



## DIAX04 Drive With Electric Gear Function

Drive Configuration: ELS 06VRS

SYSTEM200

**Title** DIAX04 Drive With Electric Gear Function

**Type of Documentation** Drive Configuration: ELS 06VRS

**Document Typecode** DOK-DIAX04-ELS-06VRS\*\*-IF01-EN-P

**Internal File Reference**

- Box 60-06V-EN
- Based on ELS 06VRS
- 120-0800-B341-01/EN

**Purpose of Documentation** This documentation serves to identify the designation for a configured drive of the DIAX04 drive family, based on:

- Determining the motor type
- Choosing the motor - motor feedback combination
- Choosing the desired function of the drive control device

In addition, an overview is provided of the available basic functions and possible additional functions.

**Record of Revisions**

Description	Release Date	Notes
DOK-DIAX04-ELS-06VRS**-IF01-EN-P	06.02	First edition

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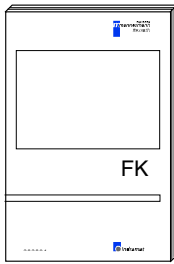
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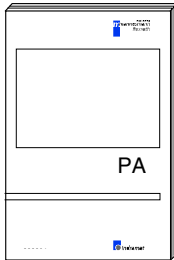
## Summary of Documentation - Box



**Functional Description:**

Description of all implemented Function based on SERCOS-Parameters

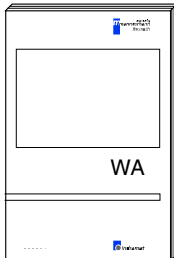
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**Parameter Description:**

A description of all parameters used in the firmware

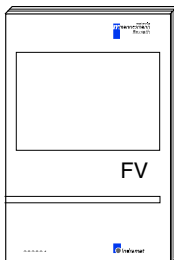
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DOK-DIAX04-ELS-06VRS\*\*-PA01-EN-P



**Troubleshooting Guide:**

- Explanation of the diagnostic states
- How to proceed when eliminating faults

Order designation:  
DOK-DIAX04-ELS-06VRS\*\*-WA01-EN-P

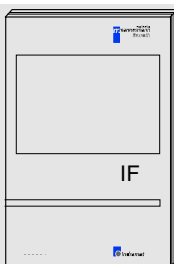


**Firmware Version Notes:**

Description of new and changed functions in terms of the derivatives:

- FWA-DIAX04-ELS-06VRS-MS

Order designation:  
DOK-DIAX04-ELS-06VRS\*\*-FV01-EN-P



**Drive Configuration:**

- Determining the motor type
- Choosing the motor – motor feedback combination
- Choosing the desired function of the drive control device

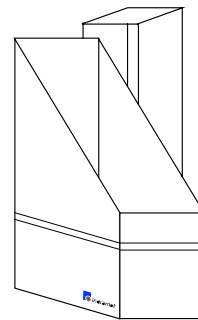
Order designation:  
DOK-DIAX04-ELS-06VRS\*\*-IF01-EN-P



**CD: DRIVEHELP**

Collection of Windows help systems which contain documents on firmware derivatives

Order designation:  
DOK-GENEERL-DRIVEHELP\*\*-GExx-MS-D0600



Order designation  
DOK-DIAX04-ELS-06VRS\*\*-6001-EN-P

## Notes

# Contents

<b>1</b>	<b>Determining Drive Configuration</b>	<b>1-1</b>
1.1	Explanation of Terms .....	1-1
1.2	Procedure.....	1-3
	Illustration: Determining the Motor/Controller Combination.....	1-4
	Illustration: Determining the Hardware Configuration Labeling .....	1-5
<b>2</b>	<b>Determining the Motor/Controller Combination</b>	<b>2-1</b>
2.1	Selection Lists .....	2-1
<b>3</b>	<b>Selecting the Motor/Motor Feedback Combination</b>	<b>3-1</b>
3.1	Possible Motor/Motor Feedback Combinations .....	3-1
3.2	Connection Examples .....	3-2
	HSF/RSF or Resolver without Feedback Data Memory .....	3-2
	Sine Encoder .....	3-2
	Rexroth Indramat Gear Wheel Encoder .....	3-3
	EnDat Encoder.....	3-3
	Resolver without Feedback Data Memory + Sine Encoder .....	3-4
	Gear Wheel Encoder with 1Vpp Signals.....	3-4
<b>4</b>	<b>Selecting Features - Determining Configuration Labeling</b>	<b>4-1</b>
4.1	Basic Features .....	4-1
4.2	Selecting Additional Features .....	4-2
	Motor Encoder Interface: HSF / RSF or Resolver without Feedback Data Memory .....	4-3
	Motor Encoder Interface: Sine Encoder.....	4-6
	Motor Encoder Interface: Rexroth Indramat Gear Wheel Encoder.....	4-9
	Motor Encoder Interface: EnDat encoder .....	4-12
	Motor Encoder Interface: Resolver without Feedback Data Memory + Sine Encoder .....	4-15
	Motor Encoder Interface: Gear Wheel Encoder with 1Vpp Signals.....	4-17
<b>5</b>	<b>Service &amp; Support</b>	<b>5-1</b>
5.1	Helpdesk .....	5-1
5.2	Service-Hotline .....	5-1
5.3	Internet .....	5-1
5.4	Vor der Kontaktaufnahme... - Before contacting us.....	5-1
5.5	Kundenbetreuungsstellen - Sales & Service Facilities .....	5-2



# 1 Determining Drive Configuration

## 1.1 Explanation of Terms

Digital drive controllers of the DIAX04 type can be adapted to meet numerous application requirements by using various plug-in modules. For this reason, drive controllers are equipped with slots for plug-in modules.

**Basic Devices** Drive controllers not fitted with plug-in modules are called basic units. The following are available:

- HDS 04.\* 4 plug-in modules (U1-U4) + programming module U5
- HDS 03.\* 4 plug-in modules (U1-U4) + programming module U5
- HDS 02.\* 3 plug-in modules (U1-U3) + programming module U5
- HDD 02.\*-W040N-HD12-01-FW  
1 plug-in module / axis (U1.1, U1.2)  
+ programming module U5.1 and U5.2
- HDD 02.\*-W040N-HD32-01-FW  
no plug-in modules  
+ programming module U5.1 and U5.2

**Plug-In Modules** The following plug-in modules are available:

- Master communication module.
- Modules for evaluating position measuring systems.
- Input/output modules for evaluating PLC signals or for outputting signals to the PLC.
- Programming modules
- Modules for evaluating analog inputs
- Encoder emulation modules

---

**Note:** For HDD 02.\*-W040N-HD32-01-FW there always is the SERCOS interface (DSS02.1) and an optional 1Vpp encoder interface (DLF01.1) available per axis. There aren't any further plug-in modules.

---

**Master Communication Module** The DSS plug-in module is used as a master communication module. This module must always occupy slot U1 of the drive controller.

**Configured Drive Controller** A basic device fitted with plug-in modules is called a configured drive controller.

**Hardware Configuration** Every hardware configuration is designated by a letter/number sequence, e.g. HS04-01-FW. Digital drive controllers are delivered as configured drive controllers which are equipped according to the selected configuration.

