

# Service Bulletin SB-67

V 1.1

## Step/Direction Clockwise/Counter Clockwise Interface

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## Overview of Service Bulletins for Integrated Drives (ID)

- SB-60** Overview of Integrated Drives
- General product description
  - Drive unit product lines and related capacitor series
  - Function levels and configurations
  - Description of module components
  - Technical specifications
  - Overview of the product range
  - Type designation
- SB-61** Drive Unit
- Drive unit product lines
  - Description of the drive unit components
- SB-62** Introduction to Stepping Motors
- Principal function of stepper motors
  - Control system of the drive unit
- SB-63** Electrical Installation ID-400
- Stepping driver control signals and connections for EXPERT ID
- SB-64** Electrical Installation ID-1200
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- SB-65** Electrical Installation ID-2800
- Stepping driver control signals and connections for EXPERT ID
- SB-66** Electrical Installation ID-5400
- Stepping driver control signals and connections for EXPERT ID
- SB-67** Step/Direction; Clockwise / Counter clockwise (CW/CCW) Interface
- Stepping driver signals
  - Stepping driver timing diagram
- SB-68** Software Protocol Interface RS-232
- Specification of the interface
  - Frame structure
  - Communication protocol between the ID and the host system
- SB-69** Software Protocol Interface RS-485
- Specification
  - Frame structure
  - Communication protocol between the ID and the host system
- SB-70** Software Protocol Interface I<sup>2</sup>C
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- Available soon
- SB-72** Safety Aspects of Integrated Drives
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- Tests of components
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**DATA SHEETS** are available for each Integrated Drive

# 1 Step/Direction CW/CCW Interface

## 1.1 Stepping driver signals for step/direction and clockwise/counter clockwise interfaces

If a stepping motor driver is used, there are typically two alternatives for the input signals: “pulse & direction” and “Clockwise/Counterclockwise”. The respective signals are shown in figures 1 and 2 respectively. Each full signal cycle results in one step of the stepping motor.

For “pulse & direction” the “pulse signal” is the trigger for each pulse and the “direction signal” provides the rotating direction for the motor.

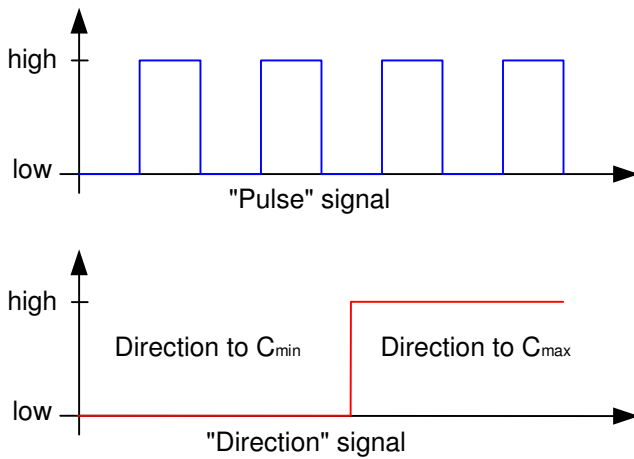


Fig. 1: Definition of the “pulse & direction” signals

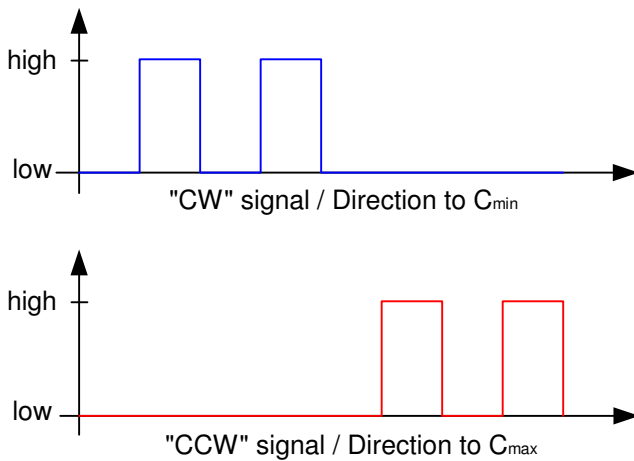


Fig. 2: Definition of the “Clockwise/Counterclockwise” signals

## 1.2 Stepping Driver Timing Diagram

When stepping motor control signals are used to control the motion of the stepping motor, the following are the required timing diagram conditions:

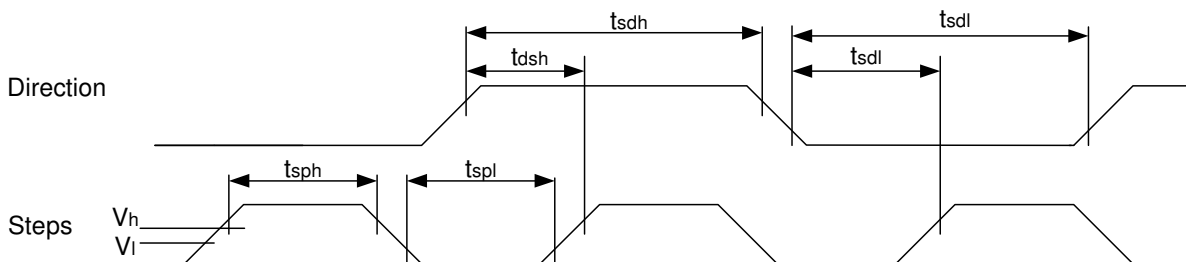


Fig. 3: Definition of the timing diagram at the stepper driver inputs

Symbol	Parameter	Min	Typ	Max	Units
$t_{sph}$	Minimum pulse width, step high	250			nS
$t_{spl}$	Minimum pulse width, step low	250			nS
$t_{sdh}$	Minimum pulse width, direction high	250			nS
$t_{sdl}$	Minimum pulse width, direction low	250			nS
$t_{dsh}$	Direction - high Steps	125			nS
$t_{dsl}$	Direction - low Steps	125			nS
$V_l$	Input Low Voltage	-0.5		1.5	V
$V_h$	Input High Voltage	3.5		5.5	V

Fig. 4: Definition of the timing diagram at the stepper driver input

## 2 Reference drive

By connecting pin 7, X2 (see SB-63) to a high voltage state (3.5 – 5.5Volts) the ID will do a reference drive. This feature is available from driver software version V.1.1.0.