

Nano-C

Version Update

from V3.01 to V3.04



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1 Introduction

Overview of Version Updates			
Version	Function	Added	Fixed
V3.04	Analog inputs of basic device Special registers millisecond timer	✓	✓
V3.03	Floating point registers Access has again been enabled		✓
V3.02	System bus LJX7-Compactbox module has been integrated Lenze frequency inverter has been integrated Festo CP-FB module with JX-SIO Special registers Creation time of application program Supply voltages Analog inputs of basic device Behavior after Power On	✓ ✓	 ✓ ✓
V3.01	Display commands Special registers System Bus LCD, PC and JETWay interface User Interfaces Networked operation via JetWay	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓
V3.00	System Bus Special registers Display commands Special functions Application program management Floating Point Registers	✓ ✓ ✓ ✓	✓ ✓ ✓

Important !



During an operating system update, the power supply of the NANO-C must not be interrupted.

1.1 Notes on Versions V3.02, and V3.03

Besides the changes that have been made to version V3.04 of the NANO-C, this document comprises all changes which have been made to version sV3.02, and V3.03.

2 New Functions/Features

2.1 System Bus

2.1.1 LJX7-Compactbox Module with IP67

The system bus allows connection of Lumberg-Jetter brand compactbox modules. For information on how to connect Compactbox modules to the system bus, please refer to the corresponding user information.

LJX7-Compactbox Module with IP67



Technical Data of LJX7-Compactbox Modules	
Maximum number of LJX7-Compactbox modules with NANO-C The maximum number of modules is limited by the maximum allowable I/O sum of the respective controller	6
I/O size with NANO-C / NANO-D	16
Supported Compactbox modules	LJX7-CSL-108-ID16 16 digital inputs, IP67 LJX7-CSL-109-ID16-NPN 16 digital inputs (n), IP67 LJX7-CSL-107-OD8-2A 8 digital outputs 2A, IP67 LJX7-CSL-114-OD16 16 digital outputs, IP67 LJX7-CSL-113-ID8-OD8 8 digital inputs and 8 digital outputs, IP67

2.1.2 Lenze Frequency Inverter 8200 vector

Now, Lenze brand frequency inverters 8200 vector equipped with fieldbus function module of the 2175 type can directly be connected to the system bus. For information on how to connect the frequency inverter to the system bus, please refer to the corresponding user information.

Furthermore, refer to the frequency inverter and fieldbus function module manuals issued by Lenze GmbH & Co. KG.

Frequency Inverter 8200 vector



The following technical data have to be taken into account when connecting a frequency inverter to the system bus.

Technical Data - Lenze Frequency Inverter 8200 vector	
Maximum number of frequency inverters with NANO-C The maximum number of modules is limited by the maximum allowable I/O sum of the respective controller	10
I/O size with NANO-C / NANO-D	8
Supported fieldbus function modules	Type 2175, SW Version 1.0
Supported basic devices For exact type designation, please refer to the operating manual appurtenant to the fieldbus function module	8201 – 8204 8211 – 8218 8221 – 8227 8241 – 8246 8200 vector 8200 vector, Cold plate

2.1.3 Module Array

Register 2016: Module Array	
Function	Description
Read	Module Array 2015 = 0 -> 2016 = Amount of modules 2015 = 1 -> 2016 = Code of the first module 2015 = 2 -> 2016 = Code of the second module
Write	Illegal
Value range	0 – 255
Value after reset	Amount of expansion modules

All detected expansion modules will be listed in the module array. First, all JX2-I/O and JX2-Slave modules are listed in the module array according to their physical order. Then, Festo CP-FB modules follow, finally JX-SIO, LJX7-Compactbox modules and third-party modules will be entered into the array.

Coding of Modules		
JX2-I/O Modules		
Module Code	Designation	Comment
0	JX2-OD8	8 digital outputs
1	JX2-ID8	8 digital inputs
2	JX2-IO16	8 digital inputs and 8 digital outputs
3	JX2-IA4	4 analog inputs
4	JX2-OA4	4 analog outputs
5	JX2-CNT1	Counter input
6	JX2-PRN1	Module with Centronics interface
7	JX2-SER1	Module with serial interface

