

Electric Drives  
and Controls

Hydraulics

Linear Motion and  
Assembly Technologies

Pneumatics

Service

**Rexroth**  
Bosch Group

## Digital axis control

**RE 30139/08.12**  
Replaces: 10.11

1/20

Type VT-HNC100



Component series 3X



H7642

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## Features

The digital axis control VT-HNC100...3X is a programmable NC control for up to four controlled axes. It complies with the specific requirements for closed-loop control of hydraulic drives.

The VT-HNC100...3X is designed for being used in rough industrial environments as regards to interference immunity, mechanical vibration, shock, and climate resistance.

### Fields of application

- Machine tools
- Plastics processing machines
- Special machines
- Presses
- Transfer systems

### Technology functions

- Sequence programming
- Positioning
- Pressure/force control
- Differential pressure control
- Synchronization
- Curves
- Cams

### Hydraulic axes

- Measurement system:
  - Incremental or absolute (SSI)
  - Analog 0 to  $\pm 10$  V and 4 to 20 mA
- Actuating variable output voltage or current
- Freely configurable controller variants
  - Position/pressure/force/velocity controller
  - Path-dependent braking
  - Substitutional closed-loop control (position/force)
  - Synchronization control of up to 4 axes also in groups

### Programming

- User programming using a PC
- NC language with subroutine technology and conditional jumps
- 1 NC program per axis for functional sequences
- 1 axes-spanning auxiliary routine
- Variable setting of the NC processing velocity
- Variable setting of the controller scan times
- Password protection

### Operation

- Comfortable administration of the machine and measuring data on a PC

### Service interface

- RS 232
- TCP/IP (not available with Version Compact)

### Process connection

- Digital inputs and outputs,
- Analog inputs and outputs,
- PROFIBUS DP, PROFIBUS DP in Motorola format, CANopen for the communication with a superior control (for CANopen, there is no standard EDS file available)
- PROFINET RT
- EtherNet/IP

### Assembly

- Top hat rail 35 mm

### CE conformity

- CE conformity according to EMC directive 2004/108/EC and EMVG (Act on electro-magnetic compatibility of operating media) from February 26, 2008

Applied harmonized standards:

- EN 61000-6-2:2005
- EN 61000-6-3:2007

### More information

[www.boschrexroth.com/hnc100](http://www.boschrexroth.com/hnc100)

## Ordering code

VT-HNC100-3X		Option
VT-HNC100	= Serial unit	
Version Compact for 1 axis	= C	000 = without synchronization
Version for 1 hydraulic axis	= 1	G02 = Synchronization 2-axis version
Version for 2 hydraulic axes	= 2	G03 = Synchronization 3-axis version
Version for 3 hydraulic axes	= 3	G04 = Synchronization 4-axis version
Version for 4 hydraulic axes	= 4	
Component series 30 to 39 (30 to 39: unchanged technical data and pinout)	= 3X	00 = No fitting E0 = TCP/IP <sup>1)</sup>
		<b>Position transducer</b>
		I = Incremental/SSI (not in connection with Compact version)
		S = SSI (only in connection with Compact version)
		<b>Bus connection <sup>2)</sup></b>
		P = PROFIBUS DP
		C = CANopen
		N = PROFINET RT (not in connection with Compact version)
		E = EtherNet/IP (not in connection with Compact version)

### Included within the scope of delivery:

- Mating connector for
- X1S (Type Phoenix Mini Combicon 3-pole),
  - X2D (Type Phoenix Micro Combicon 8-pole or Phoenix Mini Combicon 12-pole),
  - X2A (Type Phoenix Micro Combicon 8-pole or HD-SUB 15-pole),
  - X8M (Type Phoenix Micro Combicon 8-pole or HD-SUB 15-pole)

<sup>1)</sup> Only specify "E0" if the Ethernet service interface is desired for "PROFIBUS DP"

<sup>2)</sup> Versions without bus connection are not available.

### Recommended accessories (can be ordered separately)

Description	Material number
Interface cable RS232 (1:1), length 3 m	R900776897
USB-RS232 converter	R901066684
Cable set VT17220-1X/HNC100-3X, length 2 m, for analog signals (connection X2A) or digital position measurement systems (connection X8M) with HD connector and open breakout cable for: VT-HNC100-1-3X, VT-HNC100-2-3X, VT-HNC100-3-3X, VT-HNC100-4-3X	R901189300
Cable set VT17220-1X/HNC100-3X length 2 m, for analog signals (connection X2A) or digital position measurement systems (connection X8M) with FK-MC connector and open breakout cable for VT-HNC100-C-3X	R901189302
Plug-in connector type 6ES7972-0BA42-0XA0 for PROFIBUS DP	R901312863

## Software project planning

### Project planning

Developing application-specific data sets forms the basis for the function of the VT-HNC100...3X. These data sets are generated on the PC and sent to VT-HNC100...3X. The connection of user program and data sets is called project. This software project planning is implemented according to five steps:

1. The tasks of the VT-HNC100...3X are defined and recorded in a flow chart. In this connection, the meaning of the inputs and outputs and the used parameters is defined.
2. The functions of the flow chart are implemented in a series of NC commands.
3. The machine data (selection of transducers and controllers) and the parameters of the NC program are defined.
4. The data is sent to the VT-HNC100...3X.
5. The setting and the program sequence are optimized at the machine.

For detailed information on the generation of a project please refer to the document "First steps".

### PC programs "WIN-PED 7" and "WIN-PED 6"

For the implementation of the project planning tasks, two WIN-PED programs are available to the user.

WIN-PED 7 is suitable for all HNC variants mentioned in this document except for CANopen.

