jumpers present

AK-ST7FMC Quickstart Tutorial



0 Start Working in Minutes!

This Quickstart Tutorial has been designed to get you started with the AK-ST7FMC Starter Kit. You will setup the instrument and run the provided BLDC motor in minutes.

Safety Warnings

The AK-ST7FMC Starter Kit should only be used by engineers and technicians who are experienced in power electronics.

Before supplying the board, double check proper connections, make sure that there are no metal parts on, below or around the PCB and that there are no undesired earth/ground loops due to measuring equipment such as an oscilloscope.



1 Install the Software

The AK-ST7FMC System Software setup program is located on the SofTec Microsystems "System Software" CD-ROM provided with the instrument. The setup program will copy the required files (including the USB driver) to your hard drive.

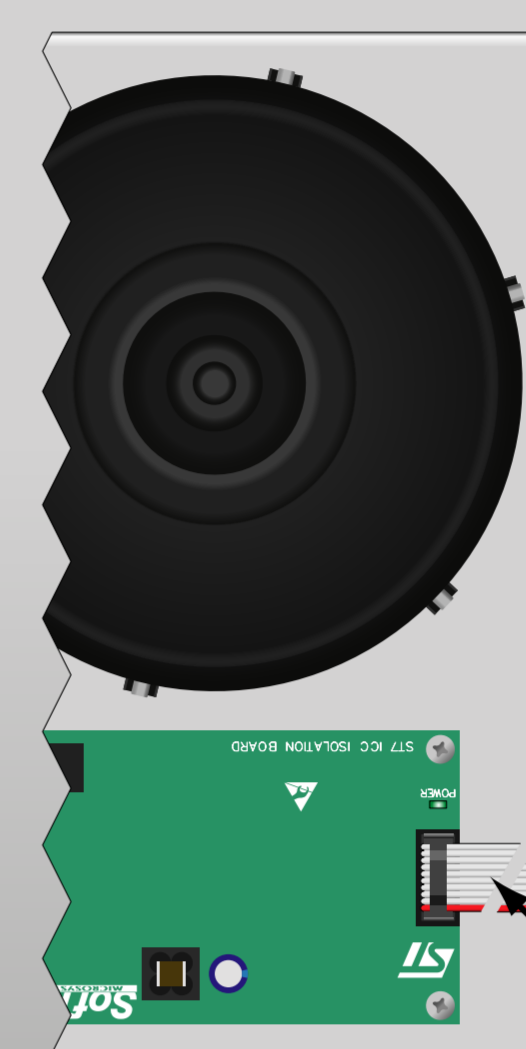
To install the AK-ST7FMC System Software, insert the SofTec Microsystems "System Software" CD-ROM into your computer's CD-ROM drive. A startup window will automatically appear. Choose "Install Instrument Software" from the main menu.

Click on the "AK-ST7FMC Control Panel" option. Follow the on-screen instructions.

Note: the "inDART-STX for ST7" system software, also present on the CD, is not required for this Quickstart Tutorial, but is needed if you want to develop your own applications.

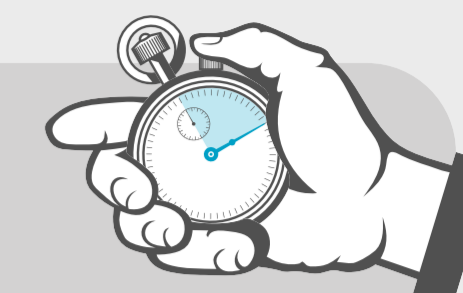


2 Connect inDART-STX to the Motor System



Connect inDART-STX to the Optoisolation Board with one of the two ISP cables provided (from inDART-STX's "ISP" connector to the Optoisolation Board's "ICC IN" connector) (1).

Connect inDART-STX to a free USB port on your PC (2). The green "POWER" LED on inDART-STX will turn on.