The following figure illustrates the components of a hardware configuration for HDS.

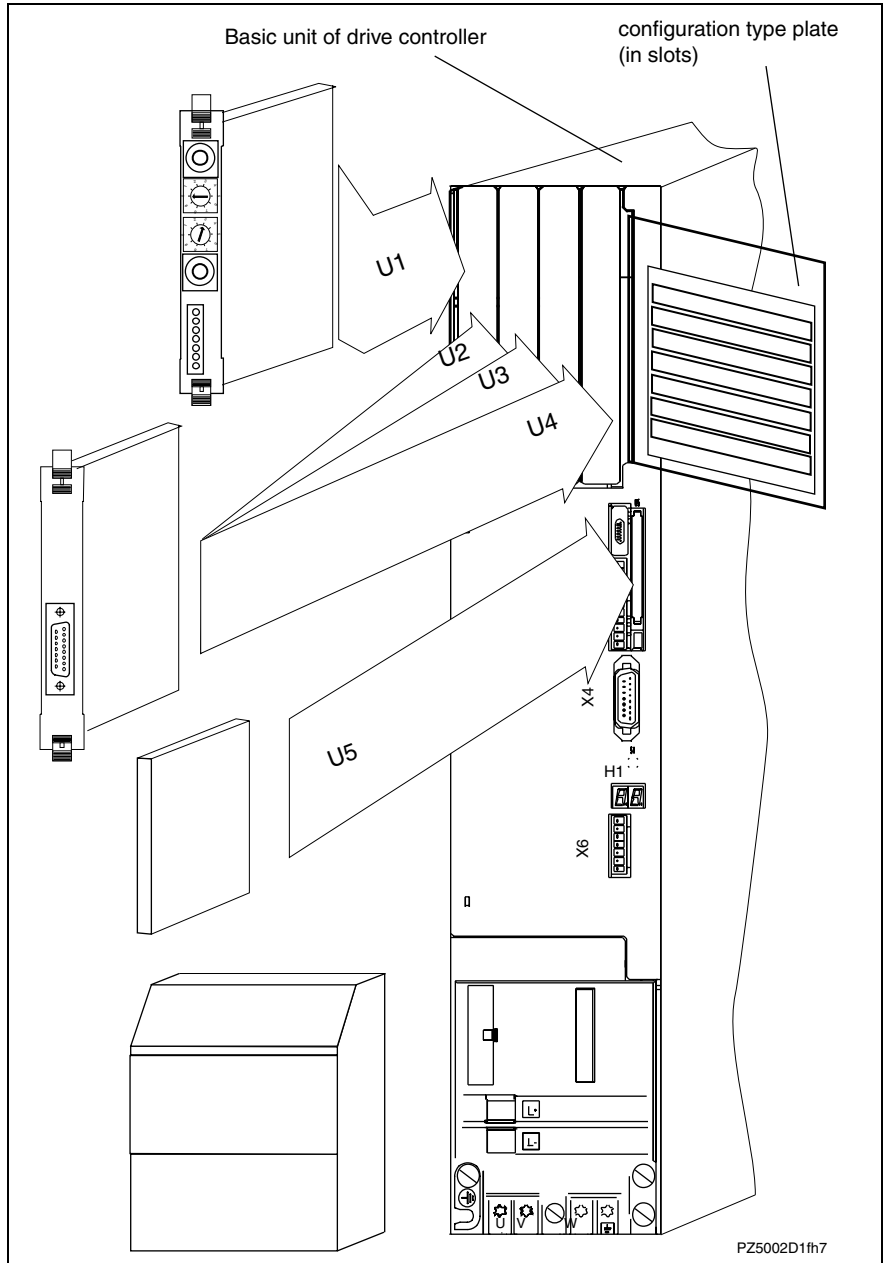


Fig. 1-1: Components of a hardware configuration for HDS



## 1.2 Procedure

To determine the drive configuration or to specify the hardware configuration labeling of a DIAX04 drive controller for the corresponding machine, we recommend the following procedure:

1. Determine the motor/controller combination:
  - Determine speed/torque requirements for your application.
  - Select a motor/controller combination from the selection lists.
  
2. Determine the hardware configuration labeling:
  - Select a motor/motor feedback combination.
  - Select the desired features.
  - Determine the configuration labeling based on the plug-in modules required for the desired features.

The following two illustrations show how to determine the configuration labeling.