WIN-PED 6 is suitable for all HNC variants mentioned in this document except for the options PROFINET RT, EtherNet/IP and PROFIBUS DP with TCP/IP.

Projects generated with WIN-PED 6 are not compatible with WIN-PED 7 and vice-versa.

### Scope of delivery for WIN-PED:

- Comfortable dialog functions for setting the machine data online or offline
- NC editor with integrated syntax test and program compiler
- Support for the definition of the parameters used in the NC program
- Dialog window for setting the parameter values online
- Comprehensive options for displaying process variables, digital inputs, outputs, and markers
- Recording and graphical presentation of up to 16 process variables with great selection of trigger options
- Dialog for the graphical definition of special functions (determination of the function via polygonal sequence)
- Bus manager for the configuration of data exchange (PROFIBUS DP, PROFINET RT, EtherNet/IP) with superior control

### System requirements:

- IBM PC or compatible system
- Windows XP or Windows 7 for WIN-PED 6
- Windows XP or Windows 7 for WIN-PED 7
- Random access memory (512 MB recommended)
- 100 MB free hard disk capacity as per control type
- RS 232 interface for the connection of VT-HNC100...3X, for the PROFINET RT, EtherNet/IP or PROFIBUS DP, also the network interface TCP/IP can be used

### Note:

The WIN-PED 6/WIN-PED 7 is **not** included in the scope of delivery. It can be downloaded from the Internet free of charge, or ordered as CD, Material number R900725471.

Download in the Internet: [www.boschrexroth.com/hnc100](http://www.boschrexroth.com/hnc100)

Inquiries: [support.nc-systems@boschrexroth.de](mailto:support.nc-systems@boschrexroth.de)

## Overview of the controller functions

### Position controller:

- PDT1 controller
- Linear amplification characteristic curve
- Direction-dependent gain adaptation
- Gain modification via the NC program possible
- Adaptation of the valve characteristic curve
- Fine positioning
- Residual voltage principle
- Compensation of zero point errors
- State feedback via
  - Pressure,
  - Pressure differential
  - Position
- Command value provision
- Limitation of the actuating variable via the NC program
- "Path-dependent braking"
- Intermediate electronics when using commercially available NC controls
- Synchronization control

### Pressure/force controller:

- PIDT1 controller
- I component switchable via window
- Pressure differential analysis
- Own scan time

### Velocity controller:

- PI controller
- I component switchable via window

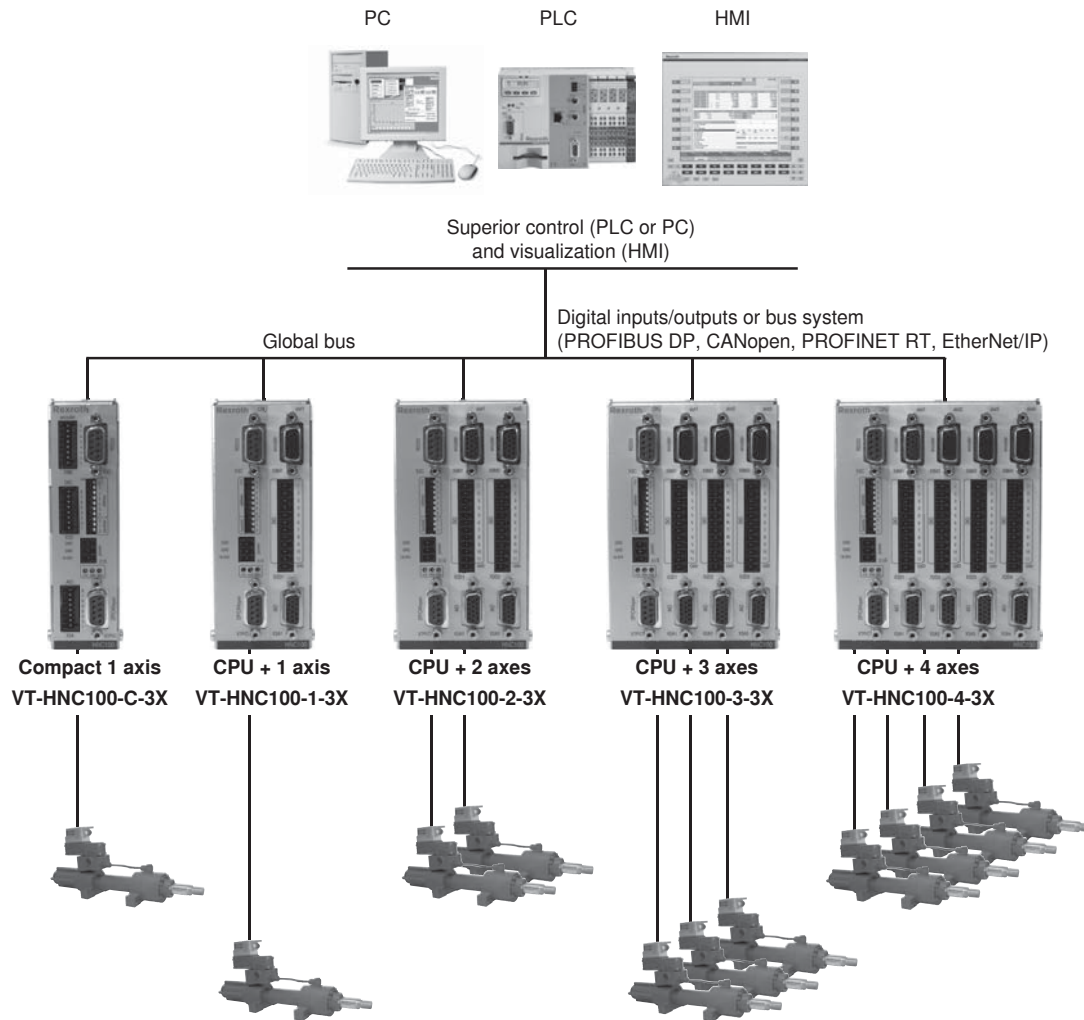
### Synchronization controller (up to 4 axes):