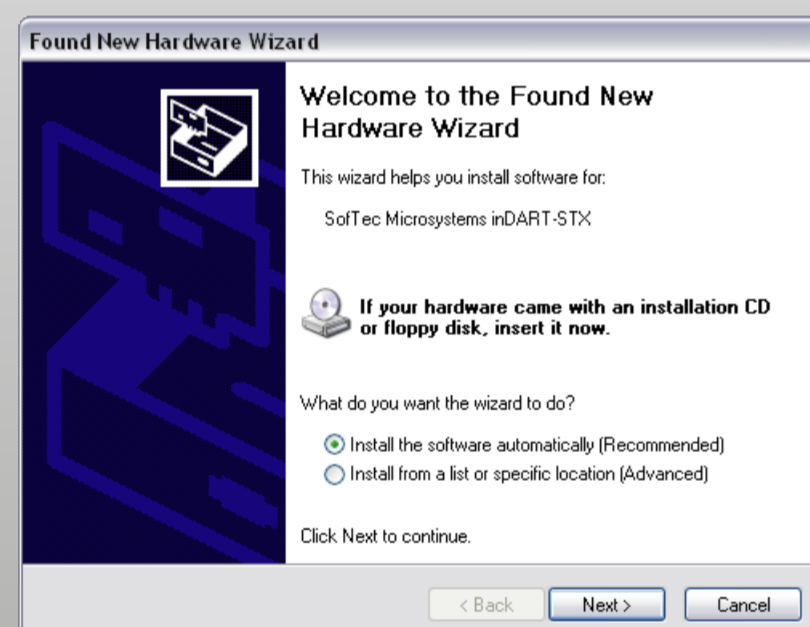


3 Found New Hardware Wizard

The first time inDART-STX is connected to the PC, Windows recognizes the instrument and starts the "Found New Hardware Wizard" procedure, asking you to specify the drivers to use for the instrument.

The procedure is slightly different on each version of Windows. On Windows XP, select the "Install the software automatically" option and click on the "Next" button.

Be sure not to specify any drive or optional location where to look for the driver, since it has already been installed on your hard disk by the AK-ST7FMC Control Panel setup.