### Illustration: Determining the Motor/Controller Combination

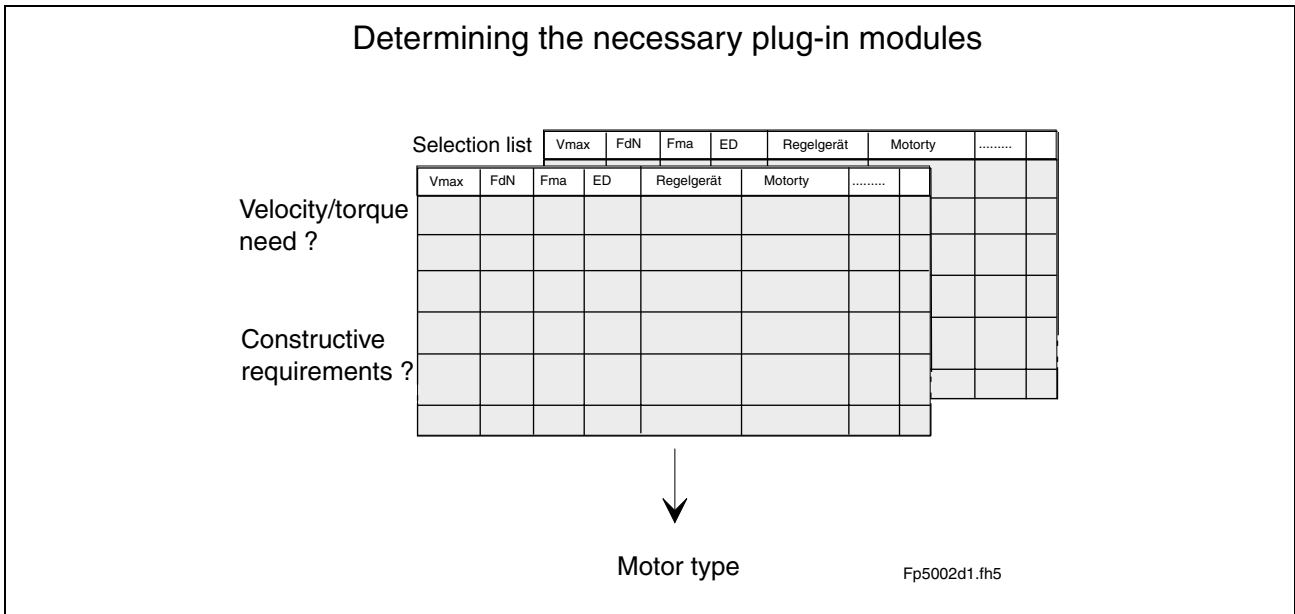


Fig. 1-2: Illustration for working with selection lists

### Illustration: Determining the Hardware Configuration Labeling

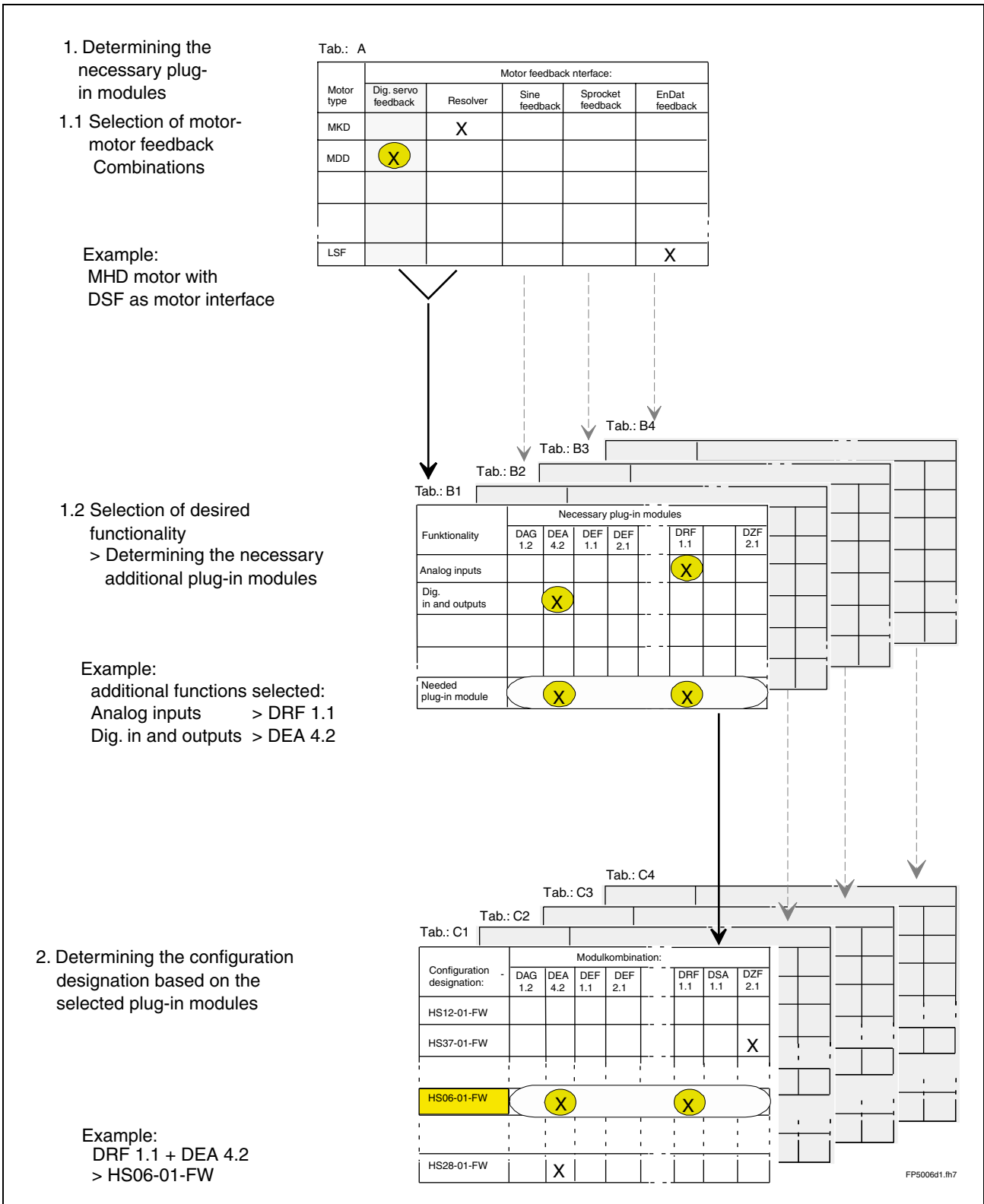


Fig. 1-3: Illustration for determining the configuration labeling

## Notes

## 2 Determining the Motor/Controller Combination

### 2.1 Selection Lists

Selection lists are used to select the required motor/controller combination.

You have to consider the requirements for torque and speed just as carefully as the physical requirements.

The **motor type** which you choose from the selection list is the most decisive factor in determining hardware configuration labeling.

## Notes

## 3 Selecting the Motor/Motor Feedback Combination

### 3.1 Possible Motor/Motor Feedback Combinations

The following table contains motor encoder interfaces allowed for the respective types of motors.

According to the motor type in use you must select the motor encoder interface.

Tab A: Motor encoder interface								
Motor feed-back type	HSF (1)	Resolver with FDM (2)	Sine-encoder (3)	Rexroth Indramat gear wheel encoder	EnDat-encoder (4)	Resolver without FDM (5)	Resolver without FDM + sine-encoder (6)	Gear wheel encoder with 1Vpp signals (7)
<b>P-0-0074*</b>	1	1	2	3	8	10	11	9
MKD		X						
MKE	X	X						
MHD	X							
2AD	X			X				
ADF	X			X				
1MB	X		X	X	X			X
MBW	X		X		X			
LAR			X		X			
LAF			X		X			
LSF					X			
MBS	X				X	X	X	

Fig. 3-4: Allowed motor type/motor feedback combinations

- (1) : single-turn or multi-turn HSF
- (2) : resolver or multi-turn resolver (RSF) with feedback data memory (FDM)
- (3) : incremental scale with sine signals or incremental sine rotary encoder with  $\mu$ A or 1Vpp signals
- (4) : absolute scale, single-turn or multi-turn rotary encoder with EnDat interface
- (5) : resolver without feedback data memory
- (6) : resolver without feedback data memory combined with incremental rotary encoder
- (7) : gear wheel encoder with 1Vpp signals, evaluation via module DZF3.1

\* P-0-0074, Feedback 1 type

## 3.2 Connection Examples

### HSF/RSF or Resolver without Feedback Data Memory

The encoder is connected to the standard interface of the controller. Therefore, no other plug-in card is required.