- Master-slave principle
- Mean principle

### Monitoring functions:

- Dynamic tracking error monitoring
- Traversing range limits (electronic limit switches)
- Cable break monitoring for incremental and SSI encoder
- Cable break monitoring for sensors with output 4 to 20 mA

## System overview (example)



## System overview, interfaces (example)

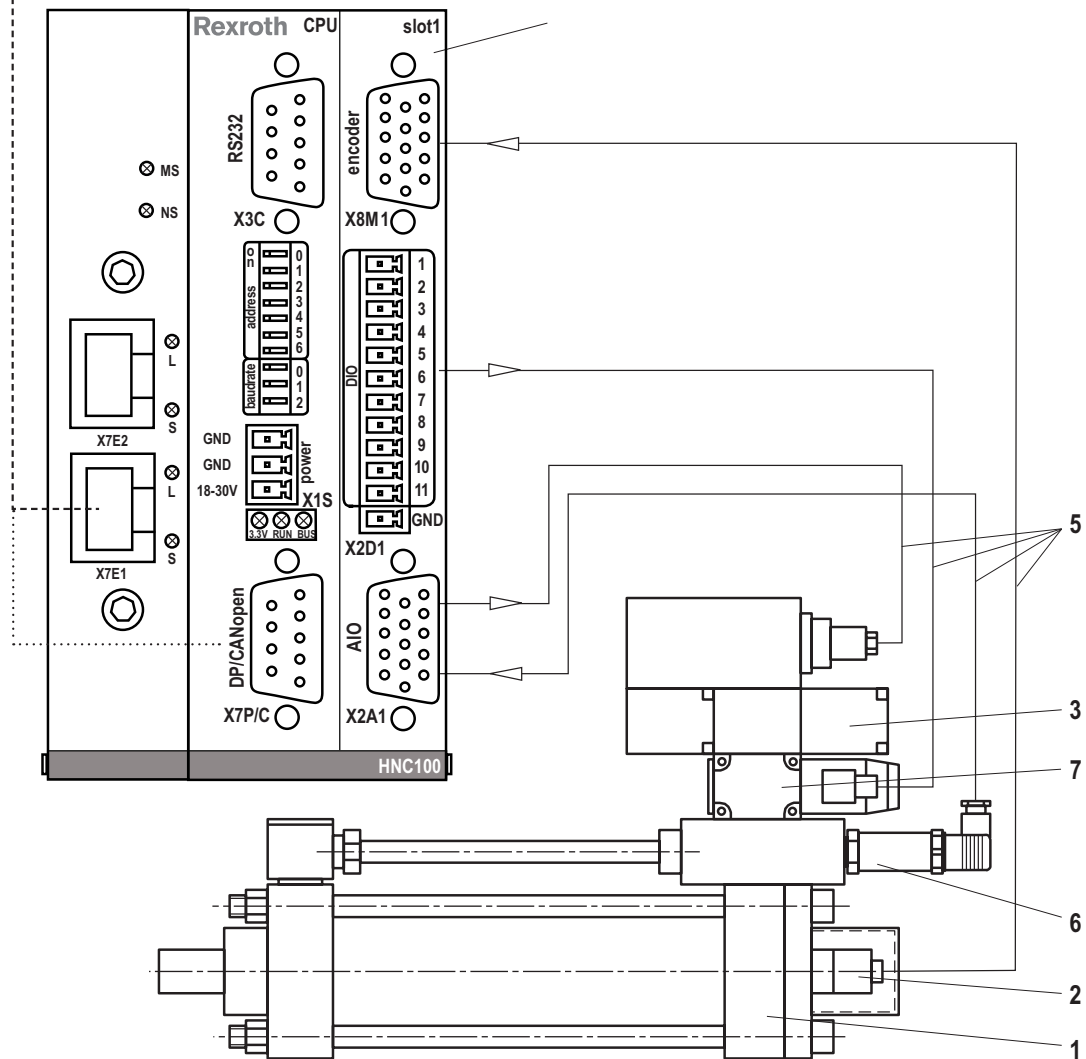
### Superior control

Possible interfaces with VT-HNC100...3X:

- Analog signals
- Digital inputs / outputs
- Serial interface RS232
- Bus systems  
(PROFIBUS DP, CANopen, PROFINET RT, EtherNet/IP)
- Ethernet service interface

Example:

VT-HNC100-1-3X/N... / VT-HNC100-1-3X/E... with hydraulic cylinder axis



- |  |  |
|--|--|
| 1 Single-rod cylinder  | 4 VT-HNC100-1-3X/N...  |
| 2 Integrated position measurement system                       | 5 Connection cable   |
| 3 Proportional servo valve with integrated control electronics | 6 Pressure transducer  |
|  | 7 Sandwich plate isolator valve (with plug-in switching amplifier) |

