18 Quick Configuration Guide

This guide is meant as a practical tool to come to a first configuration and do a minimum set of measurements and decisions for tuning the driver. It does not cover all advanced functionalities but concentrates on the basic function set to make a motor run smoothly. Once the motor runs, you may decide to explore additional features, e.g. freewheeling and further functionality in more detail. A current probe on one motor coil is a good aid to find the best settings, but it is not a must.

CURRENT SETTING AND FIRST STEPS WITH STEALTHCHOP

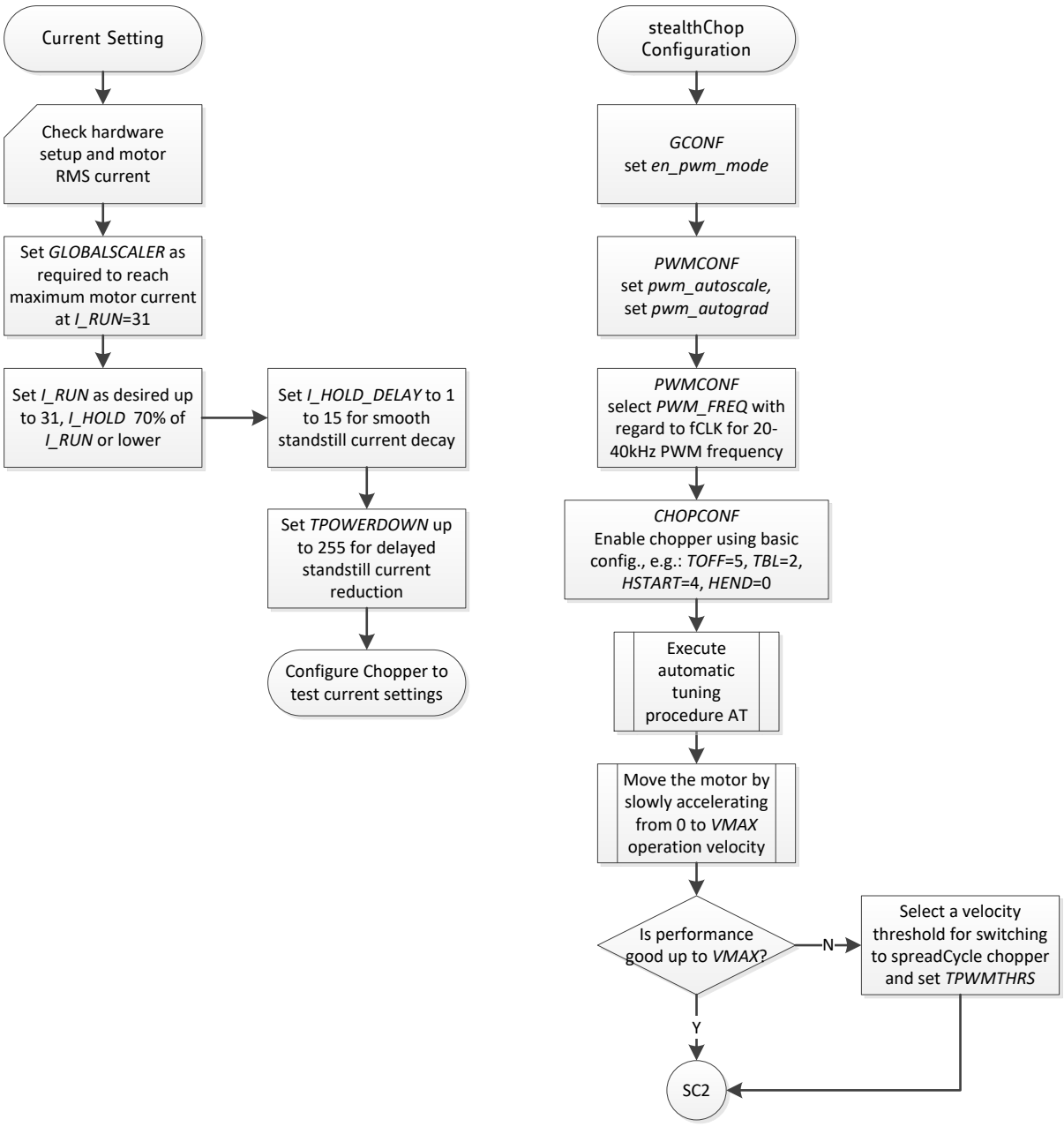

Figure 18.1 Current setting and first steps with stealthChop

TUNING STEALTHCHOP AND SPREADCYCLE

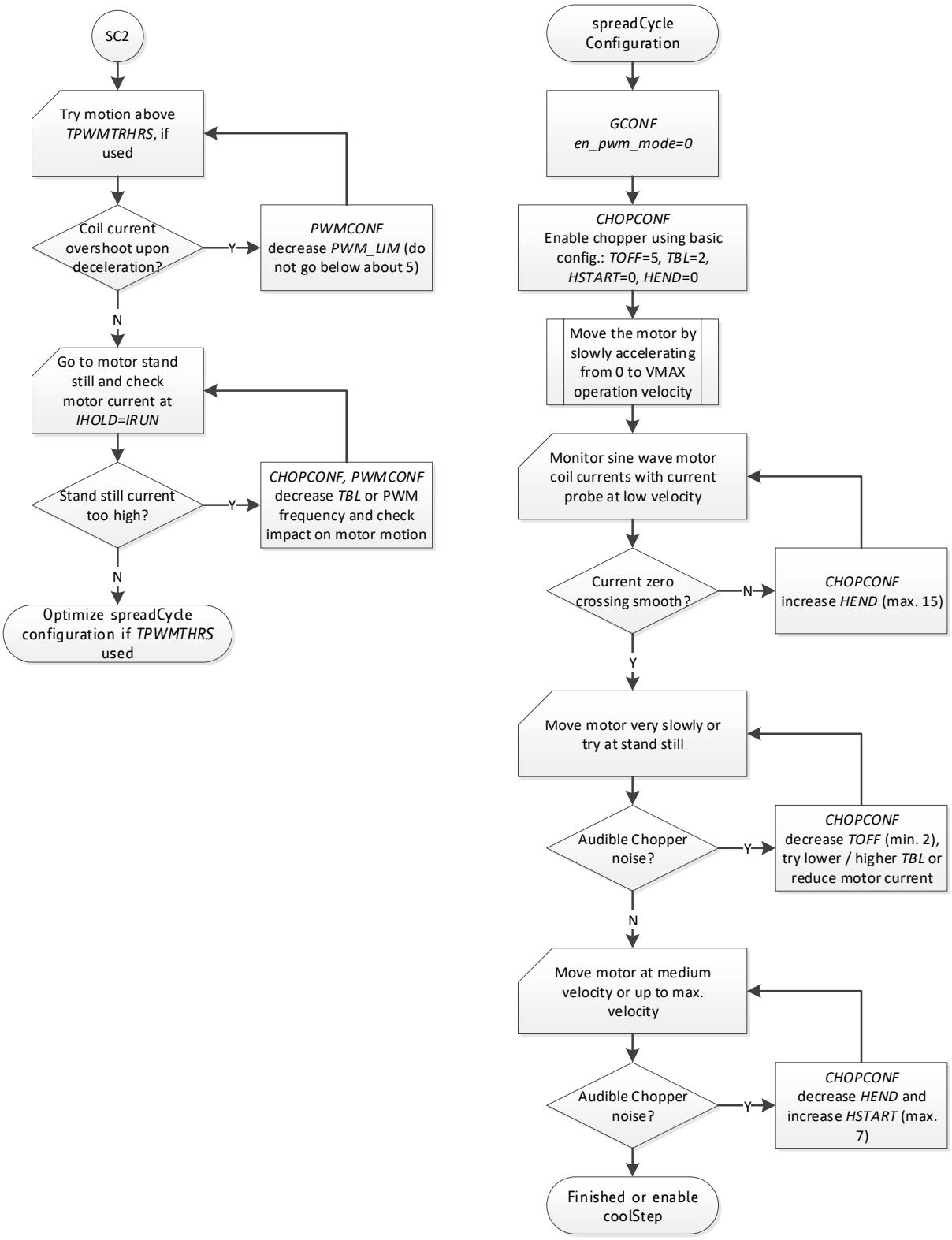

Figure 18.2 Tuning stealthChop and spreadCycle

ENABLING COOLSTEP (ONLY IN COMBINATION WITH SPREADCYCLE)