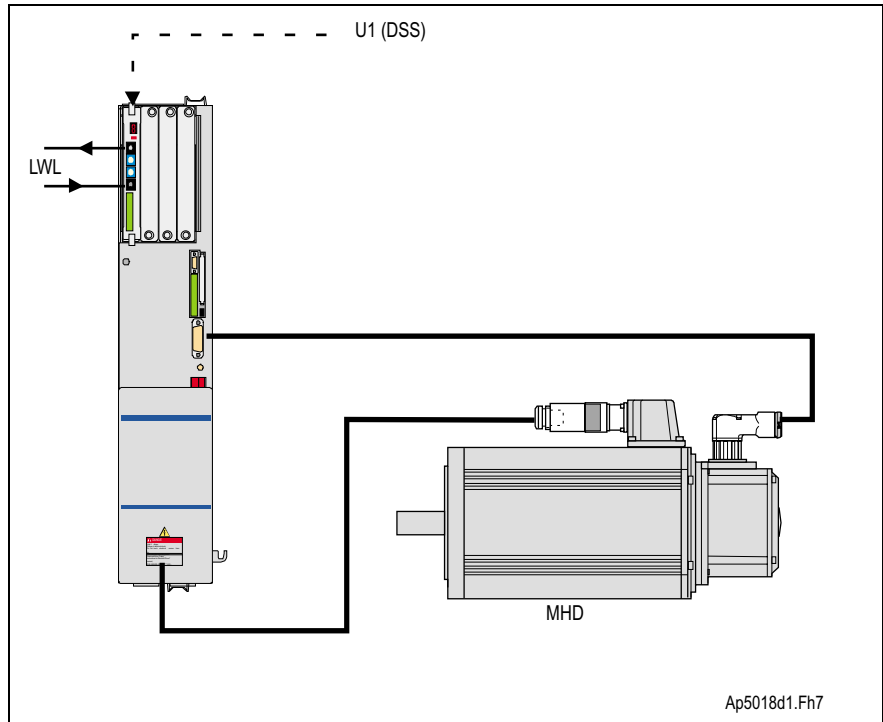


Fig. 3-5: MHD motor with HSF motor encoder at standard interface

### Sine Encoder

The DLF01.1M plug-in module is required to connect the motor encoder.

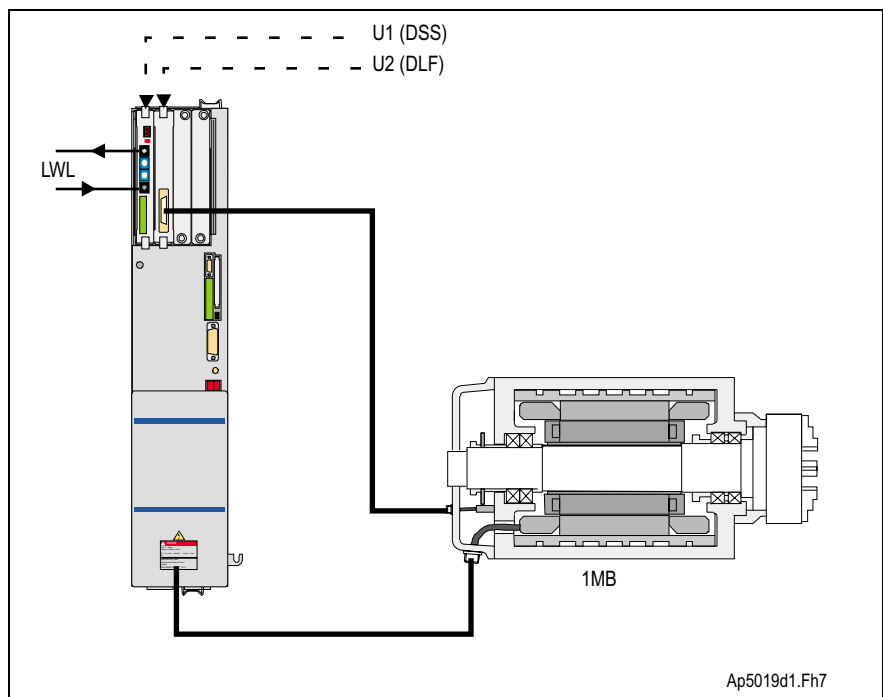


Fig. 3-6: 1MB motor with incremental sine encoder from Heidenhain, connected to a DLF01.1M plug-in module



### Rexroth Indramat Gear Wheel Encoder

The DZF02.1M plug-in module is required to connect the motor encoder.

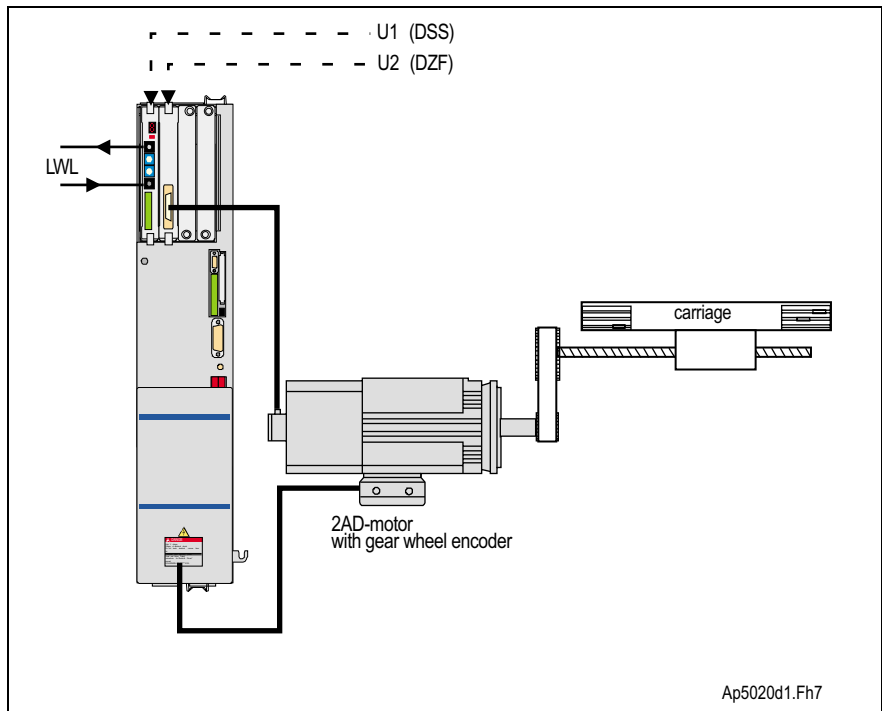


Fig. 3-7: 2AD motor with gear wheel encoder, connected to a DZF02.1M plug-in module

### EnDat Encoder

A DAG01.2M plug-in module is required to connect the motor encoder.

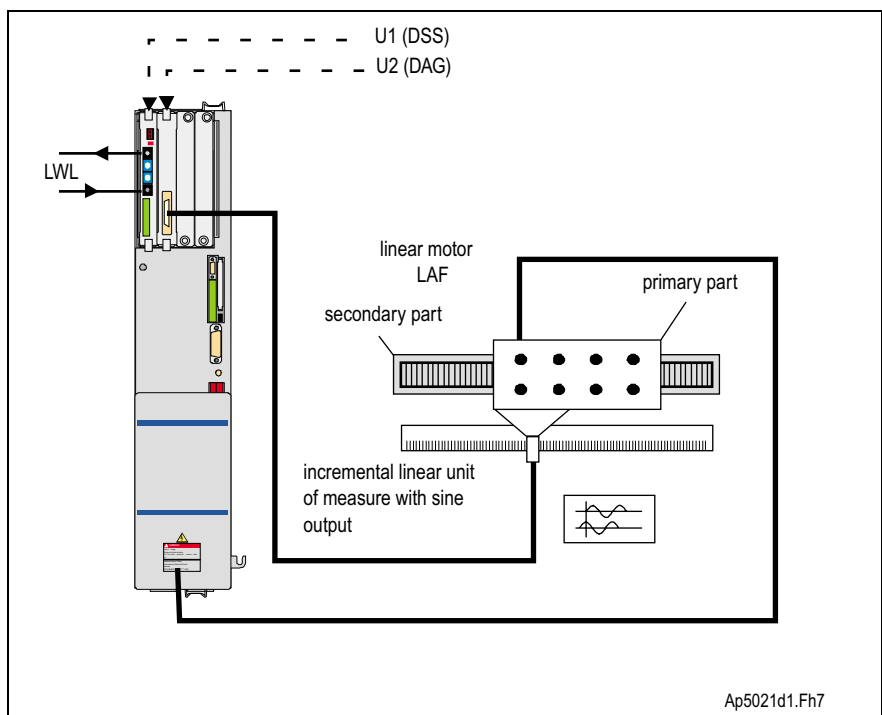


Fig. 3-8: LAF motor with EnDat encoder, connected to a DAG01.2M plug-in module

### Resolver without Feedback Data Memory + Sine Encoder

The DLF01.1M and DSS plug-in modules are needed to connect the motor encoders.

