Example 4. Multi-speed mode.

Purpose:

This configuration is intended for switching the converter's speed to preset frequency values. Control is implemented by closing specific discrete inputs so that the motor reaches the corresponding frequency. In total, 15 speeds are provided in this mode.

Wiring diagram:

Connection diagram to RD05

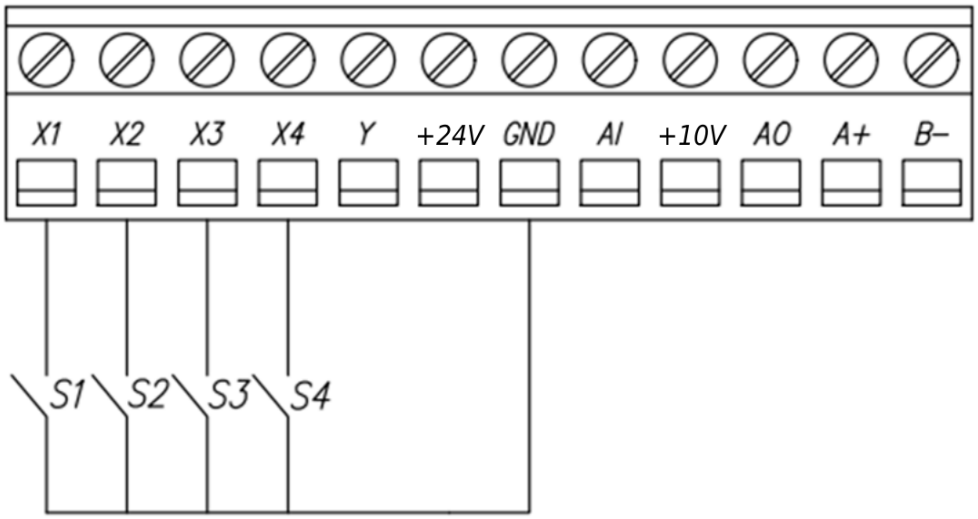


Figure 1. Wiring diagram for multi-speed control mode

Control algorithm:

1) The induction motor is started by pressing the START button on the front panel.
2) The frequency setpoint changes according to the position of the discrete inputs, as shown in Table 1.

Table 1. Combination of signals for setting profile speed values.

Input 4	Input 3	Input 2	Input 1	Input/speed value
0	0	0	1	F14.00
0	0	1	0	F14.01
0	0	1	1	F14.02
0	1	0	0	F14.03
0	1	0	1	F14.04
0	1	1	0	F14.05
0	1	1	1	F14.06
1	0	0	0	F14.07
1	0	0	1	F14.08
1	0	1	0	F14.09
1	0	1	1	F14.10
1	1	0	0	F14.11
1	1	0	1	F14.12
1	1	1	0	F14.13
1	1	1	1	F14.14

3) The motor is stopped by pressing the 

button on the front panel.

Example.

The requirement is that, when the following are closed:

- terminal X1 – the motor reaches a speed of 10 Hz
- terminal X2 – the motor reaches a speed of 20 Hz
- terminals X1 and X2 – the motor reaches a speed of 30 Hz
- terminal X3 – the motor reaches a speed of 40 Hz
- all four terminals – the motor reaches a speed of 50 Hz

Parameter list.

Table 2. Parameter list.

No.	Code	Name	Value	Note
1	F01.01	Start signal source	0	Start/stop mode from the local operator panel
2	F01.02	Frequency setpoint source	11	Digital multi-speed control
3	F01.10	Maximum output frequency	50	Rated nameplate speed, Hz
4	F01.13	Lower frequency limit setting	0	Minimum RD output frequency, Hz
5	F01.22	Acceleration time	5	Water hammer protection
6	F01.23	Deceleration time	5	Water hammer protection
7	F02.00	Motor type		According to the motor
8	F02.01	Number of poles		According to the motor
9	F02.02	Rated motor power		According to the motor
10	F02.03	Rated motor frequency		According to the motor
11	F02.04	Rated motor rotational speed		According to the motor
12	F02.05	Rated motor voltage		According to the motor
13	F02.06	Rated motor current		According to the motor
14	F05.00	Terminal X1 function selection	16	Forward start
15	F05.01	Terminal X2 function selection	17	Multi-speed input 1
16	F05.02	Terminal X3 function selection	18	Multi-speed input 2
17	F05.03	Terminal X4 function selection	19	Multi-speed input 3
18	F05.20	Control mode selection	0	Two-wire system 1
19	F05.22	Operating signal selection for terminals X1–X4	0000	Active on contact closure
20	F14.00	Preset frequency of stage 1	10	Frequency when X1 is closed
21	F14.01	Preset frequency of stage 2	20	Frequency when X2 is closed
22	F14.02	Preset frequency of stage 3	30	Frequency when X1 and X2 are closed
23	F14.03	Preset frequency of stage 4	40	Frequency when X3 is closed
24	F14.14	Preset frequency of stage 5	50	Frequency when all four discrete inputs are closed