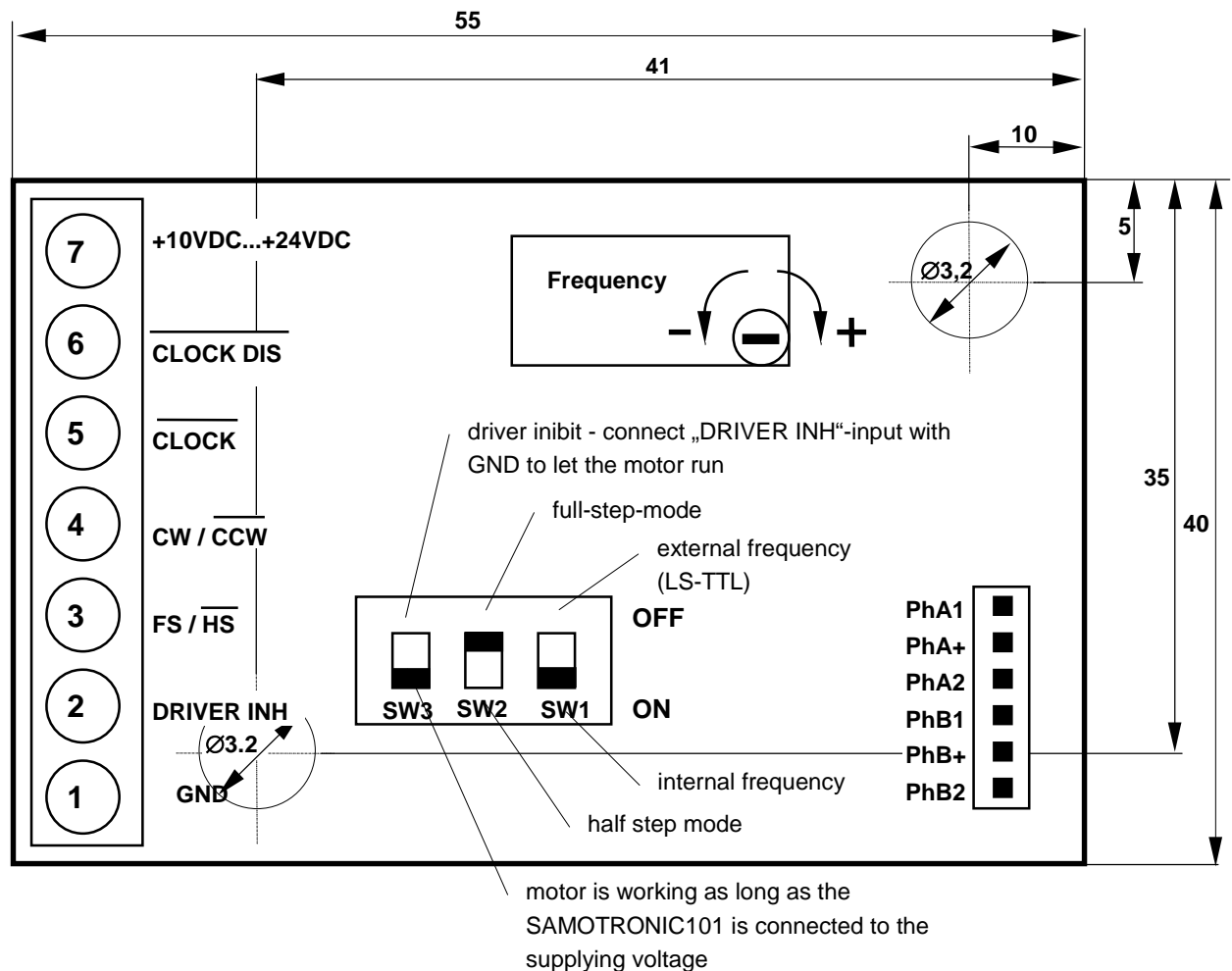


## SAMOTRONIC101 (4 636 6608 0)

Short Reference Unipolar Stepper Motor Driver

### 1. Overview

All dimensions in mm. Tolerance of hole diameter  $\pm 0.1\text{mm}$ , of all other dimensions  $\pm 0.5\text{mm}$ .



