

1 System Presentation

1.1 Drive Range Rexroth IndraDrive Cs

1.1.1 Overview – Rexroth IndraDrive Cs

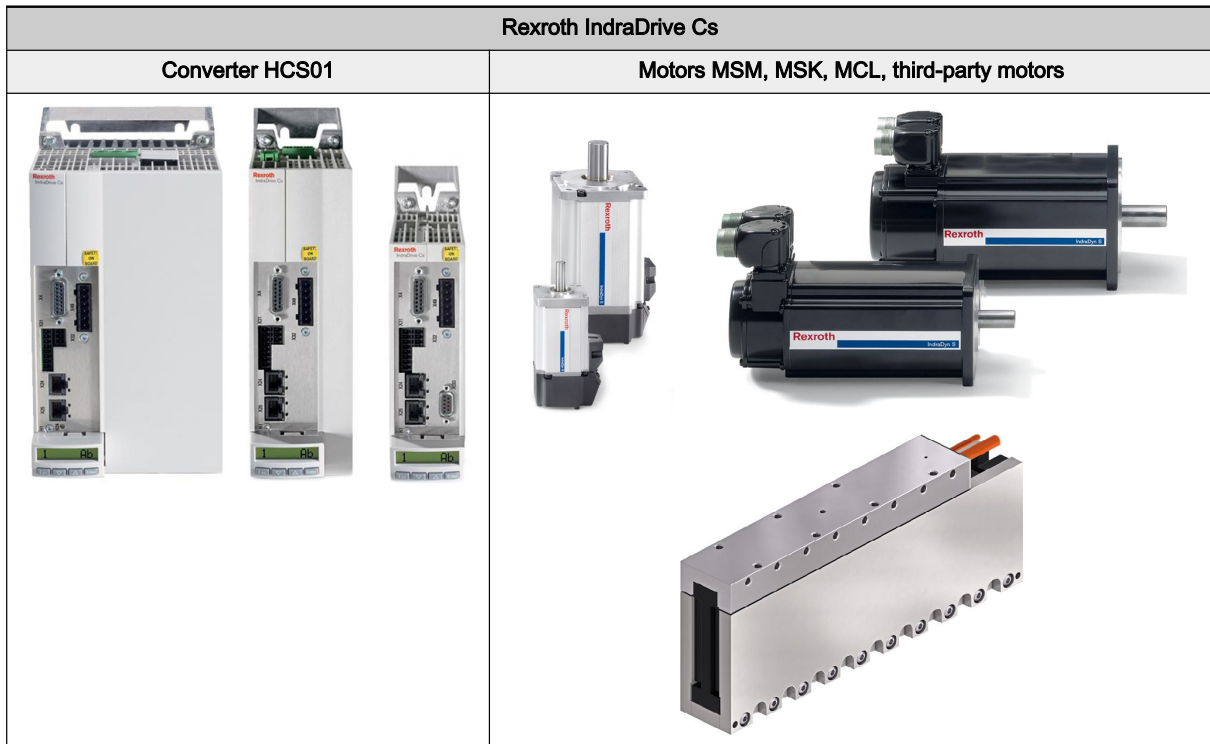


Fig. 1-1:

Components of the Rexroth IndraDrive Cs Range

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1.1.2 Target Applications

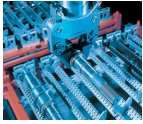


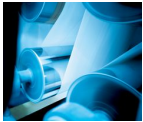

	General automation, handling, assembly Automated assembly and handling systems, palletizing systems, pick-and-place systems, logistics ...
	Machine tools Compact machines (e.g., for wood machining), secondary and servo drives ...
	Food and packaging industry Filling and closing, palletizing, erecting cartons, closing cartons, labeling ...
	Printing machines Label printing, labeling, digital printing, positioning, servo drives ...
	Semiconductor industry Semiconductor/wafer production and handling, metalizing, cleaning, solar cell production ...

Fig. 1-2: Target Applications

1.1.3 Features

Functional Features

- Compact type of construction
- Degree of protection IP20
- Control panel with programming module function
- Scalable signal processing and firmware
- Multi-encoder interface for all standard encoders (HIPERFACE®, En-Dat2.1, SSI, TTL, sin/cos, resolver, MSM encoder)
- DC bus connection (at HCS01.1E-W00xx-x-03 devices)
- Analog input (14 bit, ± 10 V)
- 8 digital inputs
 - 2 probe inputs
 - 1 combined I/O which can be configured as digital input or as digital output
- Performance-dependent fan control
- Integrated brake current measurement and monitoring
- Winding short circuit at motor output for shutdown as reaction to fatal errors
- Compact MSM motors
- 2 options for buffering the data of MSM encoders
 - Battery box (SUP-E01-MSM-BATTERYBOX; mounting near the motor is possible; one battery box is required for each drive controller)
 - D-Sub connector (RGS0001/K01) for encoder cable (RKG0041) and connection of a battery or an uninterruptible power supply
- Hall sensor adapter box SHL03.1 to operate MCL linear motors with digital Hall sensors

