Nanotec®
PLUG & DRIVE

Application Note

Library for NanoJ Programming

Version 1.0.0

Contents

1   Scope

This Library provides additional functions for NanoJ V2, to simplify the use of the CiA 402 Power State Machine and Controlword/Statusword and to handle In- and Outputs within the code.
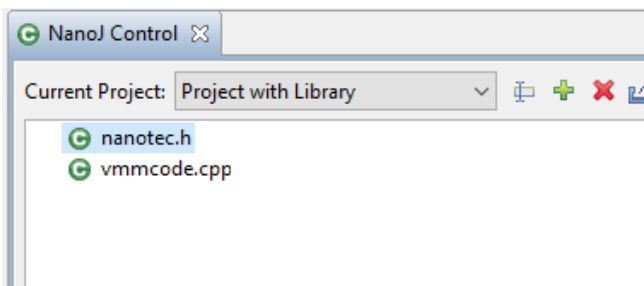
The functions of the Library are contained in a single header file (**nanotec.h**) which you can simply add to your NanoJ project in Plug&Drive Studio.

2   Software

Plug&Drive Studio

3   Including the Library into a NanoJ Project

1. Generate a new **NanoJ** project or open an existing one. Copy the header file **nanotec.h** into the project tree via Drag&Drop:

2. Include this header file in your code by adding this line:
    `#include "nanotec.h"`
    The inclusion of "wrapper.h" is always mandatory and should not be removed.

```
10
11 #include "wrapper.h"
12 #include "nanotec.h"
13
14
15 void user()
16 {
```

3. Since **nanotec.h** works with mapped objects, you must map at least the following objects in your NanoJ program:

```
map U16 Controlword as inout 0x6040:00
map U16 Statusword as input 0x6041:00
map U32 Inputs as input 0x60FD:00
map U32 Outputs as inout 0x60FE:01
map S08 ModesOfOperation as output 0x6060:00
map S08 ModesOfOperationDisplay as input 0x6061:00
map S16 AnalogInput as input 0x3220:01
```

4 Examples

You can find various examples on how to use the functions provided by this Library included in the download folder.

4.1 Template

Use this template to create a new NanoJ program already including the functions of this Library and the necessary mapping.

4.2 Position Example

Use this example to test the profile position mode.
You can perform various positioning tasks via the digital inputs of the drive.

4.3 Velocity Example

Use this example to test the profile velocity mode.
You can select/set the target velocity via the digital inputs or the analog input.

5 Functions

The following is a description of the functions of this Library.
Open the header file **nanotec.h** in **NanoJ** to see and, if necessary, modify/extend the source code.

5.1 Reset()

Parameter: -

Returns: -

Description: Resets an error

Functionality: Sets Bit 7 of 0x6040:00

5.2 Quickstop()

Parameter: -

Returns: -

Description: Activates Quickstop

Functionality: Clears Bit 2 of 0x6040:00

5.3 Shutdown()

Parameter: -

Returns: -

Description: Switches the State Machine to the ReadyToSwitchOn-State

Functionality: Clears Bits 0, 3 and sets Bits 1, 2 of 0x6040:00

5.4 SwitchOn()

Parameter: -

Returns: -

Description: Switches the Statemachine to the SwitchedOn-State

Functionality: Clears Bit 3 and sets Bits 0, 1, 2 of 0x6040:00

5.5   EnableOperation()

Parameter: -

Returns: -

Description: Switches the Statemachine to the OperationEnabled-State

Functionality: Sets Bits 0, 1, 2, 3, of 0x6040:00

5.6   RelativeMovement()

Parameter: -

Returns: -

Description: Selects Relative Movement for Profile Position

Functionality: Sets Bit 5 of 0x6040:00

5.7   AbsoluteMovement()

Parameter: -

Returns: -

Description: Selects Absolute Movement for Profile Position

Functionality: Clears Bit 5 of 0x6040:00

5.8   NewSetPoint(bool newsetpoint)

Parameter: true/false

Returns: -

Description: De-/Activates a new setpoint for Profile Position

Functionality: Clears/Sets Bit 4 of 0x6040:00

5.9   Halt(bool halt)

Parameter: true/false

Returns: -

Description: De-/Activates the Halt functionality

Functionality: Clears/Sets Bit 8 of 0x6040:00

5.10 ChangeSetPointImmediately(bool changesetpointimmediately)

Parameter: true/false

Returns: -

Description: De-/Activates the immediate change of a setpoint in Profile Position

Functionality: Clears/Sets Bit 5 of 0x6040:00

5.11 ChangeOnSetPoint(bool changeonsetpoint)

Parameter: true/false

Returns: -

Description: De-/Activates the immediate Change of the Velocity in Profile Position

Functionality: Clears/Sets Bit 9 of 0x6040:00

5.12 TargetReached()

Parameter: -

Returns: true/false

Description: Returns true if the Target has been reached

Functionality: Returns Bit 10 of 0x6041:00

5.13 NewSetPointAcknowledge()

Parameter: -

Returns: true/false

Description: Returns true if a new setpoint has been acknowledged

Functionality: Returns Bit 12 of 0x6041:00

5.14 DigitalInput(U08 inputnumber)

Parameter: 1, 2, 3, 4, 5 or 6

Returns: true/false

Description: Returns true, if digital input 1, 2, 3, 4, 5 or 6 is active

Functionality: Returns Bit 16, 17, 18, 19, 20 or 21 of 0x60FD:00

5.15 SetDigitalOutput(U08 outputnumber)

Parameter: 1, 2 or 3

Returns: -

Description: Sets the digital output 1, 2 or 3

Functionality: Sets Bit 16, 17, 18 or 19 of 0x60FE:01

5.16 ClearDigitalOutput(U08 outputnumber)

Parameter: 1, 2 or 3

Returns: -

Description: Clears the digital output 1, 2 or 3

Functionality: Clears Bit 16, 17, 18 or 19 of 0x60FE:01

5.17 AnalogInput()

Parameter: -

Returns: 0 to 1023

Description: Returns the value of the analog input 1

Functionality: Returns value of 0x3220:01

5.18 ModesOfOperation(S08 modesofoperation)

Parameter: -128 to 127

Returns: -

Description: Sets the Mode of Operation to the value of the parameter

Functionality: Writes value in 0x6060:00

5.19 ModesOfOperationDisplay()

Parameter: -

Returns: -128 to 127

Description: Returns the Mode of Operation

Functionality: Returns value of 0x6061:00

6   Liability

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