CHANGE NOTICE NEMESYS S/M COMMUNICATION PROTOCOL

The new Nemesys pump generation works with a newer type of motor control (Epos 4). You can continue to use the functions from the Pump Library in the SDK as before. However, you must use the latest release of the SDK. Additionally, some new functions are to be considered, which are already described in the online documentation to the SDK.
The new Nemesys S pumps have absolute encoders. So, there is no need to initialize the position sensing system. For the old generation pumps (neMESYS low and mid pressure pumps) an initialization after switch on power is absolutely necessary. Use the new function LCP_IsPositionSensingInitialized() to find out if the connected pumps needs an initialization or not. In addition, the new pumps contain an internal force sensor in the drive. Thus, there is a new function force monitoring which has been added to the SDK.

RS232 INTERFACE - SERIAL COMMUNICATION PROTOCOL

The serial communication protocol changed. The new Nemesys S comes with an improved serial protocol. Customers that already implemented support for older Nemesys pumps via RS232 interface need to implement the new serial protocol. Please refer to the firmware specifications for a detailed description of the serial protocol:

DEVICE	FIRMWARE SPECIFICATION
Nemesys Low Pressure	https://cetoni.de/downloads/manuals/neMESYS_Firmware_Specification.pdf
Nemesys S	https://cetoni.de/downloads/manuals/NemesysV4_Firmware_Specification.pdf

DEVICE OBJECT DICTIONARY

Both pumps are CANopen Devices. Both devices provide access to all device parameters via the CANopen object dictionary. Both pumps implement the CANopen Profile DS402 – Drives and Motion Control. The new Nemesys S pumps implement a more recent version of the DS402 profile. That means, the object dictionary identifiers of some parameters have changed and also the structure of some parameters (for example SI units) have changed. The following table gives and quick overview over all changed parameters. Changed parameters, additional parameters and no longer existing parameters are highlighted red. Customers that access the device functionality via the CANopen object dictionary need to implement the new Object Dictionary.

NEMESYS LOW PRESSURE		NEMESYS S/M	
0x1001	Error Register	0x1001	Error Register
0x1003	Error History (Predefined Error Field)	0x1003	Error History (Predefined Error Field)
0x2003	RS232 Frame Timeout	0x2005	RS232 Frame Timeout
0x200C	Custom persistent memory	0x210C	Custom persistent memory
0x2210	Position Sensor Configuration	0x3000	Axis configuration
		0x3003	Gear configuration

0x2028	Velocity Actual Value Averaged	0x30D3	Velocity Actual Values
0x2078	Digital Output Functionalities	0x60FE	Digital outputs
		0x3141	Digital input properties
		0x60FD	Digital inputs
0x207C	Analog Inputs	0x3160	Analog input properties
		0x3182	Analog output general purpose
0x6040	Control Word	0x6040	Controlword
0x6041	Status Word	0x6041	Statusword
0x6060	Modes of Operation	0x6060	Modes of operation
0x6061	Modes of Operation Display	0x6061	Modes of operation display
0x6064	Position Actual Value	0x6064	Position actual value
0x606B	Velocity demand	0x606B	Velocity demand
0x607A	Target Position	0x607A	Target position
		0x607D	Software position limit
		0x607F	Max profile velocity
0x6081	Profile Velocity	0x6081	Profile velocity
0x6098	Homing Method		
0x6099	Homing Speeds		
0x2081	Home Position		
0x607C	Home Offset		
0x608B	Velocity Notation Index	0x60A9	Si unit velocity

For a detailed description of the changed parameters please refer to the firmware specifications:

DEVICE	FIRMWARE SPECIFICATION
Nemesys Low Pressure	https://cetoni.de/downloads/manuals/neMESYS_Firmware_Specification.pdf
Nemesys S	https://cetoni.de/downloads/manuals/NemesysV4_Firmware_Specification.pdf

INITIALISATION OF POSITION SENSING SYSTEM

The new Nemesys S pumps have absolute encoders. So, there is no need to initialize the position sensing system. For the old generation pumps (Nemesys Low and Mid pressure pumps) an initialization after switch on power is absolutely necessary. If you work with the SDK you can use the new function LCP_IsPositionSensingInitialized() to find out if the connected pumps needs an initialization or not.

NEMESYS RS232 LIBRARY

The serial protocol for Nemesys device access differs from older to newer devices. If you would like to control older devices such as Nemesys Low Pressure, Mid Pressure, High Pressure or Ultra-High pressure then the Nemesys V1 API is the right choice for you. If you target newer devices such as Nemesys S and Nemesys M, then you need to use the more recent Nemesys V4 API. Customers that control pumps via the RS232 library need to implement support for the Nemesys S pumps via the new Nemesys V4 API.

DEVICE	NEMESYS RS232 LIBRARY
Nemesys Low Pressure	Nemesys V1 API
Nemesys S	Nemesys V4 API

2.1 FORCE MONITORING

The new Nemesys S pumps contain an internal force sensor and a force monitoring functionality that automatically stops the pump drive in case of a force overload. Customers that implement support for the new Nemesys S pumps need to properly support the force monitoring functionality in order to bring the pump back into operational state after a force overload event.

Depending on the way of integration, the following documents contain the information about the force monitoring functionality:

INTEGRATION METHOD	REQUIRED DOCUMENT
CANopen Device Access	https://cetoni.de/downloads/manuals/NemesysV4_Firmware_Specification.pdf
RS232 Library	Nemesys V4 API Force Monitoring
CETONI SDK	https://cetoni.de/downloads/manuals/CETONI_SDK/PumpAPI.html