

DIAX04 Drive With Main Spindle Function SERCOS interface

Drive Configuration: SHS 03VRS

SYSTEM200

Title DIAX04 Drive With Main Spindle Function SERCOS interface

Type of Documentation Drive Configuration: SHS 03VRS

Document Typecode DOK-DIAX04-SHS-03VRS**-IF02-EN-P

Internal File Reference

- Box 62-03V-EN
- Based on: SHS 03VRS
- 120-0800-B309-02/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-SHS-03VRS**-IF02-EN-P	08.99	First edition
DOK-DIAX04-SHS-03VRS**-IF02-EN-P	10.00	First release

Copyright © 2000 Rexroth Indramat GmbH

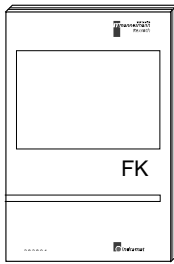
Copying this document, giving it to others and the use or communication of the contents thereof without express authority, are forbidden. Offenders are liable for the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design (DIN 34-1).

Validity All rights are reserved with respect to the content of this documentation and the availability of the product.

Published by Rexroth Indramat GmbH
 Bgm.-Dr.-Nebel-Str. 2 • D-97816 Lohr a. Main
 Telephone 09352/40-0 • Tx 689421 • Fax 09352/40-4885
<http://www.rexroth.com/indramat>
 Dept. ECD (JR)

Note This document has been printed on chlorine-free bleached paper.

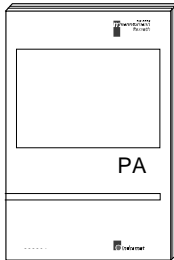
Summary of Documentation - Box



Functional Description:

Description of all implemented Function based on SERCOS-Parameters

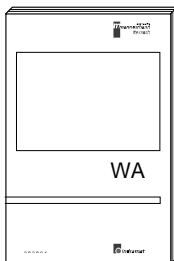
Order designation:
DOK-DIAX04-SHS-03VRS**-FK01-EN-P



Parameter Description:

A description of all parameters used in the firmware

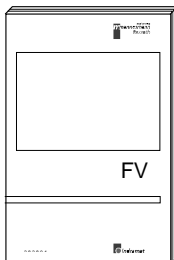
Order designation:
DOK-DIAX04-SHS-03VRS**-PA02-EN-P



Troubleshooting Guide:

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

Order designation:
DOK-DIAX04-SHS-03VRS**-WA01-EN-P

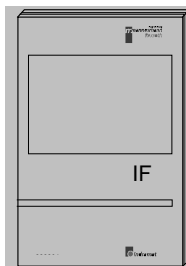


Firmware Version Notes:

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

- FWA-DIAX04-SHS02VRS-MS

Order designation:
DOK-DIAX04-SHS-03VRS**-FV01-EN-P



Drive Configuration:

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

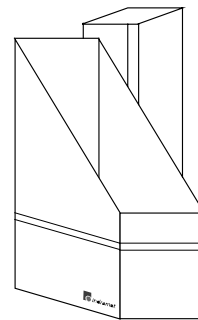
Order designation:
DOK-DIAX04-SHS-03VRS**-IF02-EN-P



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-SHS-03VRS**-6202-EN-P

Notes

Contents

1	Determining Drive Configuration	1-1
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 labelling	1-5
2	Determining the motor/controller combination	2-1
2.1	Selection lists	2-1
3	Choosing the motor - motor feedback combination	3-1
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
4	Selecting Features - Determining Configuration Labelling	4-1
4.1	Basic Features	4-1
4.2	Additional Firmware Features: Drive With Main Spindle Functions.....	4-2
4.3	Selection of additional features.....	4-3
	Motor encoder interface: HSF / RSF or resolver without feedback data memory	4-4
	Motor encoder interface: sine encoder	4-6
	Motor encoder interface: Rexroth Indramat gear wheel encoder	4-7
	Motor encoder interface: EnDat encoder	4-9
	Motor encoder interface: Resolver without feedback data memory + sine encoder	4-11
	Motor encoder interface: gear wheel encoder with 1Vpp signals	4-13
5	Service & Support	5-1
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

Notes

1 Determining Drive Configuration

1.1 Explanation of Terms

Digital drive controllers of the type DIAX04 can be adapted to meet numerous application requirements by using various plug-in modules.