## Technical data VT-HNC100-C-3X (Compact)

Operating voltage <sup>1)</sup>	$U_B$	18 to 30 VDC, residual ripple < 1.5 V <sub>pp</sub>
Current consumption at 24 VDC	$I$	approx. 500 mA
Processor		32 bit power PC
Interface for WIN-PED 6, WIN-PED 7		RS232
Bus interface		PROFIBUS DP (max. 12 Mbaud according to IEC 61158), CANopen
Analog inputs (AI):		
– Voltage input (reference to AGND - Analog ground)		
• Channel number		1
• Input voltage	$U_E$	max +12 V to –12 V (+10 V to –10 V measurable)
• Input resistance	$R_E$	200 kΩ ± 5 %
• Resolution		5 mV
• Non-linearity		< 0.2 %
• Calibration tolerance <sup>2)</sup>		max. 40 mV (with factory settings)
– Current inputs		
• Channel number		2
• Input current	$I_E$	4 mA to 20 mA
• Input resistance	$R_E$	225 Ω at 20 °C (100 Ω measuring resistance)
• Leakage current	$I_V$	0.1 to 0.4 % (at 100 Ω between pin 2 or pin 3 (Cin1+ or Cin2+) and "AGND")
• Resolution		5 μA
– Voltage supply for analog sensors via the VT-HNC100-C-3X	$U$	$U_B$ at X2A, Pin 7 (+24 Vsens)
Analog outputs (AO):		
– Voltage outputs		
• Channel number		2
• Output voltage	$U_{nom}$	–10 V to +10 V (max. –10.7 V to +10.7 V)
• Output current	$I_{max}$	±10 mA
• Load	$R_{min}$	1 kΩ
– Resolution		1.25 mV
– Non-linearity		
• In the range –9.5 V to +9.5 V		< 0,1 %
• In the range –10 V to –9.5 V and +9.5 V to +10 V		< 0,2 %

<sup>1)</sup> If a 24 V transducer supply is implemented directly via the VT-HNC100...3X (supply voltage is looped in), the transducer specification has to be observed.

<sup>2)</sup> If the factory settings are insufficient, the measurement technology can be calibrated on site via software in a system-specific way.

## Technical data VT-HNC100-C-3X (Compact) continued

Gate inputs (DI)	Quantity	4
	Logic level	log 0 (low) $\leq 5$ V; log 1 (high) $\geq 10$ V to $U_B$ , $I_e = 20$ mA at $U_B = 24$ V
	Port	Flexible conductor up to 1.5 mm <sup>2</sup>
Gate outputs (DO)	Quantity	2
	Logic level	log 0 (low) $\leq 2$ V; log 1 (high) $\leq U_B$ ; $I_{max} = 20$ mA, Maximum load capacity C = 0.047 $\mu$ F
	Port	Flexible conductor up to 1.5 mm <sup>2</sup>
Reference potential for all signals		DGND
Digital position transducers (encoders):		
– SSI transducer (Due to the higher control quality, an SSI transducer with clock synchronization should be used.)		Gray-Code Adjustable up to max. 28 Bit RS485
• Coding		
• Data width		
• Line receiver / line driver		
• Voltage supply via the VT-HNC100-C-3X	U	$U_B$
– Reference potential for all signals		EGND
Dimensions		See page 16
Assembly		Top hat rail TH 35-7.5 or TH 35-15 according to EN 60715
Admissible operating temperature range	$\vartheta$	0 to 50 °C
Storage temperature range	$\vartheta$	-20 to +70 °C
Protection class according to EN 60529:1991		IP 20
Weight:	m	440 g
CE conformity		See page 2

Further technical details upon request.

### Note:

Information on the **environment simulation testing** for the areas EMC (electromagnetic compatibility), climate and mechanical load see data sheet 30139-U.

## Technical data VT-HNC100-...-3X (CPU + axis electronics)

Operating voltage <sup>1)</sup>	$U_B$	18 to 30 VDC, residual ripple < 1.5 V <sub>pp</sub>
Current consumption at 24 VDC	$I$	1 to 4 A (depending on the HNC variant and the additionally supplied components)
Processor		32 bit power PC
Interface for WIN-PED 6 interface for WIN-PED 7 Bus interface		RS232 RS232, optional TCP/IP PROFIBUS DP (max. 12 MBaud according to IEC 61158), CANopen, PROFINET RT, EtherNet/IP
PROFINET RT, EtherNet/IP		
• Minimum cycle time		2 ms
• Max. size of the cyclic I/O data		992 byte (max. 496 496 byte per direction)
• Transmission rate		100 Mbit/s, full-duplex
Analog inputs (AI) per axis electronics:		
– Voltage inputs (differential inputs)		
• Channel number		2
• Input voltage	$U_E$	max +12 V to –12 V (+10 V to –10 V measurable)
• Input resistance	$R_E$	200 kΩ ± 5 %
• Resolution		5 mV
• Non-linearity		< 0.2 %
• Calibration tolerance <sup>2)</sup>		max. 40 mV (with factory settings)
– Current inputs		
• Channel number		2
• Input current	$I_E$	4 mA to 20 mA
• Input resistance	$R_E$	350 Ω at 20 °C (100 Ω measuring resistance)
• Leakage current	$I_V$	0.1 to 0.4 %
• Resolution		5 μA
– Voltage supply for analog sensors via the VT-HNC100...3X	$U$	$U_B$ at X2A1 to X2A4, Pin 14 (+24 Vsens)
Analog outputs (AO) per axis electronics: <sup>3)</sup>		2 (1)
– Non-linearity		
• In the range –9.5 V to +9.5 V		< 0.1 %
• In the range –10 V to –9.5 V and +9.5 V to +10 V		< 0.2 %
– Voltage output		
• Output voltage	$U_{nom}$	–10 V to +10 V (max. –10.7 V to +10.7 V)
• Output current	$I_{max}$	±10 mA
• Load	$R_{min}$	1 kΩ
• Residual ripple		±60 mV (without noise)
• Resolution		1.25 mV
– Current output		
• Output current	$I_{nom}$	4 mA to 20 mA
• Load	$R_{max}$	500 Ω
• Resolution		0,625 μA

<sup>1)</sup> If a 24 V transducer supply is implemented directly via the VT-HNC100...3X (supply voltage is looped in), the transducer specification has to be observed.

