

Rexroth IndraDrive – for high performances up to 630 kW

Complete, intelligent and safe



Rexroth IndraDrive – compact converters for high performances

The new HCS04 power units complete Rexroth's successful IndraDrive C converter series in the higher power range. Performances between 50 W and 630 kW are covered on a standard drive platform.

In combination with the IndraDrive control units and their extensive firmware functionalities integrated solutions are realized throughout a wide power range.

High power with scalable drive functions in an integrated system – this is what the IndraDrive compact converter series stands for.

Customized performance

Control units adapted to your application ensure economical solutions. A terminal Volts/Hz control or a sensor-less vector control in open-loop operation provide optimum coverage for all requirements, from the simple operation of a fan up to dynamic pump drives. The field-based control in closed-loop operation allow high-precision positioning in machine tools or printing presses.

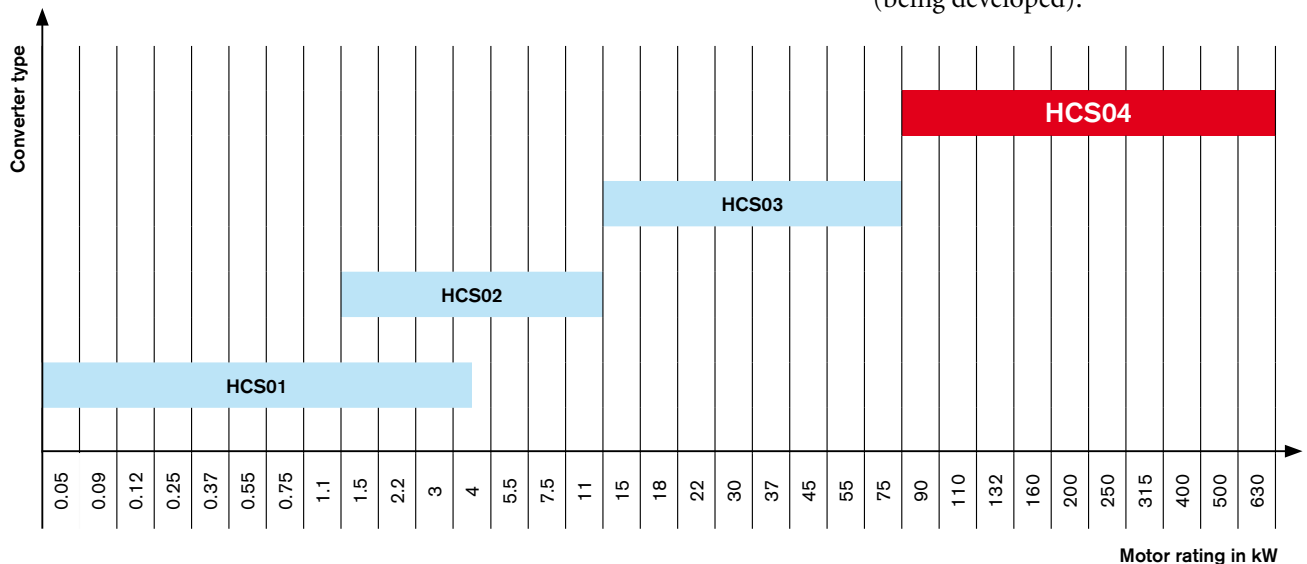
Integrated motion control with PLC

The motion control with PLC according to IEC 61131-3 integrated as an option consistently relies on open standards. This facilitates the implementation of customer know how and provides savings in respect to higher-level controls.

Safety on Board

The certified safety technology according to EN 13849-1, category 3 PL d, and EN 62061 SIL 2, together with the drive-integrated Safe Torque Off and Safe Motion safety options, provides optimum personal protection (being developed).

With the new IndraDrive C converter series the power range is expanded up to 630 kW



At home in many industries

Building materials machinery

- Crushers
- Drying plant
- Mixing plant

Lifting, material handling and storage equipment

- Cable cars
- Conveyor belts
- Cranes
- Lifting gears
- Running gears
- Winches

Machine tools

- Heavy-duty lathes
- Heavy-duty milling machines
- Roller milling machines
- Roller-burnishing machines

Metal forming

- Feeders
- Pipe bending machines
- Press main drives
- Servo presses
- Straightening machines

Mines and rolling mills

- Arc type plants
- Conveyor belts
- Crushers
- Tipping units

Plastics machines

- Extrusion plants
- Injection molding machines
- Kneading machines

Print and processing machines

- Cross-cutters
- Corrugated cardboard processing
- Jobbing printing presses
- Winder drives

Process engineering

- Centrifuges
- Compressors
- Cross-cutters
- Fans
- Pumps

Stage engineering

- Overstage machinery
- Stage trappers
- Understage machinery

Test rig equipment

- Test rigs for hydraulics
- Test rigs for motors
- Transmission test rigs



Your advantages

Versatile

Optional high overload capacity, e. g. for heavy starting of cold plants or high continuous load of a S1 operation.

Economical

The power unit of the converter, designed according to protection type IP54, is located outside the control cabinet which reduces the heat inside the cabinet.