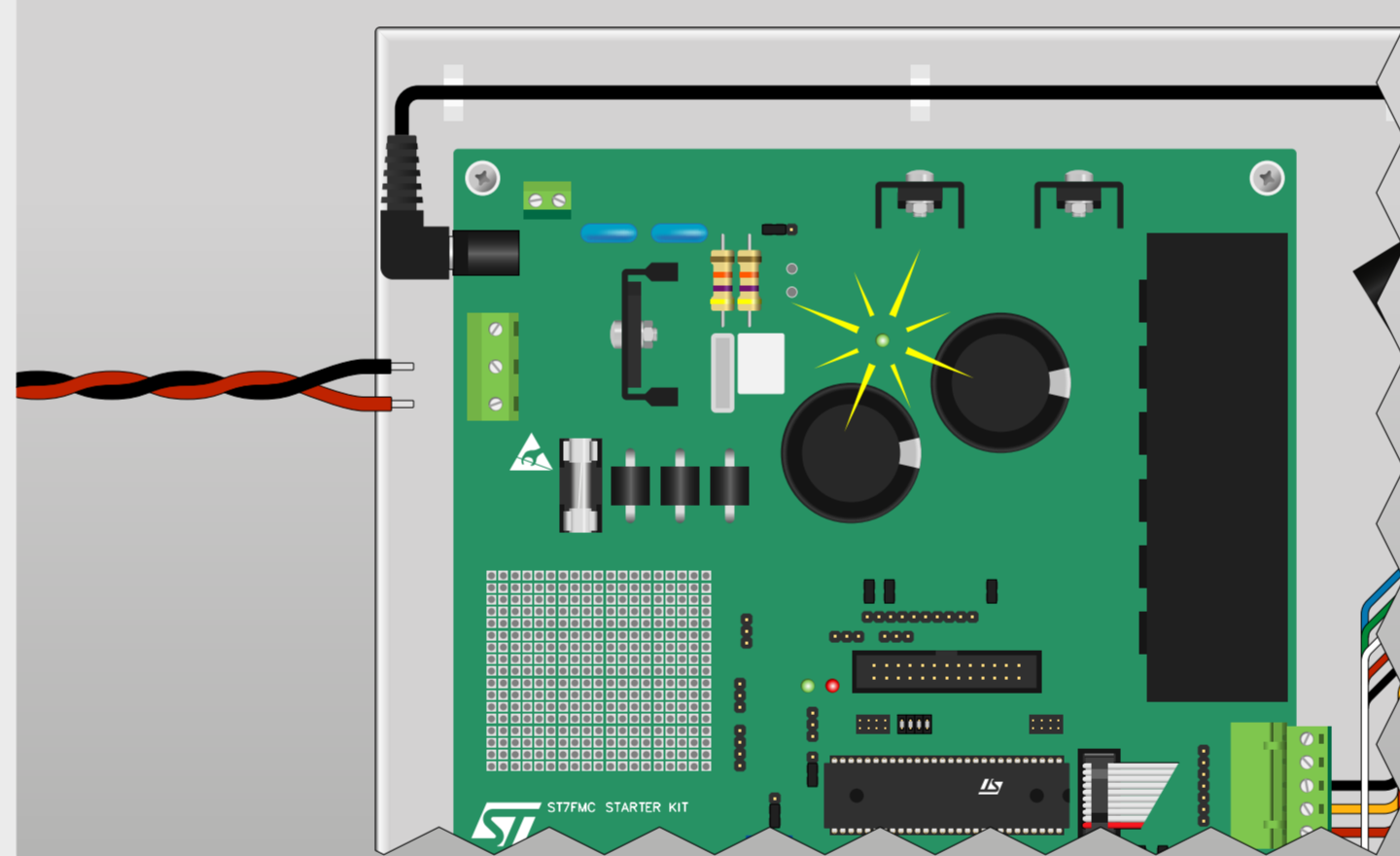


Note: both Windows 2000 and Windows XP may issue a warning during the "Found New Hardware Wizard" procedure. This warning is related to the fact that the USB driver used by inDART-STX is not digitally signed by Microsoft, and Windows considers it to be potentially malfunctioning or dangerous for the system. However, you can safely ignore the warning, since every kind of compatibility/security test has been carried out by SofTec Microsystems.



4 Power Up the Motor Control Board

Power up the Motor Control board by connecting the output terminals of your DC power supply to the "MAINS" connector. The provided voltage must be 24V DC and your power supply must be able to provide a current of 4 A. Polarity is not important. The board's power LED will turn on.

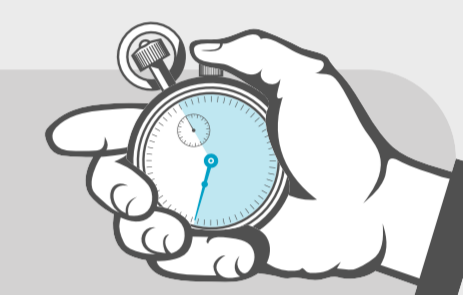
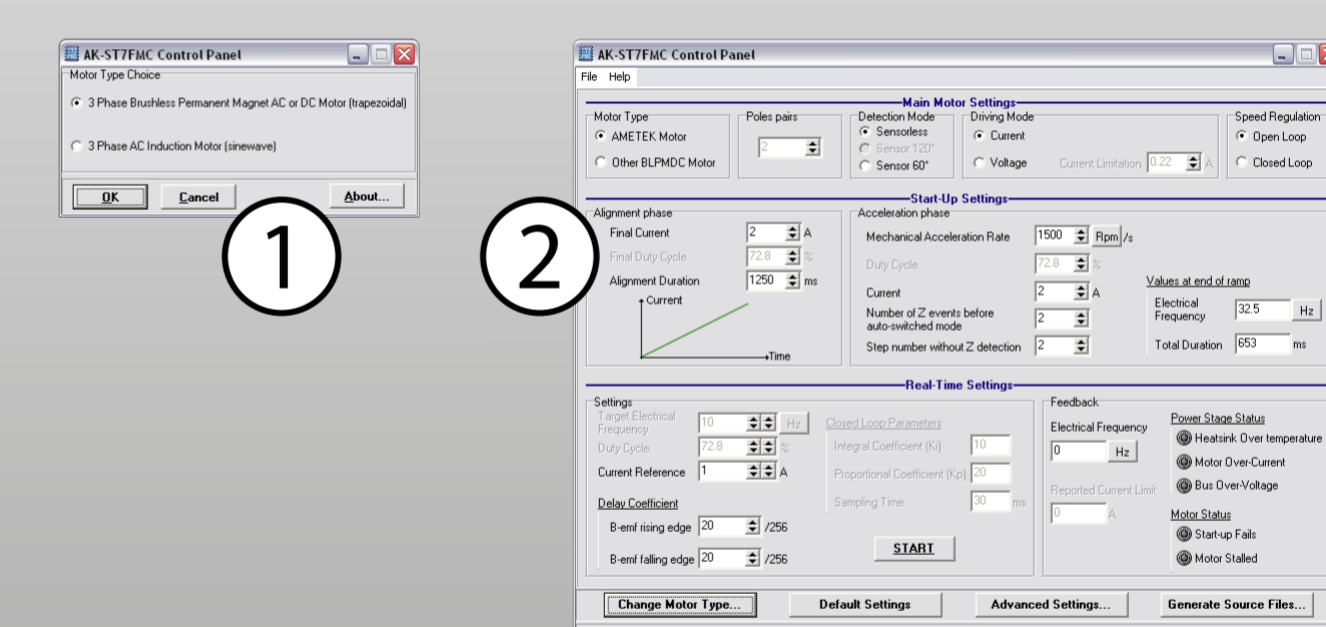