For this reason, drive controllers are equipped with ports for plug-in modules.

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

- HDS 04.* 4 plug-in modules (U1-U4) + software module U5
- HDS 03.* 4 plug-in modules (U1-U4) + software module U5
- HDS 02.* 3 plug-in modules (U1-U3) + software module U5
- HDD 02.*-W040N-HD12-01-FW
1 plug-in module / axis (U1, U2)
+ software module U5.1 and U5.2
- HDD 02.*-W040N-HD32-01-FW
no plug-in modules
+ software module U5.1 and U5.2

Plug-in modules The following plug-in modules are available:

- Command interface card.
- Modules for evaluating position measurement systems.
- Input/output modules to evaluate SPS signals or to ..\Export signals to the SPS.
- Software modules
- Modules for evaluating analog inputs

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

Command interface card module

The DSS plug-in module is used as a command interface card module. This module must always occupy slot U1 in the drive controller.

Configured drive controller

A basic device with fitted with additional 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 may be equipped with various components, according to the selected configuration.

The following illustration represents the components of a typical hardware configuration for HDS.

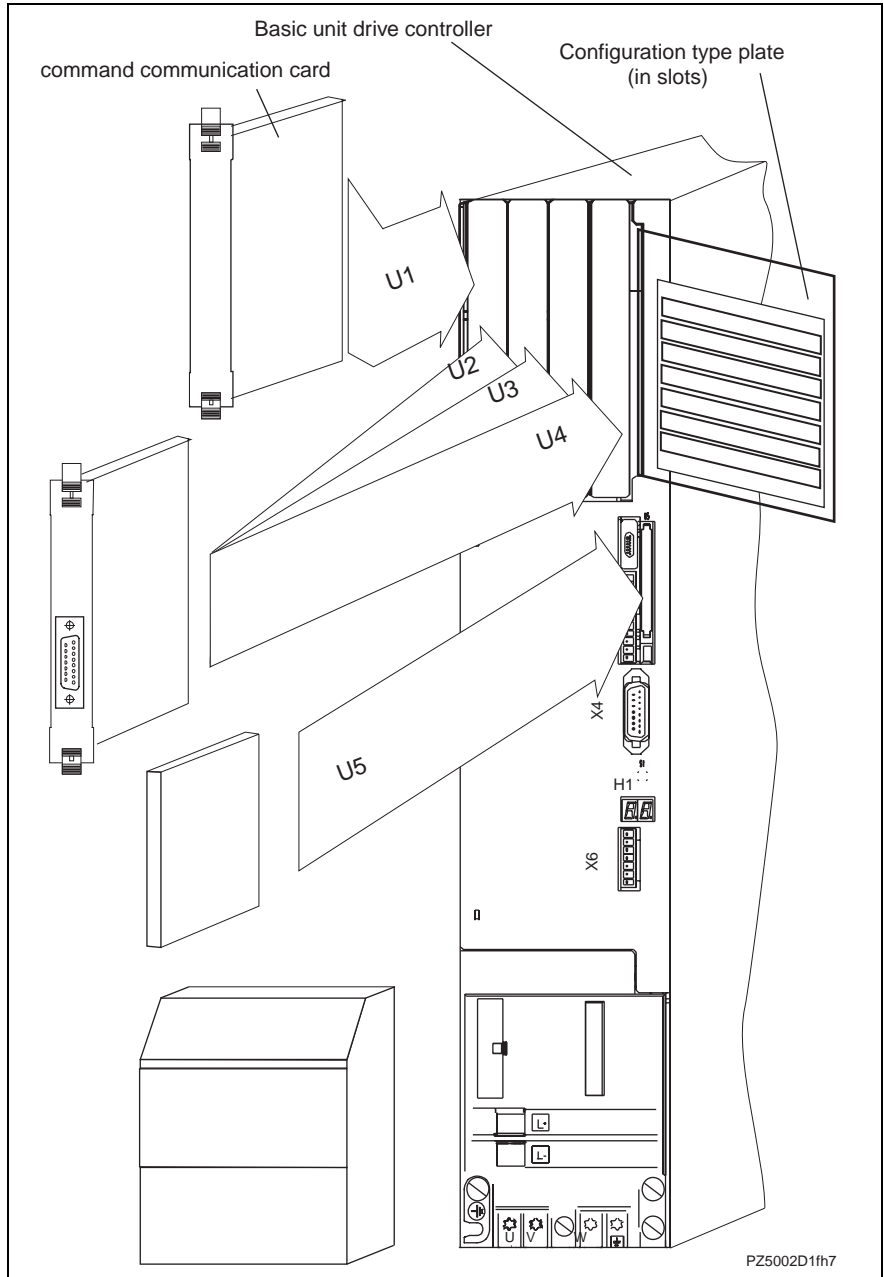


Fig. 1-1: Components of a hardware configuration for HDS

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 rpm/torque requirements for your purpose.
- Select a motor/controller combination from the list.

2. Determine the hardware configuration labeling:

- Motor - Select a 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 offer an idea on how to determine the configuration labeling.