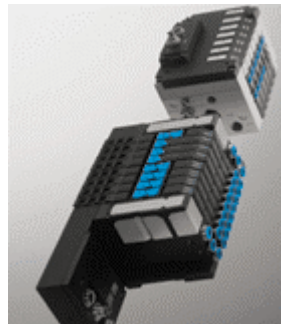
Coding of Modules		
LJX7-Compactbox Modules		
Module Code	Designation	Comment
10	LJX7-CSL-108-ID16	16 digital inputs, IP67
11	LJX7-CSL-109-ID16-NPN	16 digital inputs (n), IP67
12	LJX7-CSL-107-OD8-2A	8 digital outputs, IP67
13	LJX7-CSL-114-OD16	16 digital outputs, IP67
14	LJX7-CSL-113-ID8-OD8	8 digital inputs and 8 digital outputs, IP67
FESTO CP-FB modules		
Module Code	Designation	Comment
32	CP-FB output module	Valve terminal or digital output module
33	CP-FB input module	Digital input module
JX-SIO and Third-party Modules		
Module Code	Designation	Comment
64	JX-SIO	System bus coupler for Smart I/O
65	CPV-Direct Valve Terminal	Festo AG & Co.
66	Terminal CPX	Festo AG & Co.
67	Valve terminal type 8640	Bürkert GmbH & Co. KG
68	SI unit EX12# - SCA1	SMC Pneumatik GmbH
70	Frequency inverter 8200 vector	Lenze Drives Systems GmbH
JX2-Slave Modules		
Module Code	Designation	Comment
128	JX2-SV1	Position feedback controller, frequency inverter ...
129	CAN-DIMA	Position feedback controller with integrated servo amplifier
130	JX2-SM2	Module for controlling 2 stepper motor amplifiers
131	JX2-SM1D	Module with integrated power unit for controlling a stepper motor
132	JX2-PID1	Module with 4 PID controllers
133	JX2-PROFI1	Slave for Profibus-DP
136	JX2-ProfiM	Master for Profibus-DP
146	JetMove 600 Series	Position feedback controller with integrated servo amplifier

Coding of Modules		
Dummy Modules		
Module Code	Designation	Comment
252	JX-SIO dummy-module	
253	JX2-Slave dummy module	
254	JX2-I/O Dummy Module	
255	Not identified	

2.1.4 FESTO CP-FB modules

Starting from version V3.02, Festo CP-FB modules connected to the system bus can be operated together with JX-SIO, Festo CPV-Direct, Festo CPX-Terminal and other third party modules

The maximum allowable IO sum has still to be taken into account.



Note

We recommend not to use Festo CP-FB modules for new developments. These modules should rather be replaced by Fest CPV-Direct or Festo CPX-Terminal modules. In contrast with CP-FB modules, they offer more functions, less complicated commissioning and installation.

2.2 Creation Time of Application Program

The programming tool JetSym creates a file with the extension *.end when compiling the application program for a NANO-C controller.

The file creation date is stored to the application program and transferred to the NANO-C when downloading it. The creation time of the application program located in the RAM can be read out from registers 2970 through 2974. The creation time contained in these registers corresponds to the creation time contained in the file with the extension *.end.

Register Overview: Creation Time of Application Program located in RAM	
Register #	Description
2970	Minutes
2971	Hours
2972	Day
2973	Month
2974	Year

Note



In NANO-C OS version V3.01 these registers were used to read the creation time of the application program located in the flash memory.

2.3 Supply Voltages

Register 2908: Supply Voltage for Analog Inputs	
Function	Description
Read	Present voltage in millivolts
Write	Illegal
Value range	0 - 15000 (nominal)
Value after reset	Approx. 15000

Analog inputs are fed in the basic controller via operational amplifiers to the AD converter. The nominal supply voltage of these amplifiers is 15 V and can be read from this register.

Register 2952: Supply Voltage for Expansion Modules	
Function	Description
Read	Present voltage in millivolts
Write	Illegal
Value range	0 - 5000 (nominal)
Value after reset	Approx. 5000

Up to five JX2-I/O expansion modules can directly be supplied with voltage by the NANO-C controller. The nominal supply voltage is 5 V and can be read from register 2952.

2.4 Millisecond-Timer

Register 2037: Millisecond-Timer	
Function	Description
Read	Present value of the millisecond-timer Value after reset: 0
Write	New value from which counting will start
Value range	0 – 65535
Value after reset	0

The NANO-C increments the millisecond-timer by the value 1 each millisecond. The timer starts automatically when switching on the NANO-C. It is not possible to stop the timer.

3 Fixed Software Bugs

3.1 Analog Inputs of the Basic Device

The NANO-C up to version V3.01 required a certain time after power-on until the analog values actually being present at the analog inputs were displayed.

Starting from version V3.02, the NANO-C reads the present state of the four analog inputs located on the basic controller before it starts the application program. Thus, after power-on the correct analog value is available already from the first instruction.

3.2 Floating Point Registers

Version V3.02 did not allow access to floating point registers.

Starting from version V3.03, floating point registers can be used with their former scope of functions.