5 Run the AK-ST7FMC Control Panel

A Control Panel application is provided which allows you to change (in real time) all of the motor's electrical parameters. In this way it is possible to learn all of the features offered by the ST7FMC integrated motor control peripheral. To start the AK-ST7FMC Control Panel, select **Start > SofTec Microsystems > AK-ST7FMC > AK-ST7FMC Control Panel**.

The AK-ST7FMC Control Panel will ask you what kind of motor you are using (1). Make sure that the "3 Phase Brushless Permanent Magnet AC or DC Motor (Trapezoidal)" option is selected and click the "OK" button.

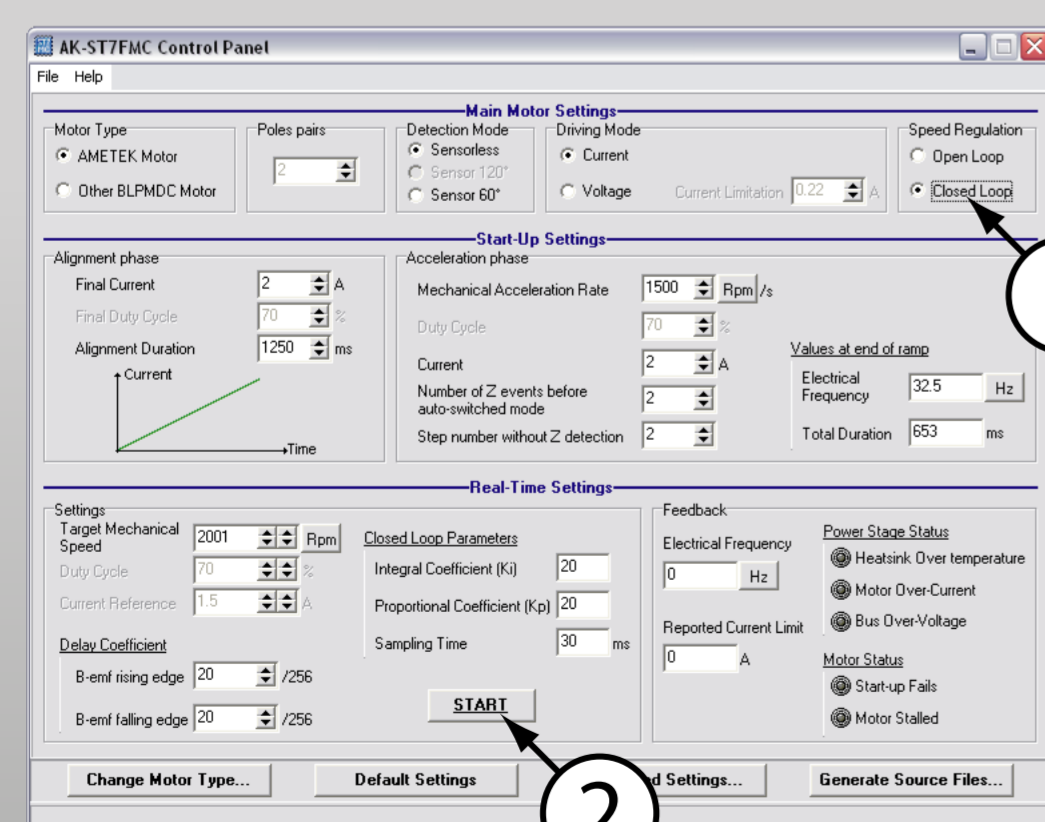
The AK-ST7FMC Control Panel main window will open (2).



6 AK-ST7FMC Control Panel: First Steps (1/2)

Change the "Speed Regulation" parameter to "Closed Loop" (1) and click the "START" button (2). A firmware will be automatically created based on all of the Control Panel's parameter and downloaded to the ST7FMC microcontroller in the Motor Control board.