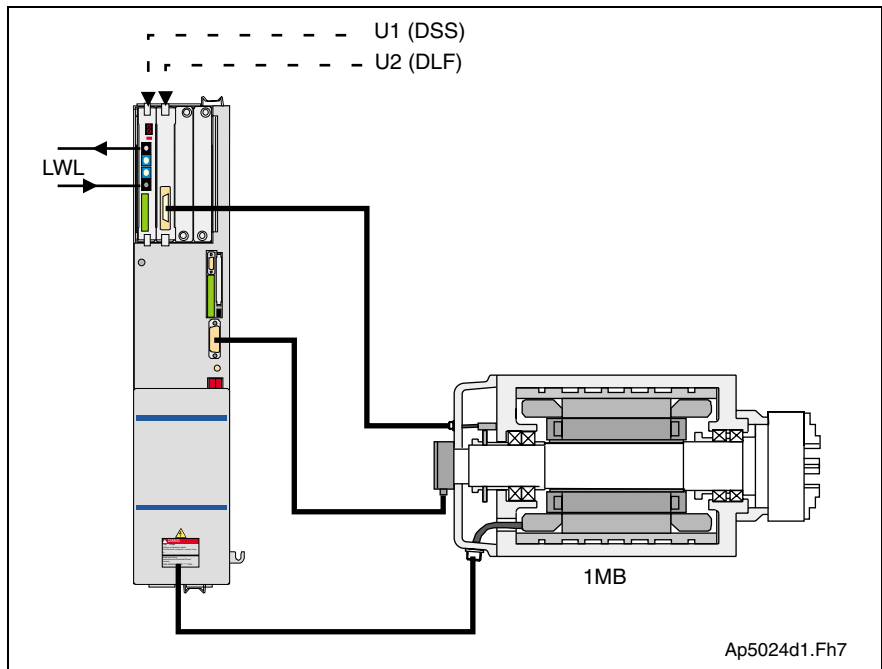


Fig. 3-9: MBS motor with sine encoder, connected to a DLF01.1M plug-in module

### Gear Wheel Encoder with 1Vpp Signals

The DZF03.1M plug-in module is needed to connect the motor encoder.

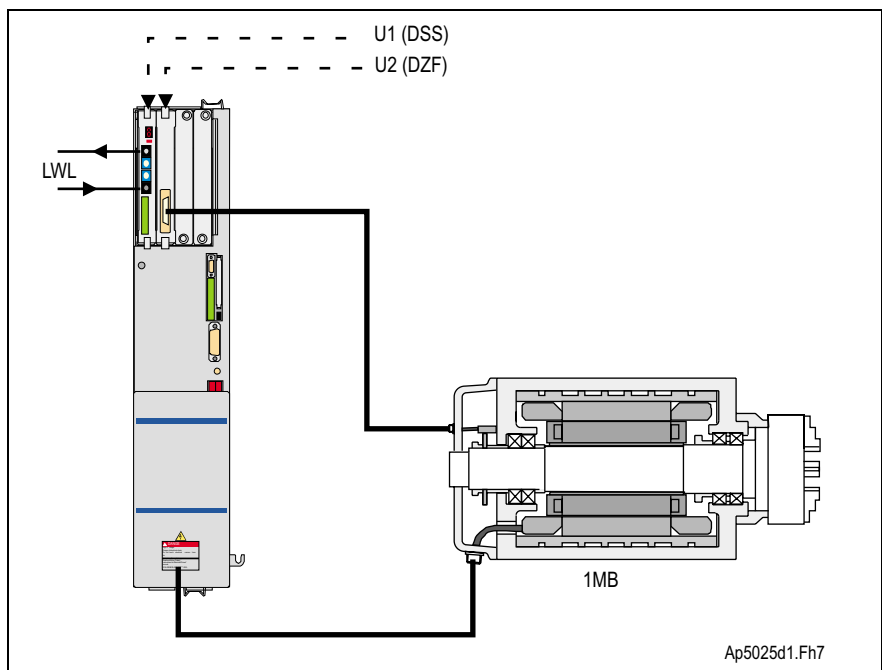


Fig. 3-10: 1MB motor with gear wheel encoder with 1Vpp signals, connected to a DZF03.1M plug-in module

## 4 Selecting Features - Determining Configuration Labeling

### 4.1 Basic Features

Independent of the motor type in use, a DIAX04 drive controller offers a wide range of features which are always available.

To use these features, **no separate** plug-in module is needed.

The following **basic features** are available:

- Supported operating modes:
  - Torque/force control
  - Velocity control
  - Position control
  - Drive-internal interpolation
  - Relative drive-internal interpolation
- Numerous diagnostic possibilities
- Programmable torque/force limitation
- Current limitation
- Velocity limitation
- Travel range limitation
- Drive-side error response:
  - Best possible deceleration "velocity command value to zero"
  - Best possible deceleration "torque-free"
  - Best possible deceleration "velocity command value to zero with ramp and filter"
  - NC response in error situation
  - Emergency stop feature
- Control loop setting
  - Basic load feature
  - Acceleration feedforward
  - Velocity mix factor
  - Velocity feedforward
- Language selection
- Drive interlock
- Drive Halt
- Drive-controlled homing procedure
- Evaluation of absolute measuring systems
- Set absolute measuring
- Analog outputs

- Oscilloscope feature
- Probe feature:
  - Measuring signal actual position value 1/2
  - Measuring signal time
- Modulo feature
- "Travel to positive stop" command
- Amplifier and feedback data can be written via password
- Analog inputs
- Parking axis command
- Load base parameters command
- Error memory and operating hour counter
- Freely configurable signal status word
- Customer password

## 4.2 Selecting Additional Features

In addition to the basic features DIAX04 offers a range of other features.

### Additional Plug-In Modules are Required

When you select these additional features which are presented in tables in the following chapters, you have to consider that additional plug-in modules will be required.

### Max. Number of Plug-In Modules

Depending on the basic device type being used, there are differences in the number of plug-in modules used.

