

Example Programs

1. CANopen – Profile position mode

2. CANopen – Profile Velocity mode

1. CANopen – Profile position mode

Description

Profile Position Mode – demonstrates the different move types supported for position control executed via Service Data Objects (SDOs).

SEM CANopen products support relative and absolute moves to position. Using either relative or absolute moves, the user can also select (by the control word data) if the target position should be reached before another target position is allowed (finish first) or if the SEM product should execute a newly received target position even if still in motion (immediate).

Applicable Product

- Lexium MDrive
- Lexium MDrive Linears
- MDrive Linear Actuator
- MDrive Plus
- MForce

Program Example

The below example sets typical motion profile commands a system would configure¹, enabling the motor power² and the four different move types³ supported in Profile Position Mode using SDOs with Node ID 41h.

¹Typical motion profile commands could be set each time on power up from host or set using a configuration file and stored to NVM once.

²Enabling the motor power only has to be done once on power up.

³The Control Word data selects the move type.

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CANopen Profile Position Mode
1 Typical motion profile commands and enabling motor power -
2 ***** Typical Motion Parameters *****
3 >> Id=0641, Rtr=00, Data= 2F 04 22 00 50 00 00 00 'Set run current to 80%
4 >> Id=0641, Rtr=00, Data= 23 84 60 00 40 42 0F 00 'Set deceleration to 1M steps/sec^2
5 >> Id=0641, Rtr=00, Data= 23 83 60 00 40 42 0F 00 'Set acceleration to 1M steps/sec^2
6 >> Id=0641, Rtr=00, Data= 23 81 60 00 00 D0 07 00 'Set max velocity to 512K steps/sec
7
8 ***** Enable motor power - DSP402 state machine *****
9 >> Id=0641, Rtr=00, Data= 2B 40 60 00 06 00 00 00 'Ready to Switch on
10 >> Id=0641, Rtr=00, Data= 2B 40 60 00 07 00 00 00 'Switched on
11 >> Id=0641, Rtr=00, Data= 2B 40 60 00 0F 00 00 00 'Operation Enable
12
13 ***** Set to Profile Position Mode *****
14 >> Id=0641, Rtr=00, Data= 2F 60 60 00 01 00 00 00 'Set to Profile Position Mode
15
16 Move Absolute (finish first) -
17 >> Id=0641, Rtr=00, Data= 23 7A 60 00 30 75 00 00 'Set Target Position to 30K steps
18 >> Id=0641, Rtr=00, Data= 2B 40 60 00 1F 00 00 00 'Set Control Word bit 4 to 1
19 >> Id=0641, Rtr=00, Data= 2B 40 60 00 0F 00 00 00 'Set Control Word bit 4 to 0
20
21 Move Absolute (immediate) -
22 >> Id=0641, Rtr=00, Data= 23 7A 60 00 B8 0B 00 00 'Set Target Pos to 3K steps
23 >> Id=0641, Rtr=00, Data= 2B 40 60 00 3F 00 00 00 'Set Control Word bit 4 to 1
24 >> Id=0641, Rtr=00, Data= 2B 40 60 00 2F 00 00 00 'Set Control Word bit 4 to 0
25
26 Move Relative (finish first) -
27 >> Id=0641, Rtr=00, Data= 23 7A 60 00 A0 86 01 00 'Set Target Position to 100K steps
28 >> Id=0641, Rtr=00, Data= 2B 40 60 00 5F 00 00 00 'Set Control Word bit 4 to 1
29 >> Id=0641, Rtr=00, Data= 2B 40 60 00 4F 00 00 00 'Set Control Word bit 4 to 0
30
31 Move Relative (immediate) -
32 >> Id=0641, Rtr=00, Data= 23 7A 60 00 B8 0B 00 00 'Set Target Position to 3K steps
33 >> Id=0641, Rtr=00, Data= 2B 40 60 00 7F 00 00 00 'Set Control Word bit 4 to 1
34 >> Id=0641, Rtr=00, Data= 2B 40 60 00 6F 00 00 00 'Set Control Word bit 4 to 0

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2. CANopen – Profile velocity mode

Description

Profile Velocity Mode – demonstrates the ability to move at constant velocity using Service Data Objects (SDOs).

SEM CANopen products support the ability to move in velocity mode. Once in Profile Velocity Mode, any new target velocity will be executed immediately.

Applicable Product

- Lexium MDrive
- Lexium MDrive Linears
- MDrive Linear Actuator
- MDrive Plus
- MForce

Program Example

The below example sets typical motion profile commands a system would configure¹, enabling the motor power² and sending a new target velocity using SDOs with Node ID 41h.

1 Typical motion profile commands could be set each time on power up from host or set using a configuration file and stored to NVM once.

2 Enabling the motor power only has to be done once on power up.

```
CANopen Profile velocity mode
1 Typical motion profile commands and enabling motor power -
2 ***** Typical Motion Parameters *****
3 >> Id=0641, Rtr=00, Data= 2F 04 22 00 50 00 00 00 'Set run current to 80%
4 >> Id=0641, Rtr=00, Data= 23 84 60 00 40 42 0F 00 'Set deceleration to 1M steps/sec^2
5 >> Id=0641, Rtr=00, Data= 23 83 60 00 40 42 0F 00 'Set acceleration to 1M steps/sec^2
6
7 ***** Enable motor power - DSP402 state machine *****
8 >> Id=0641, Rtr=00, Data= 2B 40 60 00 06 00 00 00 'Ready to Switch on
9 >> Id=0641, Rtr=00, Data= 2B 40 60 00 07 00 00 00 'Switched on
10 >> Id=0641, Rtr=00, Data= 2B 40 60 00 0F 00 00 00 'Operation Enable
11
12 ***** Set to Profile Velocity Mode *****
13 >> Id=0641, Rtr=00, Data= 2F 60 60 00 03 00 00 00 'Set to Profile Velocity Mode
14
15 Send new Target Velocity -
16 >> Id=0641, Rtr=00, Data= 23 FF 60 00 50 C3 00 00 'Target Velocity 50K
```

source: <https://motion.schneider-electric.com/resources/example-programs/>