HCS01 - ECONOMY vs. BASIC vs. ADVANCED

Functional equipment	HCS01.1E-W00** -A-0* -...		
	...E-S3 (ECONOMY)	...B-ET (BASIC)	...A-CC (ADVANCED)
Communication	sercos III	Multi-Ethernet (incl. sercos III)	sercos III master (cross communication)
		Alternative interface ¹⁾ (PROFIBUS DP, CANopen) ²⁾	Alternative interface ¹⁾ (Multi-Ethernet, PROFIBUS DP, CANopen)
Encoder evaluation	Multi-encoder interface	Multi-encoder interface	Multi-encoder interface
		Optional multi-encoder interface ¹⁾	Optional multi-encoder interface ¹⁾
Encoder emulation	–	✓	✓

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Functional equipment	HCS01.1E-W00**A-0*...		
	...E-S3 (ECONOMY)	...B-ET (BASIC)	...A-CC (ADVANCED)
Integrated Safety Technology	L3 (Safe Torque Off)	L3 (Safe Torque Off)	L3 (Safe Torque Off)
	L4 (Safe Torque Off, Safe Brake Control)	L4 (Safe Torque Off, Safe Brake Control)	L4 (Safe Torque Off, Safe Brake Control)
		Safe Motion ³⁾	Safe Motion ³⁾
IndraMotion	–	MLD-S ⁴⁾	MLD-S ⁴⁾ MLD-M ⁴⁾
Freely configurable digital inputs/outputs (incl. probe)	✓	✓	✓
Analog input	✓	✓	✓
Operator terminal			
• With programming module function	✓	✓	✓
• With slot for microSD memory card	–	–	✓

1)

One additional interface per converter for communication **or** encoder evaluation

2)

If you use "PROFIBUS DP" or "CANopen" communication, the Multi-Ethernet function is no longer available. However, you can still use the connection points X24 and X25 as engineering interfaces.

3)

In preparation




4)

Firmware version MPx-17 or higher

Fig. 1-3:

ECONOMY vs. BASIC vs. ADVANCED

Performance Features

		 Size 1 (Width: 50 mm; Height: 215 mm)						 Size 2 (Width: 70 mm; Height: 268 mm)			 Size 3 (Width: 130 mm; Height: 268 mm)	
HCS01.1E-W00... →		03	06	09	13	05	08	18-A-02	18-A-03	28	54	
Mains connection voltage	V	3 AC 110 ... 230 V*				3 AC 200 ... 500 V**		3 AC 110 ... 230 V*		3 AC 200 ... 500 V**		
Maximum current	A _{rms}	3,3	6,0	9,0	13,0	5,0	8,0	18,0	18,0	28,0	54,0	

* Single-phase operation allowed; for HCS01.1E-W0013 and HCS01.1E-W0018-A-02 with derating

** Single-phase operation not allowed

Fig. 1-4: Converter HCS01 - Performance Features

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Combination of HCS01 and MSM/MSK

	HCS01									
	3 AC 110 ... 230 V					3 AC 200 ... 500 V				
	W0003	W0006	W0009	W0013	W0018	W0005	W0008	W0018	W0028	W0054
MSM MSM019 ... MSM041			■				T		-	-
MSK MSK030 ... MSK070C-0150			□					■		□
MSK MSK070C-0300 ... MSK103			-					□		■

- Optimum combination
- Some allowed combinations are possible
- T Allowed combination (transformer required, as operation of MSM only allowed with a maximum of 3 AC 230 V)
- Combination not allowed

Fig. 1-5: Converter HCS01 and Motors MSM/MSK



Drive sizing with Rexroth IndraSize

Rexroth IndraSize is a software for optimum sizing of a drive system consisting of the components Rexroth IndraDrive and IndraDyn.

Rexroth IndraSize is available as a download.

