Example 3. Induction motor speed control via digital inputs.

Purpose:

This configuration is intended for controlling the drive via digital inputs, without using external or preset setpoints and without connecting an external potentiometer. The speed varies within the range from f_{min} to f_{max}.

Wiring diagram:

RD control diagram using discrete inputs

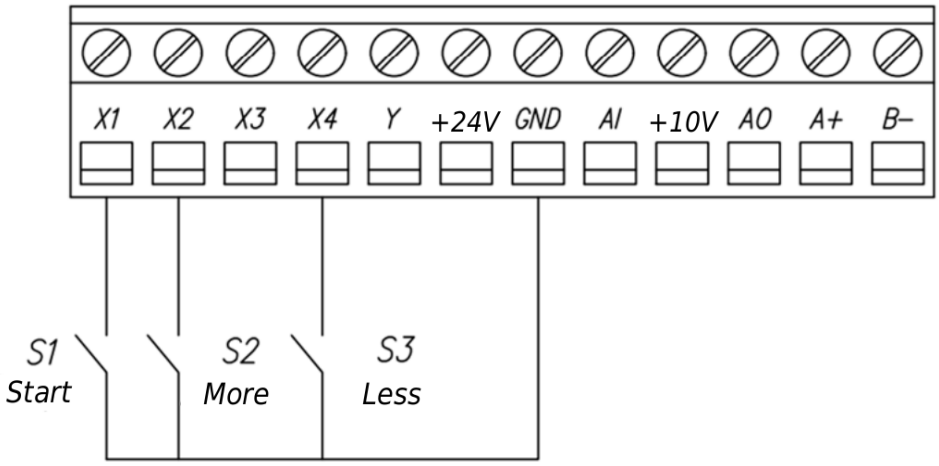


Figure 1. Wiring diagram for operation in discrete-input control mode

Control algorithm:

1) The induction motor is started by closing terminals X1 and COM.
2) Speed is increased by pressing the button connected to terminal X2.
3) Speed is decreased by pressing the button connected to terminal X4.
4) The motor is stopped by opening terminals X1 and COM.

Parameter list.

Table 1. Parameter list.

No.	Code	Name	Value	Note
1	F01.01	Start signal source	1	Start/stop mode via discrete input
2	F01.02	Frequency setpoint source	7	Digital potentiometer
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	1	Forward start
15	F05.01	Terminal X2 function selection	10	Frequency increase
16	F05.03	Terminal X4 function selection	11	Frequency decrease
17	F05.20	Control mode selection	0	Two-wire system 1
18	F05.22	Operating signal selection for terminals X1–X4	0000	Active on contact closure
19	F05.25	Digital potentiometer control modes	0	Frequency value is saved at power-off
20	F05.26	Digital potentiometer setpoint ramp-up/ramp-down rate	0.5	Response speed adjustment, Hz/s