- CW / FS / DRIVER INH... functions are logic HIGH active (LS-TTL-level  $>2\text{ V}$  to  $5\text{ V}$ ); they apply automatically when input is open (depending on the switch position)
- CLOCK DIS ... functions are logic LOW active (LS-TTL-level  $0\text{ V}$  to  $<0.8\text{ V}$ ); no HIGH signal allowed (leave open instead)
- CCW / HS ... functions are logic LOW active (LS-TTL-level  $0\text{ V}$  to  $<0.8\text{ V}$ )
- CLOCK ... one step is generated for each negative edge of the clock signal (clock signal LS-TTL-level)

**Take care** on the input levels (LS-TTL-signals). For LOW a real ground connection is required. If an input is left open it is detected as HIGH. Input signals  $>5\text{V}$  may destroy the SAMOTRONIC101.



## 2. Truth Tables

### 2.1. Clock Signal Sources

SW1	CLOCK	CLOCK DIS	Reaction
ON	Output for internal generated clock signal	not connected	motor is working with the internal adjusted clock frequency
ON	Output for internal generated clock signal	LOW	internal clock is held, phases are still under current
OFF	Input for external clock signal	not connected	motor is working with the external clock frequency

No other combination of input-signals allowed!

### 2.2. Full- / Half-Step

SW2	FS/HS	Reaction
OFF	not connected	full step mode
ON	not connected	half step mode
OFF	LOW	half step mode
OFF	HIGH	full step mode

No other combination of input-signals allowed!

### 2.3. Direction

CW/CCW	Direction
not connected	CW
LOW	CCW
HIGH	CW

No other combination of input-signals allowed!

### 2.4. Stop Signal

SW3	DRIVER INH	SW1	CLOCK DIS	Reaction
ON	not connected or LOW	OFF	not connected	motor is working with the external clock frequency
ON	not connected or LOW	ON	not connected	motor is working with the internal clock frequency
ON	not connected or LOW	ON	LOW	internal clock is held, phases are still under current
OFF	HIGH	ON or OFF	LOW or not connected (HIGH not allowed!)	motor is stopped, phases are switched off (without current)
OFF	LOW	OFF	not connected	motor is working with the external clock frequency
OFF	LOW	ON	not connected	motor is working with the internal clock frequency
OFF	LOW	ON	LOW	internal clock is held, phases are still under current