HDS 04.\* max. 4 additional plug-in modules

HDS 03.\* max. 4 additional plug-in modules

HDS 02.\* max. 3 additional plug-in modules

HDD 02.\*-W040N-**HD12**-01-FW  
1 plug-in module / axis

HDD 02.\*-W040N-**HD32**-01-FW  
no plug-in modules possible  
(DSS02.1 and DLF01.1 integrated)

---

**Note:** One slot is already used for the DSS communication module in every basic device type. That means:

- in the case of HDD 02.\*-W040N-**HD12**-01-FW, it is impossible to use additional features in the form of plug-in modules.
  - in the case of HDD 02.\*-W040N-**HD32**-01-FW, the SERCOS interface (DSS02.1) and an optional 1Vpp encoder interface (DLF01.1) per axis are always available. It is impossible to use other plug-in modules.
-

- Selection Requirements** The following requirements must be taken into consideration when selecting an additional feature:
- Each module can only be used for one feature.
  - A maximum of one external measuring system may be selected.

In contrast to basic features, use of additional features depends on the type of motor or motor encoder interface being used.

For this reason, distinctions based on the motor encoder interface are made in the following chapters.

## Motor Encoder Interface: HSF / RSF or Resolver without Feedback Data Memory

If a motor type with a digital servo feedback (HSF) or a resolver (RSF) is used, you can select the desired additional features from the *Additional features for motor with HSF/RSF or resolver without feedback data memory* table.

Depending on your selection, the result will be a number or a combination of required plug-in modules.

With this plug-in module combination you can determine the respective configuration labeling from the *Configuration selection for motor with HSF/RSF or resolver without feedback data memory* table to order the correct components.

If the plug-in module combination is not listed in this table, check your selected components again (motor type, motor encoder interface, features); some changes may be required.

- 
- Note:**
- In the case of HDD 02.\*-W040N-HD12-01-FW, it is impossible to use additional features.
  - In the case of HDD 02.\*-W040N-HD32-01-FW, it is possible to connect an external measuring system with 1Vpp signals (DLF01.1 integrated).
-

### Selecting the Features for Motor with HSF/RSF or Resolver without Feedback Data Memory

Features	Tab B1: Plug-in modules										
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog inputs Incremental encoder emulation	X										
Digital inputs/outputs 15 inputs/16 outputs			X								
Digital inputs/outputs 32 inputs/24 outputs				X							
External measuring system with Heidenhain sine encoder								X			
External measuring system with Heidenhain square- wave encoder					X	X					
External measuring system with HSF encoder							X				
External measuring system with SSI interface		X									
External measuring system with EnDat encoder		X									
External measuring system with gear wheel encoder (Rexroth Indramat)										X	
Master axis encoder measuring system with HSF encoder							X				
Leitachsgeber-Mess-System mit EnDat-Geber		X									
Master axis encoder measuring system with SSI interface		X									
Master axis position output									X		
<b>Determined plug-in modules</b>											

Fig. 4-1: Additional features for motor with HSF/RSF or resolver without feedback data memory

### Configuration Selection for Motor with HSF/RSF or Resolver without Feedback Data Memory

Name of configuration	Tab C1: Module combination											
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M	
HS12-01-FW												
HS37-01-FW											X	
HS54-01-FW										X		
HS56-01-FW	X											
HS32-01-FW								X				
HS09-01-FW							X					
HS23-01-FW			X									
HS45-01-FW		X										
HS70-01-FW									X	X		
HS19-01-FW	X										X	
HS27-01-FW							X				X	
HS38-01-FW			X								X	
HS04-02-FW		X									X	
HS62-01-FW								X	X			
HS47-01-FW							X		X			
HS58-01-FW	X							X				
HS59-01-FW	X						X					
HS60-01-FW	X				X							
HS84-01-FW	X		X									
HS66-01-FW	X	X										
HS08-01-FW							X	X				
HS33-01-FW			X					X				
HS30-01-FW			X				X					
HS74-02-FW		X	X									
HS65-01-FW							X		X	X		
HS63-01-FW			X						X	X		
HS72-02-FW		X							X	X		
HS67-01-FW	X		X								X	
HS22-01-FW			X				X				X	
HS02-02-FW		X					X				X	
HS03-02-FW		X	X								X	
HS57-01-FW							X	X	X			
HS55-01-FW			X					X	X			
HS25-01-FW			X				X		X			
HS68-01-FW	X		X					X				
HS73-01-FW	X		X				X					
HS86-01-FW	X		X		X							
HS87-01-FW	X	X	X									
HS10-01-FW			X							X		
HS76-01-FW					X							
HS78-01-FW			X		X							
HS79-01-FW												X
HS80-01-FW			X									X
HS91-01-FW									X			X

Name of configuration	Tab C1: Module combination										
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
HT08-01-FW	X		X								X
HT13-01-FW			X						X		X
HT18-01-FW	X	X									
HT20-01-FW				X							
HT81-01-FW	X			X							

Fig. 4-2: Configuration Selection for Motor with HSF/RSF or Resolver without Feedback Data Memory

## Motor Encoder Interface: Sine Encoder

If a motor type was specified for an application where an incremental scale with sine signals or an incremental sine encoder is used for the motor encoder interface, you can select the desired additional features from the *Additional features for motor with sine encoder as the motor encoder* table.

Depending on your selection, the result will be a number or a combination of required plug-in modules.

With this plug-in module combination you can determine the respective configuration labeling from the *Configuration selection for motor with sine encoder as the motor encoder* table to order the correct components.

If the plug-in module combination is not listed in this table, check your selected components again (motor type, motor encoder interface, features); some changes may be required.

- 
- Note:**
- In the case of HDD 02.\*-W040N-HD12-01-FW, it is impossible to connect a sine encoder as a motor encoder.
  - In the case of HDD 02.\*-W040N-HD32-01-FW, it is possible to connect a sine encoder with 1Vpp signals as a motor encoder and optionally to connect an external measuring system (HSF encoder) (DLF01.1 integrated).
-



### Selecting the Features for Motor with Sine Encoder

Features	Tab B2: Plug-in modules										
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog inputs	X							X			
Digital inputs/outputs 15 inputs/16 outputs			X					X			
Digital inputs/outputs 32 inputs/24 outputs				X				X			
External measuring system with Heidenhain square-wave encoder						X		X			
External measuring system with HSF encoder (1)							X	X			
External measuring system with SSI interface		X						X			
External measuring system with EnDat encoder		X						X			
Master axis encoder measuring system with HSF encoder (1)							X	X			
Master axis encoder measuring system with EnDat encoder		X						X			
Master axis encoder measuring system with SSI interface		X						X			
Master axis position output								X	X		
<b>Determined plug-in modules</b>								X			

(1) The standard interface X4 is not used. That is why there is no need to use the DFF module. The HSF encoder can be connected to the standard interface X4.

Fig. 4-3: Additional features for motor with sine encoder as the motor encoder

### Configuration Selection for Motor with Sine Encoder

Name of configuration	Tab C2: Module combination									
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
HS32-01-FW							X			
HS62-01-FW							X	X		
HS58-01-FW	X						X			
HS08-01-FW						X	X			
HS33-01-FW			X				X			
HS57-01-FW						X	X	X		
HS55-01-FW			X				X	X		
HT07-01-FW	X					X	X			
HT06-01-FW	X				X		X			
HS68-01-FW	X		X				X			
HT03-01-FW	X	X					X			
HS28-01-FW			X			X	X			
HT01-01-FW		X					X			
HT02-01-FW		X	X				X			
HT04-01-FW					X		X			
HT05-01-FW			X		X		X			

Fig. 4-4: Configuration selection for motor with sine encoder as the motor encoder

## Motor Encoder Interface: Rexroth Indramat Gear Wheel Encoder

If a motor type was specified for an application where a gear wheel encoder is used for the motor encoder interface, you can select the desired additional features from the table *Additional features for motor with Rexroth Indramat gear wheel encoder* table.