<sup>2)</sup> If the factory settings are insufficient, the measurement technology can be calibrated on site via software in a system-specific way.

<sup>3)</sup> Configurable as current or voltage output.

Axis electronics slot 1 and axis electronics slot 2 have two voltage outputs Vout1 and Vout2. The axis electronics slot 3 and slot 4 only have one voltage output Vout1.

## Technical data VT-HNC100-...-3X (CPU + axis electronics), continued

Gate inputs (DI) or outputs (DO) per axis electronics (settable via software)	Quantity	11 <sup>1)</sup>
Gate inputs (DI)	Logic level	log 0 (low) $\leq 5$ V; log 1 (high) $\geq 10$ V to $U_B$ , $I_G = 20$ mA at $U_B = 24$ V
	Port	Flexible conductor up to 1.5 mm <sup>2</sup>
Gate outputs (DO)	Logic level	log 0 (low) $\leq 2$ V; log 1 (high) $\leq U_B$ ; $I_{max} = 20$ mA, Maximum load capacity $C = 0.047$ $\mu$ F
	Port	Flexible conductor up to 1.5 mm <sup>2</sup>
Reference potential for all signals		DGND
Digital position transducers (encoder) per axis electronics:		
– Incremental transducer (transducer with TTL output)		
• Input voltage	log 0	0 to 1 V
	log 1	2.8 to 5.5 V
• Input current	log 0	–0.8 mA (with 0 V)
	log 1	0.8 mA (with 5 V)
• Max. frequency referring to Ua1	$f_{max}$	250 kHz
• Voltage supply for incremental Transducer via the VT-HNC100...3X	$U$	5.25 V $\pm 1$ %, max. 400 mA total current across all axes at X8M1 to X8M4, pin 12 (+5 Venc)
– SSI transducer (Due to the higher control quality, an SSI transducer with clock synchronization should be used.)		
• Coding		Gray-Code
• Data width		Adjustable up to max. 28 Bit
• Line receiver / line driver		RS485
• Voltage supply for SSI encoders via the VT-HNC100...3X	$U$	$U_B$ at X8M1 to X8M4, pin 14 (+24 Venc)
Reference potential for all signals		EGND
Reference voltage per axis electronics	$U_{ref}$	+10 V $\pm 25$ mV (20 mA)
Dimensions		See page 16
Assembly		Top hat rail TH 35-7.5 or TH 35-15 according to EN 60715
Admissible operating temperature range	$\vartheta$	0 to 50 °C
Storage temperature range	$\vartheta$	–20 to +70 °C
Protection class according to EN 60529:1991		IP 20
Weight:		
– VT-HNC100-1-3X	$m$	585 g
– VT-HNC100-2-3X	$m$	690 g
– VT-HNC100-3-3X	$m$	850 g
– VT-HNC100-4-3X	$m$	960 g
with Ethernet	$m$	223 g more
CE conformity		See page 2

Further technical details upon request.

<sup>1)</sup> Maximally, 20 digital outputs can be connected

**Note:**

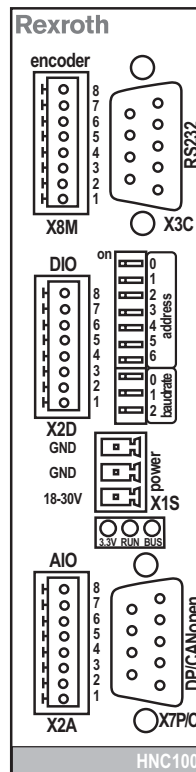
Information on the **environment simulation testing** for the areas EMC (electromagnetic compatibility), climate and mechanical load see data sheet 30139-U.

## Pinout VT-HNC100-C-3X/... (Compact)

X8M Encoder	
Pin	
8	shield
7	24 Venc
6	+5 V
5	- Clk
4	+ Clk
3	- Data
2	+ Data
1	EGND

X2D DIO (digital)	
Pin	
8	shield
7	OUT2
6	OUT1
5	IN4
4	IN3
3	IN2
2	IN1
1	DGND

X2A AIO (analog)	
Pin	
8	shield
7	24 Vsens
6	Vout1 +
5	Vout2 +
4	Vin1
3	Cin2 +
2	Cin1 +
1	AGND



X3C RS232	
Pin	
1	
2	TxD
3	RxD
4	reserved
5	GND
6	reserved
7	reserved
8	reserved
9	

X1S Power	
Pin	
1	GND
2	GND
3	18 - 30 V

X7P PROFIBUS DP	
Pin	
1	reserved
2	reserved
3	RxD/TxD-P
4	CNTR-P
5	DGND
6	VP
7	reserved
8	RxD/TxD-N
9	reserved

X7C CANopen	
Pin	
1	reserved
2	CAN_L
3	CAN_GND
4	reserved
5	reserved
6	reserved
7	CAN_H
8	reserved
9	reserved

**Note:**

The pins marked with "reserved" are reserved and must not be wired.