Interfaces

- Overview**
- Compatible with IndraDrive platform
 - Ethernet-based communication with the following supported protocols:
 - sercos III
 - PROFINET IO
 - EtherNet/IP
 - EtherCAT
 - Alternative communication:
 - PROFIBUS DP
 - CANopen
 - Optional safety technology
 - Optional multi-encoder interface
 - Optional encoder emulation
 - Analog input
 - Freely configurable digital inputs/outputs

Supported Encoder Systems

Supported Encoder Systems Encoder systems with a supply voltage of **5 and 12 volt**

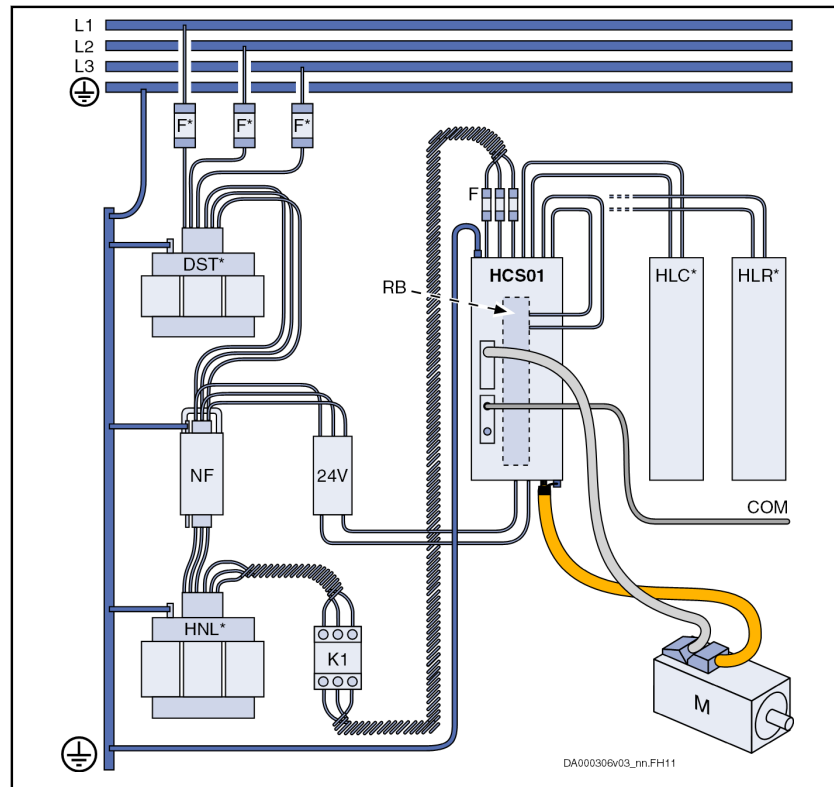
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- MSM motor encoder
- MSK motor encoder
- Sin-cos encoder 1V_{pp}; HIPERFACE®
- Sin-cos encoder 1V_{pp}; EnDat 2.1; (EnDat 2.2 in preparation)
- Sin-cos encoder 1V_{pp}; with reference track
- 5V-TTL square-wave encoder; with reference track
- SSI
- Combined encoder for SSI (combination of SSI and sin-cos encoder 1V_{pp})
- Resolver
- Hall sensor box SHL02.1
- Digital Hall sensor in conjunction with Hall sensor adapter box SHL03.1

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1.2 System Configuration

1.2.1 System Structure



*	Optional
24V	Control voltage supply
COM	Communication
DST	Autotransformer
F	Fuses
HCS01	Converter
HLC	DC bus capacitor unit (for devices with DC bus connection)
HLR	External braking resistor
HNL	Mains choke
NF	Mains filter
K1	External mains contactor
M	Motor
RB	Integrated braking resistor (at the back of the drive controller)

Fig. 1-6: Drive System Rexroth IndraDrive Cs

1.2.2 Components of the System

Drive Controllers HCS01

Type Code

Abbrev. column	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0												
Example:	H	C	S	0	1	.	1	E	-	W	0	0	1	3	-	A	-	0	2	-	E	-	S	3	-	E	C	-	N	N	-	N	N	-	N	N	-	N	N	-	F	W
Product	HCS = HCS																																									
Line	1 = 01																																									
Design	1 = 1																																									
Power supply unit																																										
Infeeding	..... = E																																								
Cooling mode																																										
Air, internal	..... = W																																								
Maximum current																																										
At mains connection voltage "02"																																										
3 A	..... = 0003																																								
6 A	..... = 0006																																								
9 A	..... = 0009																																								
13 A	..... = 0013																																								
18 A	..... = 0018																																								
At mains connection voltage "03"																																										
5 A	..... = 0005																																								
8 A	..... = 0008																																								
18 A	..... = 0018																																								
28 A	..... = 0028																																								
54 A	..... = 0054																																								
Degree of protection																																										
IP 20	..... = A																																								
Mains connection voltage																																										
3 x AC 110...230 V ±10%	..... = 02																																								
3 x AC 200...500 V ±10%	..... = 03																																								
Control section design | Communication																																										
ADVANCED | SERCOS III master (cross communication)	..... = A-CC																																								
BASIC | MultiEthernet	..... = B-ET																																								
ECONOMY | SERCOS III	..... = E-S3																																								
Interface 1																																										
Encoder IndraDyn / Hiperface® / 1Vpp / TTL / EnDat 2.1/2.2	..... = EC																																								
Interface 2																																										
CANopen	..... = CN ①																																								
Encoder IndraDyn / Hiperface® / 1Vpp / TTL / EnDat 2.1/2.2	..... = EC ①																																								
Encoder emulation	..... = EM ①																																								
MultiEthernet	..... = ET ②																																								
Not equipped	..... = NN																																								
PROFIBUS	..... = PB ①																																								
Interface 3																																										
STO (Safe Torque Off)	..... = L3 ③																																								
STO (Safe Torque Off) and SBC (Safe Brake Control)	..... = L4 ③																																								
Not equipped	..... = NN																																								
Other design																																										
None	..... = NN																																								
Firmware																																										
Denotes that firmware must be ordered as separate subposition	..... = FW																																								
Note																																										
①	Not available with Control section design | Communication "E-S3"																																									
②	Not available with Control section design | Communication "A-CC"																																									
③	The "L3" and "L4" interfaces guarantee the function, as well as its certification																																									
Standard reference																																										
Standard	Edition	Title																																								
DIN EN 60529	2000-09	Degrees of protection provided by enclosures (IP code)																																								