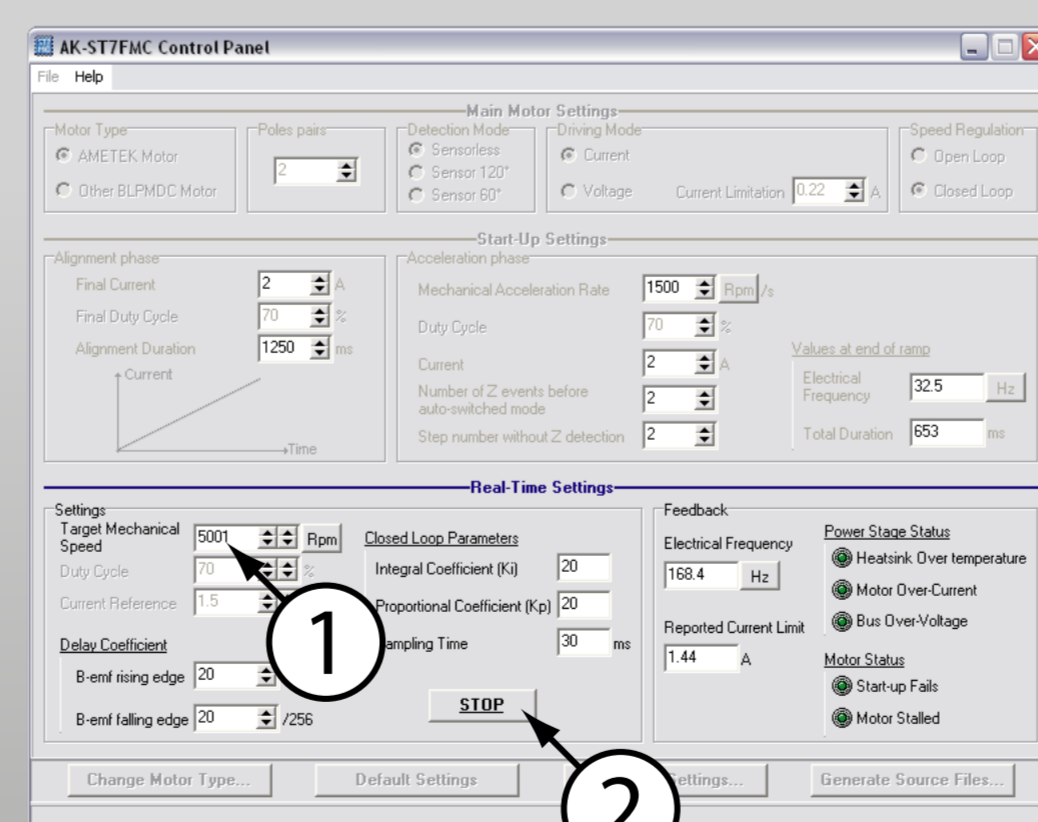
At the end of the download phase the motor will start to run.



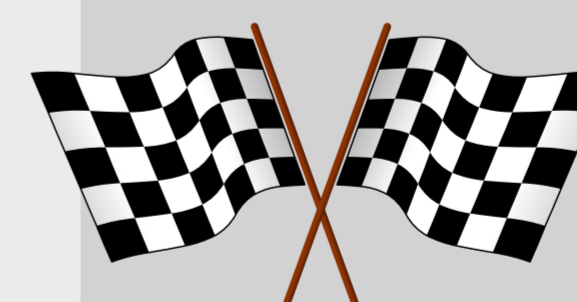
7 AK-ST7FMC Control Panel: First Steps (2/2)

Change the "Target Mechanical Speed" parameter to 5000 (1) by typing in the new value and pressing the Enter key. The new parameter will be downloaded to the ST7FMC microcontroller in real time and the motor will accelerate.

Click the "STOP" button (2) to stop the motor.



8 Congratulations!



You have successfully completed this tutorial! You can now continue to experiment with the AK-ST7FMC Control Panel on your own.

Additionally, you can develop and debug your own application by installing the "inDART-STX for ST7" software (which includes a complete development toolchain) present on the SofTec Microsystems "System Software" CD-ROM.

Please also read carefully all of the AK-ST7FMC documentation.

For the latest software releases, new products, new supported devices, discussion forums and FAQs, log on to <http://www.softecmicro.com/>

SofTec
MICROSYSTEMS

Development Tools
for the EmbeddedWorld

Microcontroller Development Tools
www.softecmicro.com