## Pinout VT-HNC100-1-3X/... (1-axis version)

X3C	RS232
Pin	
1	
2	TxD
3	RxD
4	reserved
5	GND
6	reserved
7	reserved
8	reserved
9	

X1S	Power
Pin	
1	GND
2	GND
3	18 – 30 V

X7E1, X7E2
Ethernet connection

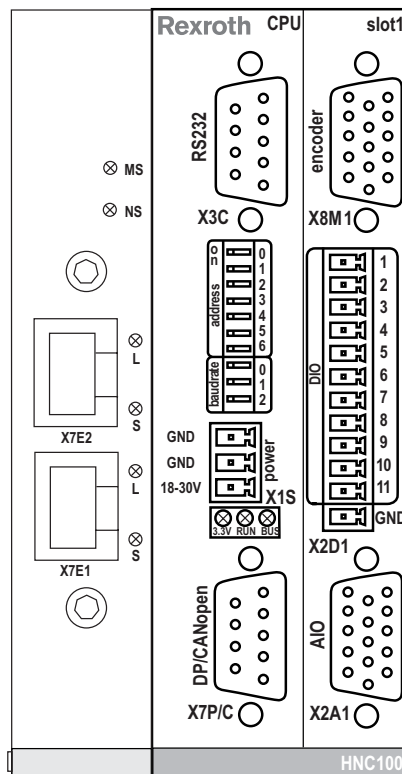
X7P PROFIBUS DP	
Pin	
1	reserved
2	reserved
3	RxD/TxD-P
4	CNTR-P
5	DGND
6	VP
7	reserved
8	RxD/TxD-N
9	reserved

X7C CANopen	
Pin	
1	reserved
2	CAN_L
3	CAN_GND
4	reserved
5	reserved
6	reserved
7	CAN_H
8	reserved
9	reserved

Slot 1 X8M1	Encoder	
	Incremental	SSI
Pin	1	- B (Inc)
	2	+ CLK (SSI)
	3	+ R (Inc)
	4	- R (Inc)
	5	+ A (Inc)
	6	- A (Inc)
	7	- CLK (SSI)
	8	+ B (Inc)
	9	- Data (SSI)
	10	EGND
	11	+ Data (SSI)
	12	+5 Venc
	13	+10 Vref
	14	+24Venc
	15	reserved

Slot 1 X2D1	DIO (digital)	
Pin	1	I/O 1
	2	I/O 2
	3	I/O 3
	4	I/O 4
	5	I/O 5
	6	I/O 6
	7	I/O 7
	8	I/O 8
	9	I/O 9
	10	I/O 10
	11	I/O 11
	12	DGND

Slot 1 X2A1	AIO (analog)	
Pin	1	Vin1 +
	2	Vin1 -
	3	Vin2 +
	4	Vin2 -
	5	Cin1 +
	6	Cin1 -
	7	Cin2 +
	8	Cin2 -
	9	reserved
	10	AGND
	11	Vout1 +
	12	Vout2 +
	13	Cout1
	14	+24 Vsens
	15	reserved



**Note:**

The pins marked with “reserved” are reserved and must not be wired.

## Pinout VT-HNC100-2-3X/... (2-axis version)

X3C RS232	
Pin	
1	
2	TxD
3	RxD
4	reserved
5	GND
6	reserved
7	reserved
8	reserved
9	

X1S Power	
Pin	
1	GND
2	GND
3	18 - 30 V

X7E1, X7E2	
Ethernet connection	

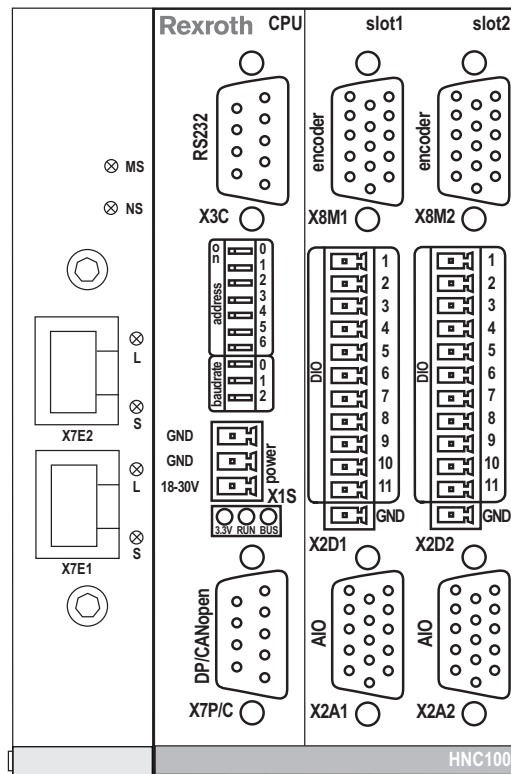
X7P PROFIBUS DP	
Pin	
1	reserved
2	reserved
3	RxD/TxD-P
4	CNTR-P
5	DGND
6	VP
7	reserved
8	RxD/TxD-N
9	reserved

X7C CANopen	
Pin	
1	reserved
2	CAN_L
3	CAN_GND
4	reserved
5	reserved
6	reserved
7	CAN_H
8	reserved
9	reserved

Encoder		
Slot 1 X8M1		Slot 2 X8M2
Pin	Incremental	SSI
1	- B (Inc)	
2		+ CLK (SSI)
3	+ R (Inc)	
4	- R (Inc)	
5	+ A (Inc)	
6	- A (Inc)	
7		- CLK (SSI)
8	+ B (Inc)	
9		- Data (SSI)
10	EGND	
11		+ Data (SSI)
12	+5 Venc	
13	+10 Vref	
14	+24Venc	
15	reserved	

Slot 1 X2D1		Slot 2 X2D2	DIO <sup>1)</sup> (digital)
Pin			
1			I/O 1
2			I/O 2
3			I/O 3
4			I/O 4
5			I/O 5
6			I/O 6
7			I/O 7
8			I/O 8
9			I/O 9
10			I/O 10
11			I/O 11
12			DGND

Slot 1 X2A1		Slot 2 X2A2	AIO (analog)
Pin			
1			Vin1 +
2			Vin1 -
3			Vin2 +
4			Vin2 -
5			Cin1 +
6			Cin1 -
7			Cin2 +
8			Cin2 -
9			reserved
10			AGND
11			Vout1 +
12			Vout2 +
13			Cout1
14			+24 Vsens
15			reserved



<sup>1)</sup> Maximally, 20 digital outputs can be connected.