Fig. 1-7: Type Code HCS01

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The figure illustrates the basic structure of the type code. Our sales representative will help you with the current state of available versions.

Control Panel HAP01

View



Fig.1-8: Control Panel HAP01

Type Code

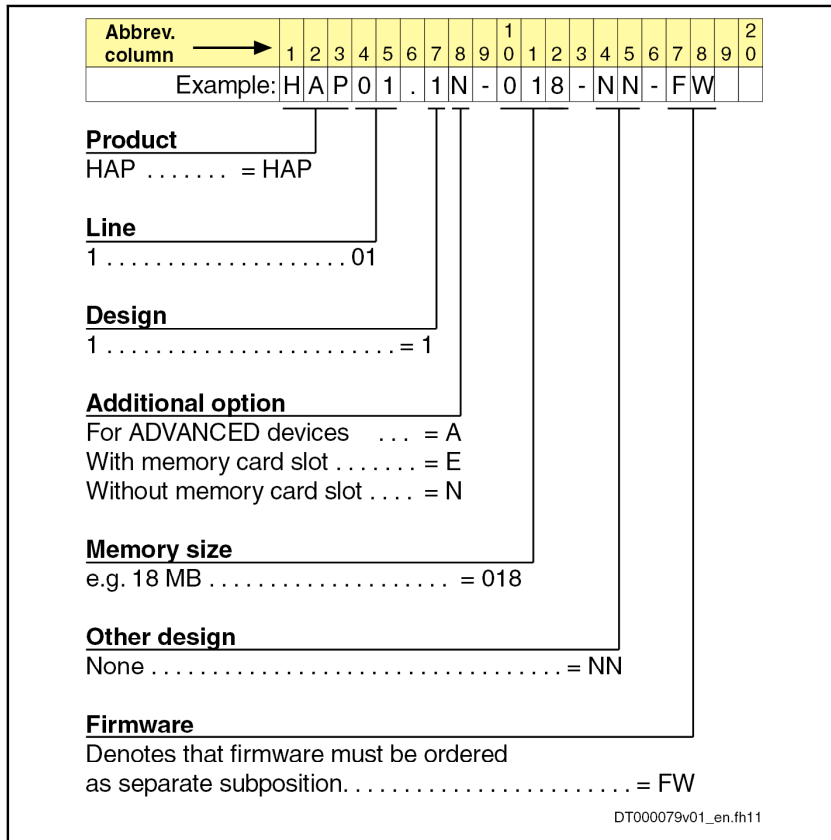


Fig.1-9: Type Code of Control Panel



The figure illustrates the basic structure of the type code. Our sales representative will help you with the current state of available versions.

Assignment HAP01 ↔ HCS01

Control panel	Drive controller
HAP01.1A	HCS01.1E-W****_**_A-CC (ADVANCED)
HAP01.1N	HCS01.1E-W****_**_B-ET (BASIC) HCS01.1E-W****_**_E-S3 (ECONOMY)
HAP01.1E	-

Fig. 1-10: Assignment HAP01 ↔ HCS01

See also index entry

- "Standard control panel"
- "ADVANCED control panel"

Firmware

Firmware Types *ECONOMY*

- FWA-INDRV*-MPE-16VRS-D5-x-NNN-NN
- FWA-INDRV*-MPE-17VRS-D5-x-NNN-NN


BASIC

- FWA-INDRV*-MPB-16VRS-D5-x-xxx-xx
- FWA-INDRV*-MPB-17VRS-D5-x-xxx-xx

ADVANCED

- FWA-INDRV*-MPC-17VRS-D5-x-xxx-xx

See also index entry "Firmware → Types".

 For detailed information, see the Functional Description of the firmware used (index entry "Overview of functions/functional packages").