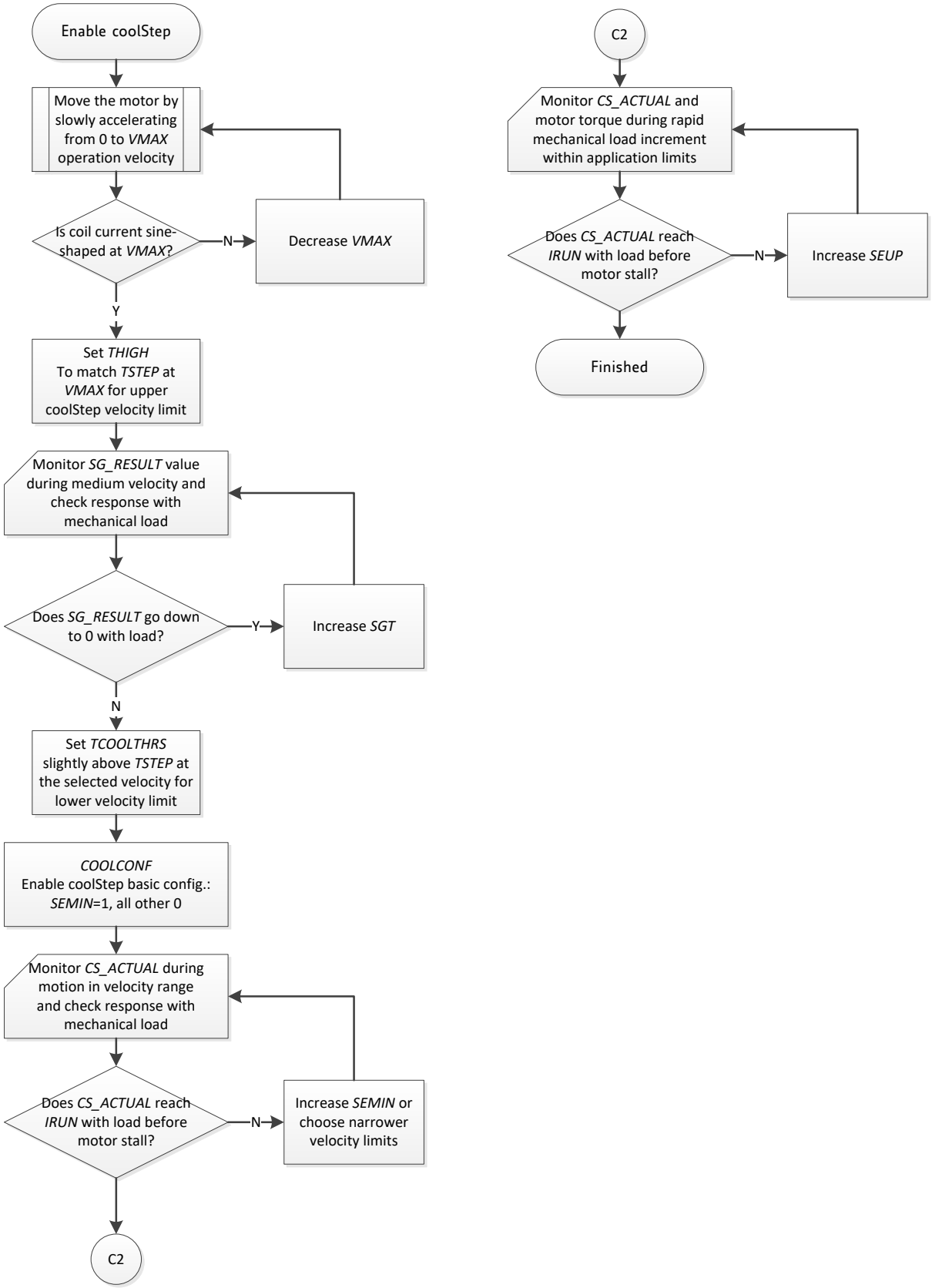

Figure 18.3 Enabling coolStep (only in combination with spreadCycle)