**Note:**

The pins marked with "reserved" are reserved and must not be wired.

## Pinout VT-HNC100-3-3X/... (3-axis version)

X3C RS232	
Pin	
1	
2	TxD
3	RxD
4	reserved
5	GND
6	reserved
7	reserved
8	reserved
9	

X1S Power	
Pin	
1	GND
2	GND
3	18 – 30 V

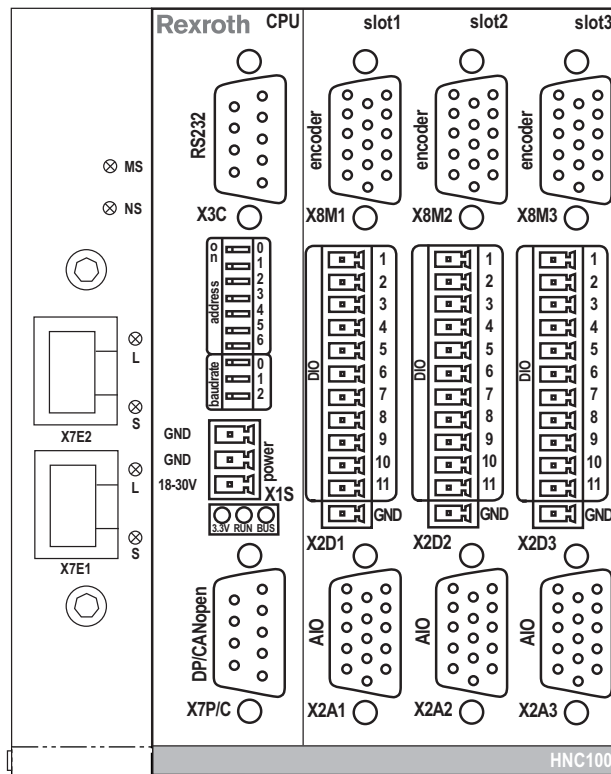
Encoder					
Slot 1 X8M1		Slot 2 X8M2		Slot 3 X8M3	
Pin	1	Incremental	SSI		
	1	- B (Inc)			
	2		+ CLK (SSI)		
	3	+ R (Inc)			
	4	- R (Inc)			
	5	+ A (Inc)			
	6	- A (Inc)			
	7		- CLK (SSI)		
	8	+ B (Inc)			
	9		- Data (SSI)		
	10	EGND			
	11		+ Data (SSI)		
	12	+5 Venc			
	13	+10 Vref			
	14	+24Venc			
	15	Reserved			

Slot 1 X2D1 DIO <sup>1)</sup>		Slot 2 X2D2 (digital)		Slot 3 X2D3	
Pin	1	I/O 1			
	2	I/O 2			
	3	I/O 3			
	4	I/O 4			
	5	I/O 5			
	6	I/O 6			
	7	I/O 7			
	8	I/O 8			
	9	I/O 9			
	10	I/O 10			
	11	I/O 11			
	12	DGND			

X7E1, X7E2	
Ethernet connection	

X7P PROFIBUS DP	
Pin	
1	reserved
2	reserved
3	RxD/TxD-P
4	CNTR-P
5	DGND
6	VP
7	reserved
8	RxD/TxD-N
9	reserved

X7C CANopen	
Pin	
1	reserved
2	CAN_L
3	CAN_GND
4	reserved
5	reserved
6	reserved
7	CAN_H
8	reserved
9	reserved



Slot 1 X2A1 AIO		Slot 2 X2A2 (analog)		Slot 3 X2A3	
Pin	1	Vin1 +			
	2	Vin1 -			
	3	Vin2 +			
	4	Vin2 -			
	5	Cin1 +			
	6	Cin1 -			
	7	Cin2 +			
	8	Cin2 -			
	9	reserved			
	10	AGND			
	11	Vout1 +			
	12	Vout2 + <sup>2)</sup>			
	13	Cout1			
	14	+24 Vsens			
	15	reserved			

<sup>1)</sup> Maximally, 20 digital outputs can be connected.

<sup>2)</sup> Not available with slot 3 (reserved)