Depending on your selection, the result will be a number or a combination of required plug-in modules.

With this plug-in module combination you can determine the respective configuration labeling from the *Configuration selection for motor with Rexroth Indramat gear wheel encoder* table to order the correct components.

If the plug-in module combination is not listed in this table, check your selected components again (motor type, motor encoder interface, features); some changes may be required.

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**Note:** In the case of HDD 02.\*-W040N-HD12-01-FW and HDD 02.\*-W040N-HD32-01-FW, it is impossible to connect a gear wheel encoder.

---

### Selecting the Features for Motor with Rexroth Indramat Gear Wheel Encoder

Features	Tab B3: Plug-in modules										
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog inputs	X									X	
Digital inputs/outputs 15 inputs/16 outputs			X							X	
Digital inputs/outputs 32 inputs/24 outputs				X						X	
External measuring system with Heidenhain square- wave encoder						X				X	
External measuring system with HSF encoder (1)							X			X	
External measuring system with SSI interface		X								X	
External measuring system with EnDat encoder		X								X	
Master axis encoder measuring system with HSF encoder (1)							X			X	
Master axis encoder measuring system with EnDat encoder		X								X	
Master axis encoder measuring system with SSI interface		X								X	
Master axis position output									X	X	
<b>Determined plug-in modules</b>										X	

(1) The standard interface X4 is not used. That is why there is no need to use the DFF module. The HSF encoder can be connected to the standard interface X4.

Fig. 4-5: Additional features for motor with Rexroth Indramat gear wheel encoder

### Configuration Selection for Motor with Rexroth Indramat Gear Wheel Encoder

Name of configuration	Tab C3: Module combination									
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
HS37-01-FW									X	
HS70-01-FW								X	X	
HS27-01-FW						X			X	
HS38-01-FW			X						X	
HS04-02-FW		X							X	
HS65-01-FW						X		X	X	
HS63-01-FW			X					X	X	
HS72-02-FW		X						X	X	
HS88-01-FW	X					X			X	
HS89-01-FW	X				X				X	
HS67-01-FW	X		X						X	
HS90-01-FW	X	X							X	
HS22-01-FW			X			X			X	
HS02-02-FW		X				X			X	
HS03-02-FW		X	X						X	
HS19-01-FW	X								X	

Fig. 4-6: Configuration selection for motor with Rexroth Indramat gear wheel encoder

## Motor Encoder Interface: EnDat encoder

If a motor type was specified for an application where an encoder with EnDat interface is used for the motor encoder interface, you can select the desired additional features from the *Additional features for motor with EnDat motor encoder Interface* table.

Depending on your selection, the result will be a number or a combination of required plug-in modules.

With this plug-in module combination you can determine the respective configuration labeling from the *Configuration selection for motor with EnDat motor encoder interface* table to order the correct components.

If the plug-in module combination is not listed in this table, check your selected components again (motor type, motor encoder interface, features); some changes may be required.

---

**Note:** In the case of HDD 02.\*-W040N-HD12-01-FW and HDD 02.\*-W040N-HD32-01-FW, it is impossible to connect an EnDat encoder.

---

Selecting the Features for Motor with EnDat Encoder

Features	Tab B4: Plug-in modules										
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog inputs	X	X									
Digital inputs/outputs 15 inputs/16 outputs		X	X								
Digital inputs/outputs 32 inputs/24 outputs		X		X							
External measuring system with Heidenhain sine encoder		X						X			
External measuring system with Heidenhain square- wave encoder		X			X	X					
External measuring system with HSF encoder (1)		X					X				
External measuring system with gear wheel encoder (Rexroth Indramat)		X								X	
Master axis encoder measuring system with HSF encoder (1)		X					X				
Master axis position output		X							X		
<b>Determined plug-in modules</b>		X									

(1) The standard interface X4 is not used. That is why there is no need to use the DFF module. The HSF encoder can be connected to the standard interface X4.

Fig. 4-7: Additional features for motor with EnDat motor encoder interface

### Configuration Selection for Motor with EnDat Encoder

Name of configuration	Tab C4: Module combination									
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
HS45-01-FW		X								
HS04-02-FW		X							X	
HS74-02-FW		X	X							
HS72-02-FW		X						X	X	
HS02-02-FW		X				X			X	
HS03-02-FW		X	X						X	
HS66-01-FW	X	X								
HS81-01-FW		X		X						
HS87-01-FW	X	X	X							
HS90-01-FW	X	X							X	
HS93-01-FW		X								X
HT01-01-FW		X					X			
HT02-01-FW		X	X				X			
HT03-01-FW	X	X					X			
HT09-01-FW	X	X								X
HT12-01-FW		X	X							X
HT14-01-FW		X						X		X
HT18-01-FW	X	X								
HT24-01-FW		X		X						
HT72-01-FW		X				X				

Fig. 4-8: Configuration selection for motor with EnDat motor encoder interface



## Motor Encoder Interface: Resolver without Feedback Data Memory + Sine Encoder

If a motor type was specified for an application where an resolver without feedback data memory is used for the motor encoder interface, you can select the desired additional features from the *Additional features for motor with resolver without FDM + sine encoder interface* table.

Depending on your selection, the result will be a number or a combination of required plug-in modules.

With this plug-in module combination you can determine the respective configuration labeling from the *Configuration selection for motor with resolver without FDM + sine encoder* table to order the correct components.

If the plug-in module combination is not listed in this table, check your selected components again (motor type, motor encoder interface, features); some changes may be required.

- 
- Note:**
- In the case of HDD 02.\*-W040N-HD12-01-FW, it is impossible to connect a motor with resolver without FDM + sine encoder.
  - In the case of HDD 02.\*-W040N-HD32-01-FW, it is possible to connect a motor with resolver without FDM + sine encoder (DLF01.1 integrated).
-

### Selecting the Features for Motor with Resolver without FDM + Sine Encoder

Features	Tab B5: Plug-in modules									
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog inputs	X						X			
Digital inputs/outputs			X				X			
External measuring system with Heidenhain square-wave encoder					X		X			
External measuring system with HSF encoder (1)						X	X			
External measuring system with SSI interface		X					X			
External measuring system with EnDat encoder		X					X			
<b>Determined plug-in modules</b>							X			

(1) The standard interface X4 is not used. That is why there is no need to use the DFF module. The HSF encoder can be connected to the standard interface X4.