Cost-efficient

- Reduced installation effort due to integrated net filters for 2nd environment “industrial environment“ C3
- Integrated brake chopper up to 200 kW
- Efficiency of energy exchange during multi-axis operation through shared intermediate circuit

Simple

- Comfort control panel for simple drive configuration
- Integrated functionality by shared hardware and software platforms

Flexible

- Realizing of frequency converters – up to high-end servo applications through shared platform for open and closed loop
- Suitable for synchronous and asynchronous motors
- Shared engineering of all drives with IndraWorks

Extensive range of accessories

- Optional line or DC reactor for reduction of harmonic currents
- Braking resistors for lifting gears, running gears, etc.
- Additional radio-interference filters for applications in residential areas
- Output motor filter for extremely long motor cables
- Optimum mounting and/or removal with control cabinet assembly kit
- Easy mounting of heat sink outside the control cabinet with flange-mounting kit



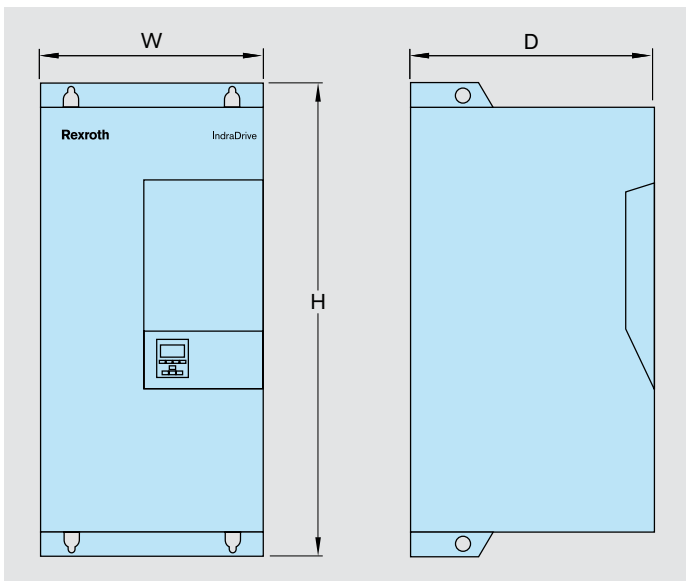
HCS04 power units

Technical specifications

Converter		HCS04.2E-W0350-N-04-NNBN	HCS04.2E-W0420-N-04-NNBN	HCS04.2E-W0520-N-04-NNBN	HCS04.2E-W0640-N-04-NNNN	HCS04.2E-W0790-N-04-NNNN	HCS04.2E-W1010-N-04-NNNN	HCS04.2E-W1240-N-04-NNNN	HCS04.2E-W1540-N-04-NNNN
Power data for motors with high continuous load¹/high overload²									
Typical motor rating	kW	132/110	160/132	200/160	250/200	315/250	400/315	500/400	630/500
	hp	200/150	250/200	300/250	400/300	500/400	600/400	700/600	900/700
Continuous current	A	259/215	300/257	366/313	459/387	586/477	720/614	894/749	1126/930
Maximum current 60 s	A	311/323	360/386	439/470	551/581	703/716	864/921	1073/1124	1351/1395
Maximum current 2 s	A	350/355	405/424	494/516	620/639	791/787	972/1013	1207/1236	1520/1535
Power supply continuous current ³	A	226/194	271/229	338/277	418/340	527/424	660/529	834/675	1037/834
Power supply voltage	V	3 AC 380 ... 480 (+10 %/-15 %)							
Intermediate circuit connection		●	●	●	●	●	●	●	●
Intermediate circuit capacity	mF	7.8	7.8	10.4	10.8	15.6	16.2	23.4	31.2
Brake chopper									
Integrated		●	●	●	external	external	external	external	external
Permanent braking power	kW	85	100	120	200	200	400	400	400
Max. braking power 10 s	kW	165	200	240	300	375	475	600	750
Control voltage data									
Internal control voltage	V	DC 24 (not for supply of motor holding brake)							
External control voltage	V	coming soon							
Mechanical specifications									
Width W	mm	350	330	430	585	585	880	880	1110
Height H	mm	782	950	950	950	950	1150	1150	1150
Depth D	mm	380	380	380	380	380	380	380	380
Dimensions approx.	kg	74	80	110	140	140	215	225	300

All specifications for rating at 3 AC 400 V supply voltage and 4 kHz switching frequency with line or DC reactor

¹Overload 200 % for 60 s, 35 % for 2 s ²Overload 50 % for 60 s, 65 % for 2 s ³with DC reactor HLL



Converter HCS04.2E	For 4 kHz and ambient temperature of 40° C suitable for motor ratings at the following load types							
High continuous load Overload increased by 1.2 times for 1 min during 10 min cycle time	132 kW	160 kW	200 kW	250 kW	315 kW	400 kW	500 kW	630 kW
High overload Overload increased by 1.5 times for 1 min during 10 min cycle time	110 kW	132 kW	160 kW	200 kW	250 kW	315 kW	400 kW	500 kW