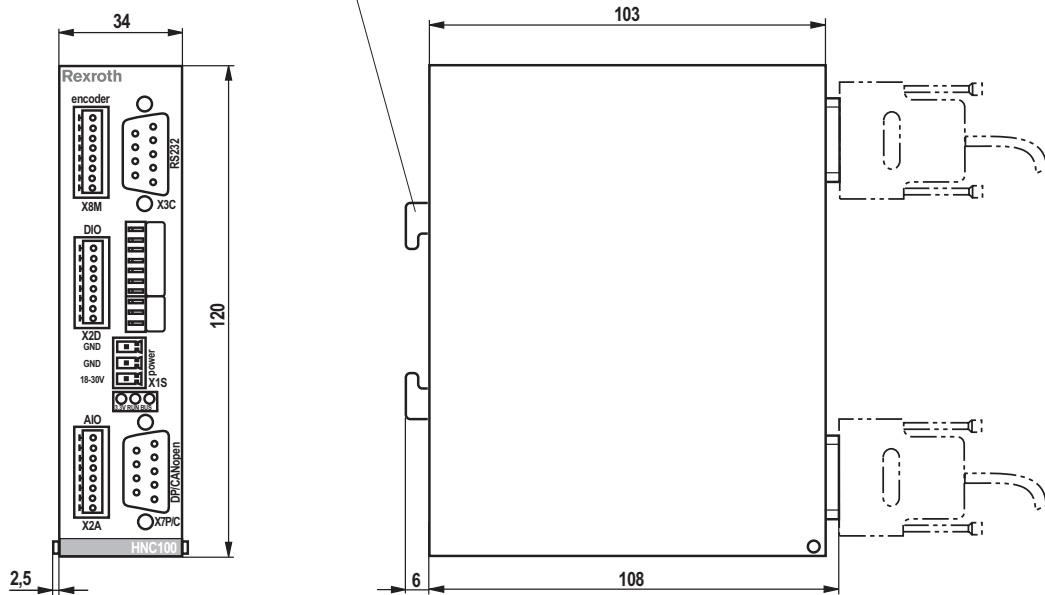
**Note:**

The pins marked with “reserved” are reserved and must not be wired.

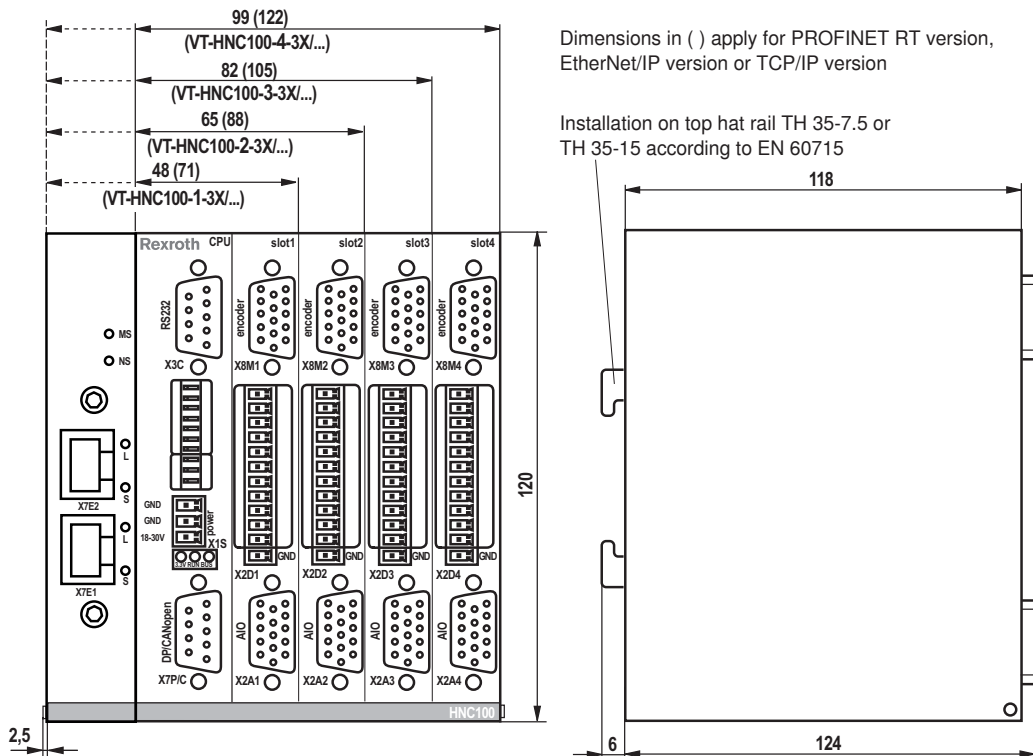


## Unit dimensions VT-HNC100-C-3X/... (dimensions in mm)

Installation on top hat rail TH 35-7.5 or TH 35-15 according to EN 60715



## Unit dimensions of all axis versions (dimensions in mm)



## Project Planning / Maintenance Instructions / Additional Information

### Product documentation for VT-HNC100...3X

<b>Product information 09956</b>	
<b>Data sheet 30139</b>	
<b>Operating instructions 30139-B</b>	
<b>Declaration on environmental compatibility 30139-U</b>	
<b>WIN-PED 6 / WIN-PED 7</b>	
	<b>First steps</b>
	<b>Online help</b>
	Machine data
	NC commands
	Parameter
	CANopen (only with WIN-PED 6)
	PROFIBUS DP (PROFIBUS DP with TCP/IP only with WIN-PED 7)
	PROFINET RT (only with WIN-PED 7)
	EtherNet/IP (only with WIN-PED 7)
<b>General Information on the maintenance and commissioning of hydraulic components 07800 / 07900</b>	

Commissioning software and documentation on the Internet: [www.boschrexroth.com/HNC100](http://www.boschrexroth.com/HNC100)

#### Maintenance instructions:

- The devices have been tested in the plant and are supplied with default settings.
- Only complete units can be repaired. The repaired units will be supplied with default settings. User-specific settings are not maintained. The operator will have to re-transfer the corresponding user parameters and programs.

#### Notes:

- Electric signals taken out via control electronics (e.g. signal "No error") may not be used for the actuation of safety-relevant machine functions. (See also the European standard "Safety requirements for fluid power systems and their components - Hydraulics", EN 982.)
- If electromagnetic interference must be expected, take appropriate measures to safeguard the function (depending on the application, e.g. screening, filtration).
- Wiring information
  - Largest spatial separation of signal and load lines possible
  - Don't lead signal lines through magnetic fields
  - If possibly, lay signal lines without intermediate terminals.
  - Don't lay signal lines parallelly to load lines
- For more information refer to the WIN-PED 6 and WIN-PED 7 online help and the 30139-B operating instructions
- The upper and lower ventilation slots must not be concealed by adjacent units in order to provide for sufficient cooling.

## Notes

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