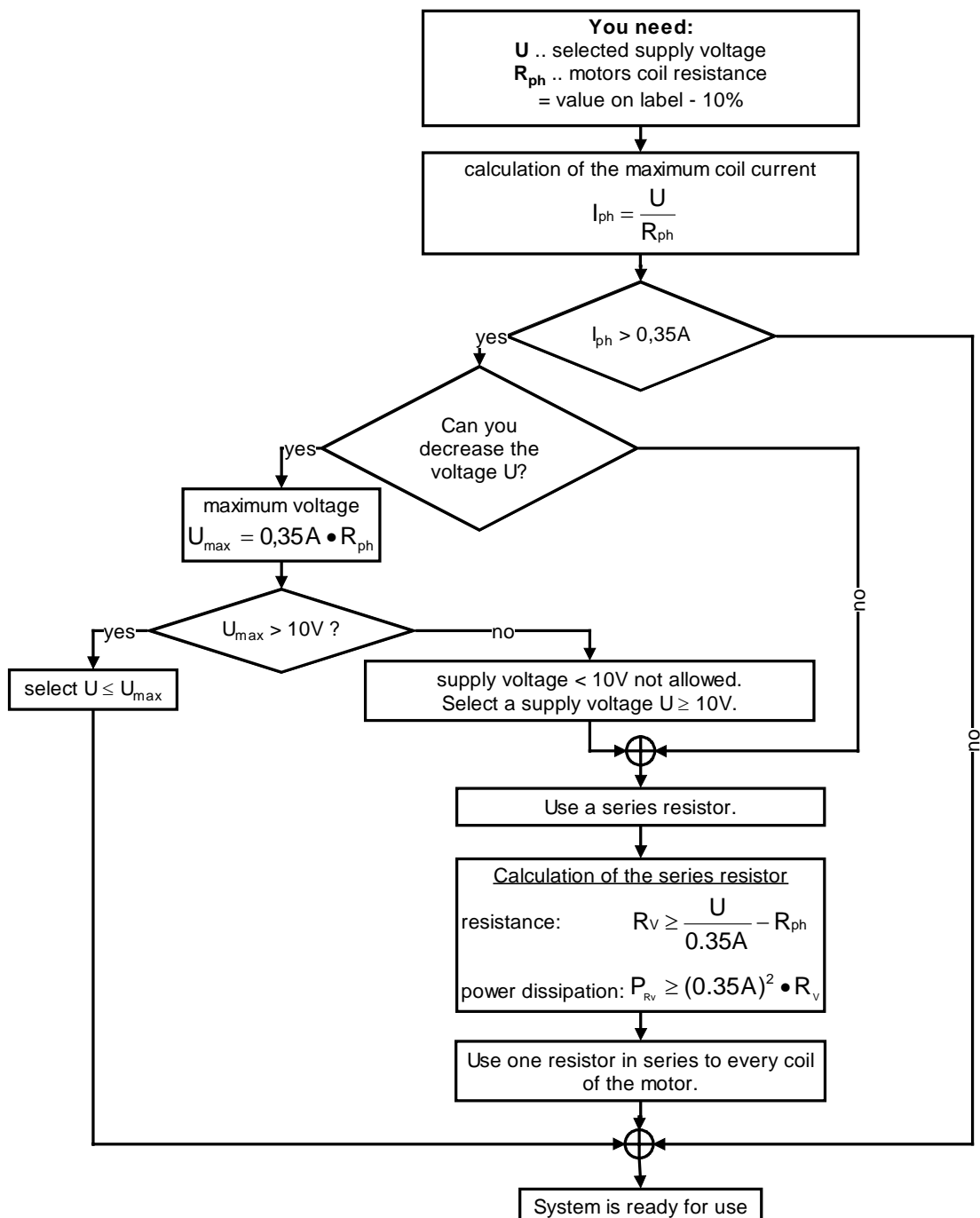
No other combination of input-signals allowed!

### 3. Recommended Operating Conditions

- Operating ambient temperature: -15°C - 50°C
- Supplying voltage: 10 VDC – 24VDC +10%
- Phase output current: 0 - 350 mA

### 4. Procedure to select the maximal possible voltage for the SAMOTRONIC101

- possible range of supplying voltages:  $U = 10\text{VDC} \dots 24\text{VDC} +10\%$
- absolute maximum of the coil current:  $I_{\text{max}} = 350\text{mA}$



## 5. Simplified calculation of duty cycle and input power for the motor

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(all values at f=0)

- Input power at 100% duty cycle:

$$P_{ED100} = \frac{U_k^2}{R_{ph}} \quad \begin{array}{l} U_k \dots \text{supplying voltage from catalog} \\ R_{ph} \dots \text{phase resistance} \end{array}$$

- Input power at selected voltage U:

$$P = \frac{U^2}{R_{ph}} \quad \text{without series resistor}$$

$$P = \frac{R_{ph}}{(R_{ph} + R_v)^2} \cdot U^2 \quad \text{with series resistor}$$

- Real duty cycle:

$$ED = \frac{P_{ED100}}{P} \cdot 100\% = \left( \frac{U_k}{U_{350}} \right)^2 \cdot 100\%$$

Duty cycle is always based on a cycle time of 5 minutes!

## 6. Motor connector

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- System: AMP MTA-100
- on PCB: straight post header 6pol. (AMP order-no. 640456-6)
- at motor side: receptacle 6pol. MTA-100 plug  
 For motor cable AWG26 use AMP-No. 640442-6 (ASN 440848920) and for  
 AWG24 use AMP-No. 640441-6 (ASN 440850420)

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