BASIC or ADVANCED control unit – always optimum performance and functionality

Basic packages	BASIC		ADVANCED	
	OPEN LOOP	CLOSED LOOP	OPEN LOOP	CLOSED LOOP
Basic functions				
Electronic type plate				
Automatic control circuit adjustment				
Setpoint generator for control optimization				
Travel to fixed stop	●	●	●	●
Adjustable error response				
Brake control				
Oscilloscope function				
Basic functions OPEN LOOP				
General motor with V/f-curve, incl. slip compensation				
I x R compensation and stall protection	●	●	●	●
Sensor-less vector control				
Speed ramp generator				
Motorized potentiometer function				
Basic functions CLOSED LOOP				
Position, speed and torque control				
Drive-controlled referencing				
Drive-controlled positioning				
Interpolation inside drive				
Positioning block mode				
Position, speed and torque limit				
Travel to fixed stop	-	●	-	●
Automatic commutation adjustment				
Path switching point with ON and OFF switching threshold				
Encoder emulation, incremental or absolute (SSI format)				

Extension packages	BASIC		ADVANCED	
	OPEN LOOP	CLOSED LOOP	OPEN LOOP	CLOSED LOOP
Servo extension				
Easy compensation of backlash on reversal	-	●	-	●
Axis error correction	-	-	-	●
Quadrant error correction	-	-	-	●
Frictional torque compensation	-	●	-	●
Touch probe with fast stop	-	1	-	2
Dynamic cam group	-	●	-	●
Main spindle				
Parameter block changeover	●	●	●	●
Spindle positioning mode	-	●	-	●
Drive-controlled gear changes	-	-	-	●
Synchronization				
Speed synchronization	●	●	●	●
Angle synchronization	-	●	-	●
Measuring wheel mode	-	●	-	●
Real and virtual leading axis	●	●	●	●
Cam plate (tabular value)	-	●	-	●
Cam plate (analytical value)	-	-	-	●
Touch probe with time measurement	1	-	1	-
Touch probe with synchronization function	-	1	-	2
Dynamic cam group	-	●	-	●

Motion Logic	BASIC		ADVANCED	
	OPEN LOOP	CLOSED LOOP	OPEN LOOP	CLOSED LOOP
IndraMotion MLD				
Freely programmable in compliance with IEC 61131-3				
Programming system for IL, ST, FBD, LD, SFC and CFC				
4 freely configurable tasks (cyclic, free-running event-controlled)	● ¹⁾	● ¹⁾	●	●
Libraries: system-specific, drive-specific, PLCopen				
Support of customer libraries				
Process orientated technology				

¹⁾ The lower computing power of the BASIC control components may lead to limited performance of the drive PLC

● Standard features

○ Option

IndraDrive control units are scalable in performance and configuration. Thanks to this flexibility, it is possible to select the best suited and most economical version for each application:

Advanced control units

offer the highest performance and can be equipped with highly diverse control, communication, and encoder interfaces as well as additional options for safety technology. Digital and analog inputs and outputs are already permanently integrated – along with a relay output – for communication with higher level control systems. Advanced control units have a level of performance to satisfy even the highest requirements imposed on control quality.

Basic control units

are the economical solution for standard applications. Basic control units with fixed configurations can be used for applications with low requirements on interface flexibility. They are available with SERCOS 2, PROFIBUS and analog interfaces, as well as with an encoder interface for IndraDyn motors. Configurable basic control components are also available for standard applications requiring additional option modules.

	Single-axis BASIC	Single-axis ADVANCED
Control communication interfaces		
Frequency converter analog/digital	○	–
Analog interface	○	with option module
Parallel interface	○	○
PROFIBUS	○	○
SERCOS 2	○	○
SERCOS III	○	○
CANopen	○	○
DeviceNet	○	○
Multi-Ethernet	○	○
Multi-function encoder interfaces		
IndraDyn motors incl. Hiperface®	●	○
MHD, MKD and MKE motors	○	○
EnDat 2.1 incl. 1 V _{pp} and 5 V TTL	○	○
Safety options compliant with EN 13849-1 coming soon		
Safe Torque Off in compliance with safety category 3, PL e	○	○
Safe Motion in compliance with safety category 3, PL d	–	○
Additional options		
Analog I/O extension	○	○
Encoder emulation	○	○
Digital I/O extension	–	○
Cross communication	Slave	Master/Slave
Software module		
MMC (MultiMediaCard)	○	○
Control panel		
Standard (one line, four buttons)	●	●
Comfort (four lines, graphic, eight buttons)	○ ¹⁾	–

¹⁾ Only in connection with control unit: CSB01.1N-FC-NNN-NNN-NN-x-NN-FW

● Standard features

○ Option

All control units are equipped with a standard display integrated in the front of the HCS04 units. A graphics-capable comfort display is also available as an option.

The configurable control components can be equipped with a Multi-Media-Card (MMC) providing easy transfer or duplication of your axis-based drive parameters without a PC.

Bosch Rexroth AG
Electric Drives and Controls
P.O. Box 13 57
97803 Lohr, Germany
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr, Germany
Phone +49 9352 40-0
Fax +49 9352 40-4885
www.boschrexroth.com

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