Fig. 4-9: Additional features for motor with resolver without FDM + sine encoder

### Configuration Selection for Motor with Resolver without FDM + Sine Encoder

Name of configuration	Tab C5: Module combination									
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
HS32-01-FW							X			
HS08-01-FW						X	X			
HT04-01-FW					X		X			
HT01-01-FW		X					X			
HT07-01-FW	X					X	X			
HT06-01-FW	X				X		X			
HT03-01-FW	X	X					X			
HS28-01-FW			X			X	X			
HT05-01-FW			X		X		X			
HT02-01-FW		X	X				X			
HS33-01-FW			X				X			
HS55-01-FW			X				X	X		
HS57-01-FW						X	X	X		
HS58-01-FW	X						X			
HS62-01-FW							X	X		
HS68-01-FW	X		X				X			

Fig. 4-10: Configuration selection for motor with resolver without FDM + sine encoder

## Motor Encoder Interface: Gear Wheel Encoder with 1Vpp Signals

If a motor type was specified for an application where a gear wheel encoder is used for the motor encoder interface, you can select the desired additional features from the *Additional features for motor with gear wheel encoder with 1Vpp signals* table.

Depending on your selection, the result will be a number or a combination of required plug-in modules.

With this plug-in module combination you can determine the respective configuration labeling from the *Configuration selection for motor with gear wheel encoder with 1Vpp signals* table to order the correct components.

If the plug-in module combination is not listed in this table, check your selected components again (motor type, motor encoder interface, features); some changes may be required.

---

**Note:** In the case of HDD 02.\*-W040N-HD12-01-FW and HDD 02.\*-W040N-HD32-01-FW, it is impossible to connect a gear wheel encoder with 1Vpp signals.

---

### Selecting the Features for Motor with Gear Wheel Encoder with 1Vpp Signals

Features	Tab B6: Plug-in modules									
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog inputs	X									X
Digital inputs/outputs			X							X
External measuring system with Heidenhain square-wave encoder					X					X
External measuring system with HSF encoder (1)						X				X
External measuring system with SSI interface		X								X
External measuring system with EnDat encoder		X								X
Master axis encoder measuring system with HSF encoder (1)						X				X
Master axis encoder measuring system with EnDat encoder		X								X
Master axis encoder measuring system with SSI interface		X								X
Master axis position output								X		X
<b>Determined plug-in modules</b>										<b>X</b>

(1) The standard interface X4 is not used. That is why there is no need to use the DFF module. The HSF encoder can be connected to the standard interface X4.

Fig. 4-11: Additional features for motor with gear wheel encoder with 1Vpp signals

### Configuration Selection for Motor with Gear Wheel Encoder with 1Vpp Signals

Name of configuration	Tab C6: Module combination									
	DAE 02.1M	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
HS79-01-FW										X
HS91-01-FW								X		X
HS92-01-FW						X				X
HS80-01-FW			X							X
HS93-01-FW		X								X
HS94-01-FW						X		X		X
HT13-01-FW			X					X		X
HT14-01-FW		X						X		X
HT15-01-FW	X					X				X
HS99-01-FW	X				X					X
HT08-01-FW	X		X							X
HT09-01-FW	X	X								X
HT10-01-FW			X			X				X
HT11-01-FW		X				X				X
HT12-01-FW		X	X							X

Fig. 4-12: Configuration selection for motor with gear wheel encoder with 1Vpp signals

## 5 Service & Support

### 5.1 Helpdesk

Unser Kundendienst-Helpdesk im Hauptwerk Lohr am Main steht Ihnen mit Rat und Tat zur Seite. Sie erreichen uns

- telefonisch: **+49 (0) 9352 40 50 60**  
über Service Call Entry Center Mo-Fr 07:00-18:00
- per Fax: **+49 (0) 9352 40 49 41**
- per e-Mail: **[service@indramat.de](mailto:service@indramat.de)**

Our service helpdesk at our headquarters in Lohr am Main, Germany can assist you in all kinds of inquiries. Contact us

- by phone: **+49 (0) 9352 40 50 60**  
via Service Call Entry Center Mo-Fr 7:00 am - 6:00 pm
- by fax: **+49 (0) 9352 40 49 41**
- by e-mail: **[service@indramat.de](mailto:service@indramat.de)**

### 5.2 Service-Hotline

Außerhalb der Helpdesk-Zeiten ist der Service direkt ansprechbar unter

oder **+49 (0) 171 333 88 26**  
**+49 (0) 172 660 04 06**

After helpdesk hours, contact our service department directly at

or **+49 (0) 171 333 88 26**  
**+49 (0) 172 660 04 06**

### 5.3 Internet

Unter **[www.indramat.de](http://www.indramat.de)** finden Sie ergänzende Hinweise zu Service, Reparatur und Training sowie die **aktuellen** Adressen \*) unserer auf den folgenden Seiten aufgeführten Vertriebs- und Servicebüros.

- Verkaufsniederlassungen
- Niederlassungen mit Kundendienst

Außerhalb Deutschlands nehmen Sie bitte zuerst Kontakt mit unserem für Sie nächstgelegenen Ansprechpartner auf.

\*) <http://www.indramat.de/de/kontakt/adressen>  
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At **[www.indramat.de](http://www.indramat.de)** you may find additional notes about service, repairs and training in the Internet, as well as the **actual** addresses \*) of our sales- and service facilities figuring on the following pages.

- sales agencies
- offices providing service

Please contact our sales / service office in your area first.

\*) <http://www.indramat.de/en/kontakt/adressen>  
Data in the present documentation may have become obsolete since printing.

### 5.4 Vor der Kontaktaufnahme... - Before contacting us...

Wir können Ihnen schnell und effizient helfen wenn Sie folgende Informationen bereithalten:

1. detaillierte Beschreibung der Störung und der Umstände.
2. Angaben auf dem Typenschild der betreffenden Produkte, insbesondere Typenschlüssel und Seriennummern.
3. Tel./Faxnummern und e-Mail-Adresse, unter denen Sie für Rückfragen zu erreichen sind.

For quick and efficient help, please have the following information ready:

1. Detailed description of the failure and circumstances.
2. Information on the type plate of the affected products, especially type codes and serial numbers.
3. Your phone/fax numbers and e-mail address, so we can contact you in case of questions.

## 5.5 Kundenbetreuungsstellen - Sales & Service Facilities

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Vertriebsgebiet Nord Germany North  Bosch Rexroth AG Walsroder Str. 93 30853 Langenhagen  Tel.: +49 (0) 511 72 66 57-0 Service: +49 (0) 511 72 66 57-256 Fax: +49 (0) 511 72 66 57-93 Service: +49 (0) 511 72 66 57-95	Vertriebsgebiet Mitte Germany Centre  Bosch Rexroth AG Regionalzentrum Mitte Waldecker Straße 13 64546 Mörfelden-Walldorf  Tel.: +49 (0) 61 05 702-3 Fax: +49 (0) 61 05 702-444	Vertriebsgebiet Ost Germany East  Bosch Rexroth AG Beckerstraße 31 09120 Chemnitz  Tel.: +49 (0)371 35 55-0 Fax: +49 (0)371 35 55-333	Vertriebsgebiet Ost Germany East  Bosch Rexroth AG Regionalzentrum Ost Walter-Köhn-Str. 4d 04356 Leipzig  Tel.: +49 (0)341 25 61-0 Fax: +49 (0)341 25 61-111

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