SETTING UP DCSTEP

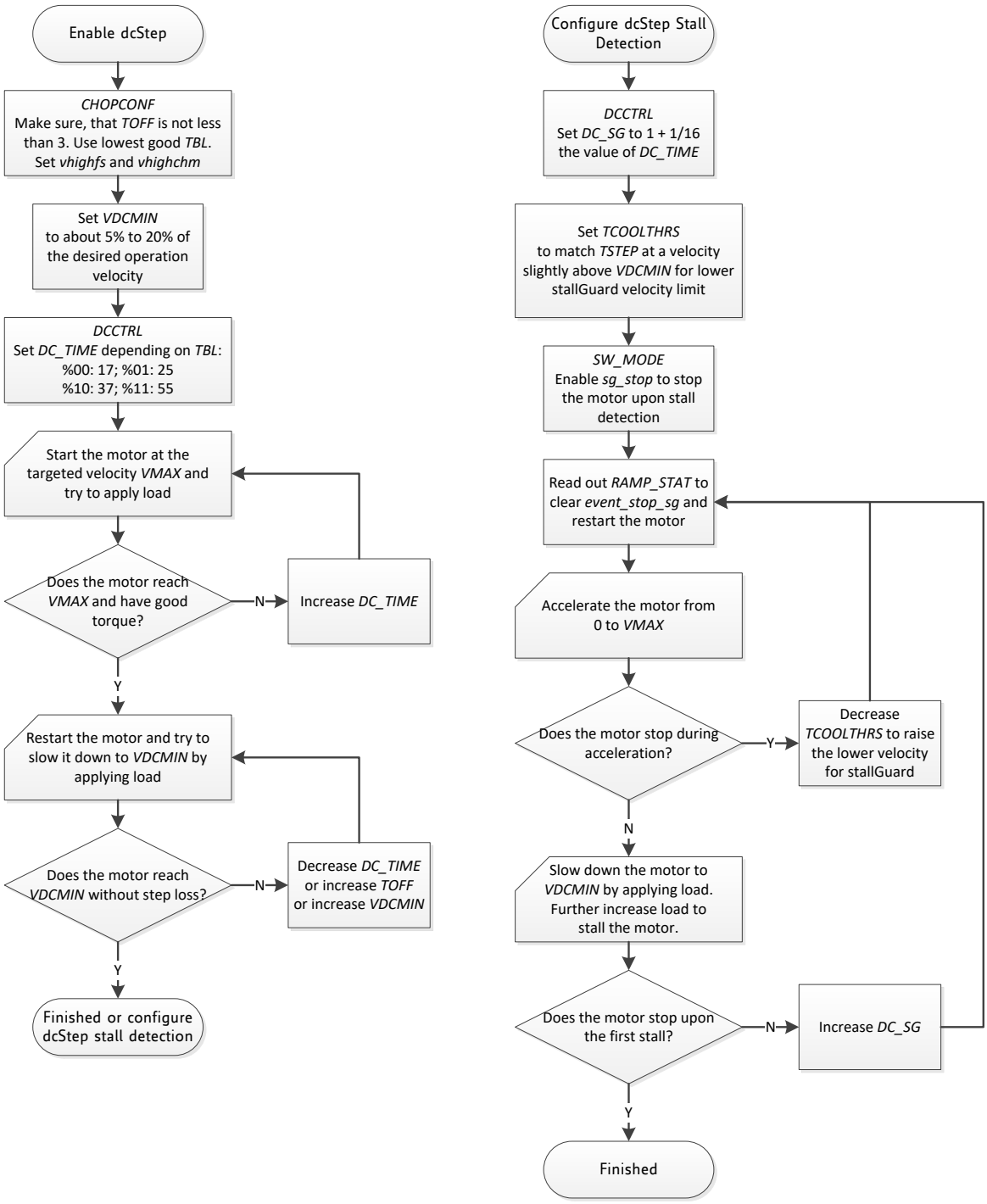

Figure 18.4 Setting up dcStep (using TMC4361 as motion controller)

19 Getting Started

Please refer to the TMC2160 evaluation board to allow a quick start with the device, and in order to allow interactive tuning of the device setup in your application. Chapter 18 will guide you through the process of correctly setting up all registers.

19.1 Initialization Examples

SPI datagram example sequence to enable the driver for step and direction operation and initialize the chopper for spreadCycle operation and for stealthChop at <30 RPM @ 12MHz clock:

```
SPI send: 0xEC000100C3;  // CHOPCONF: TOFF=3, HSTRT=4, HEND=1, TBL=2, CHM=0 (spreadCycle)
SPI send: 0x9000061F0A;  // IHOLD_IRUN: IHOLD=10, IRUN=31 (max. current), IHOLDDELAY=6
SPI send: 0x910000000A;  // TPOWERDOWN=10: Delay before power down in stand still
SPI send: 0x8000000004;  // EN_PWM_MODE=1 enables stealthChop (with default PWM_CONF)
SPI send: 0x93000001F4;  // TPWM_THRS=500 yields a switching velocity about 35000 = ca. 30RPM
```

Hint
Tune the configuration parameters for your motor and application for optimum performance.