Example 5. Working with the built-in PLC

Purpose.

This configuration is intended for running the drive according to an algorithm set in the device's built-in PLC. The process can be divided into 15 stages, for each of which the following is set:

- Rotation frequency, Hz
- Duration; the units depend on parameter F14.15
- Direction of rotation
- Group of acceleration and deceleration time parameters

Control algorithm.

1) The induction motor is started by pressing the START button on the front panel
2) The drive starts operating according to the built-in PLC algorithm.
3) The motor is stopped by pressing the STOP RESET button on the front panel

Example task

The frequency must change every 10 s according to the following pattern:

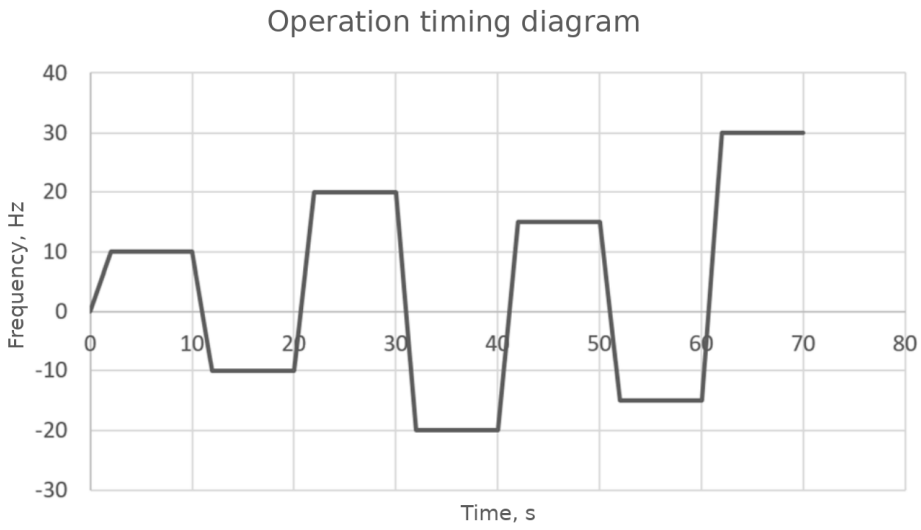


Figure 1. Timing diagram of RD operation according to the PLC algorithm

Parameter list.

Table 1. Parameter list.

No.	Code	Name	Value	Note
1	F01.01	Start signal source	0	Start/stop mode from the operator's front panel
2	F01.02	Frequency setpoint source	9	Programmable logic controller (PLC)
5	F01.22	Acceleration time 1	15	Sec. Determined individually
6	F01.23	Deceleration time 1	15	Sec. Determined individually
7	F01.24	Acceleration time 2	10	Sec. Determined individually
8	F01.25	Deceleration time 2	10	Sec. Determined individually
9	F01.26	Acceleration time 3	8	Sec. Determined individually
10	F01.27	Deceleration time 3	8	Sec. Determined individually
11	F01.28	Acceleration time 4	5	Sec. Determined individually
12	F01.29	Deceleration time 4	5	Sec. Determined individually
13	F02.00	Motor type		According to the motor
14	F02.01	Number of poles		According to the motor
15	F02.02	Rated motor power		According to the motor
16	F02.03	Rated motor frequency		According to the motor
17	F02.04	Rated motor rotational speed		According to the motor
18	F02.05	Rated motor voltage		According to the motor
19	F02.06	Rated motor current		According to the motor
20	F07.05	Direction of rotation	0100	Negative setpoint is allowed; with a negative frequency setpoint the direction of rotation will be reversed
21	F14.00	Preset frequency 1	10	Frequency at stage 1
22	F14.01	Preset frequency 2	10	Frequency at stage 2
23	F14.02	Preset frequency 3	20	Frequency at stage 3
24	F14.03	Preset frequency 4	20	Frequency at stage 4
25	F14.04	Preset frequency 5	15	Frequency at stage 5
26	F14.05	Preset frequency 6	15	Frequency at stage 6
27	F14.06	Preset frequency 7	30	Frequency at stage 7
28	F14.15	Operating mode selection	0001	Continuous cycle; after stage 7 the first stage starts immediately
29	F14.16	Duration of stage 1	10	sec
30	F14.17	Duration of stage 2	10	sec
31	F14.18	Duration of stage 3	10	sec
32	F14.19	Duration of stage 4	10	sec
33	F14.20	Duration of stage 5	10	sec

No.	Code	Name	Value	Note
34	F14.21	Duration of stage 6	10	sec
35	F14.22	Duration of stage 7	10	sec
36	F14.23– F14.30	Duration of stages 8–15	0	Stages 8 to 15 are skipped
37	F14.31	Direction of rotation, acceleration and deceleration times during stage 1	0000	Forward direction; acceleration and deceleration time 1 is used
38	F14.32	Direction of rotation, acceleration and deceleration times during stage 2	0001	Reverse direction; acceleration and deceleration time 1 is used
39	F14.33	Direction of rotation, acceleration and deceleration times during stage 3	0010	Forward direction; acceleration and deceleration time 2 is used
40	F14.34	Direction of rotation, acceleration and deceleration times during stage 4	0011	Reverse direction; acceleration and deceleration time 2 is used
41	F14.35	Direction of rotation, acceleration and deceleration times during stage 5	0020	Forward direction; acceleration and deceleration time 3 is used
42	F14.36	Direction of rotation, acceleration and deceleration times during stage 6	0021	Reverse direction; acceleration and deceleration time 3 is used
43	F14.37	Direction of rotation, acceleration and deceleration times during stage 7	0030	Forward direction; acceleration and deceleration time 4 is used