Illustration: Determining the motor/controller combination

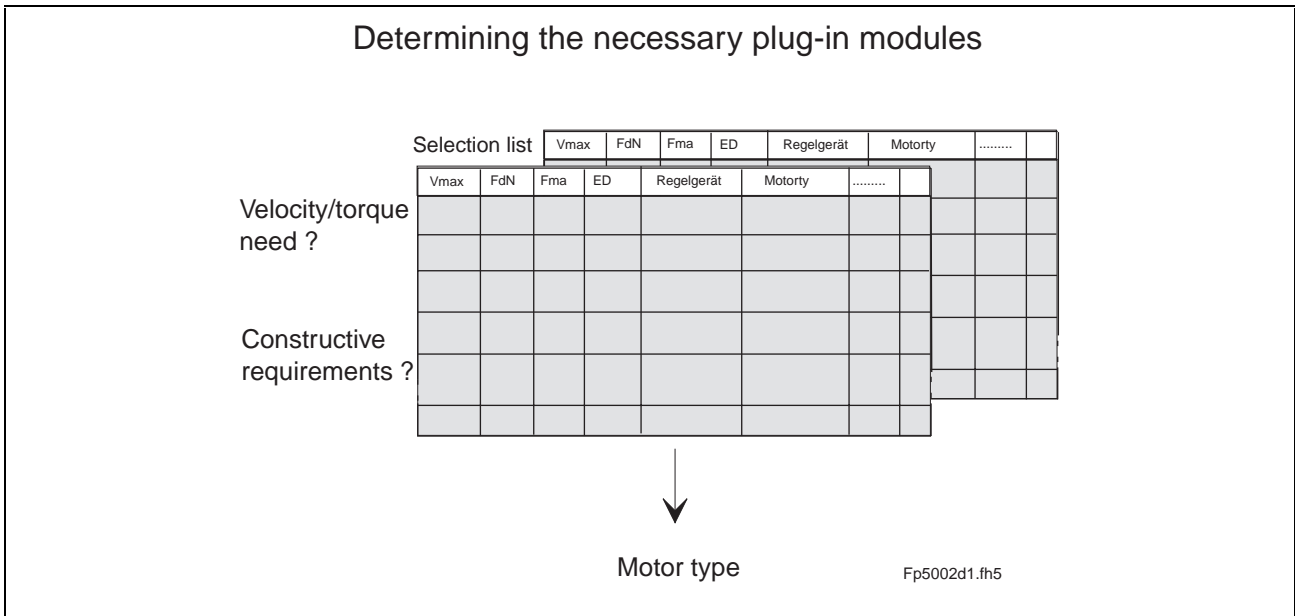


Fig. 1-2: Illustration for working with selection lists

Illustration: Determining the hardware configuration labelling

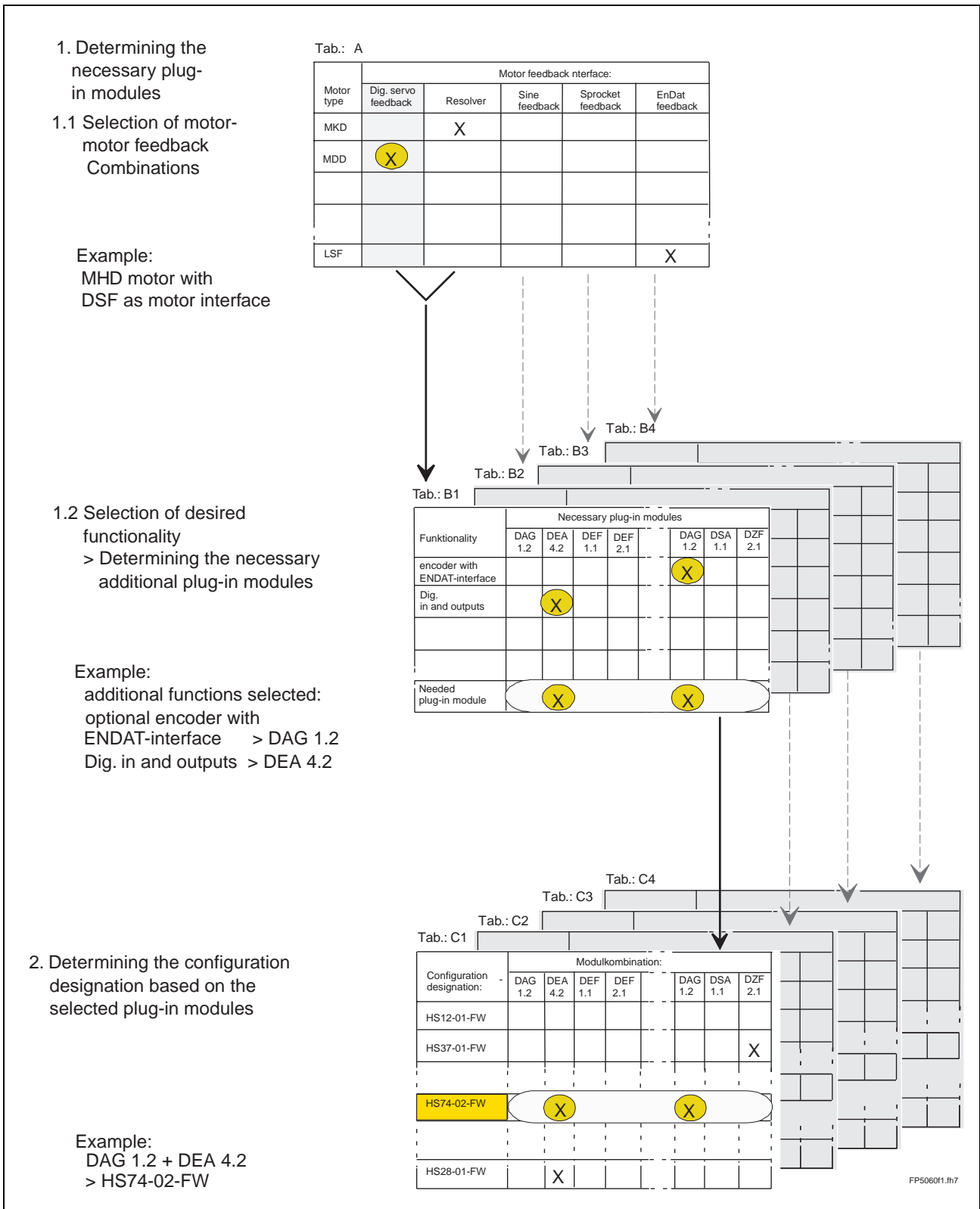


Fig. 1-3: Illustration for determining configuration labelling

Notes

2 Determining the motor/controller combination

2.1 Selection lists

Selection lists can be used to select the required motor controller combination.

You should consider the necessary requirements for torque and velocity 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 Choosing the motor - motor feedback combination

3.1 Possible motor - motor feedback combinations

The following table contains types of motors which correspond to the permissible motor encoder interfaces.

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

Tab A: Motor encoder interface								
Motor feed-back type	HSF (1)	Resolver with FDS (2)	Sine-encoder (3)	Rexroth Indramat gear wheel encoder	EnDat-encoder (4)	Resolver without FDS (5)	Resolver without FDS + sine-encoder (6)	Gear wheel encoder with 1Vpp-signals (7)
P-0-0074*	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. 3-1: Permissible motor type - motor/feedback combinations

- (1) : singleturn or multiturn HSF
- (2) : resolver or multiturn resolver (RSF) with feedback data memory (FDS)
- (3) : incremental scale with sine signals or incremental sine rotary encoder with μA or 1Vpp signals
- (4) : absolute linear scale, singleturn or multiturn 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, Motor encoder interface

3.2 Connection examples

HSF/RSF or resolver without feedback data memory

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

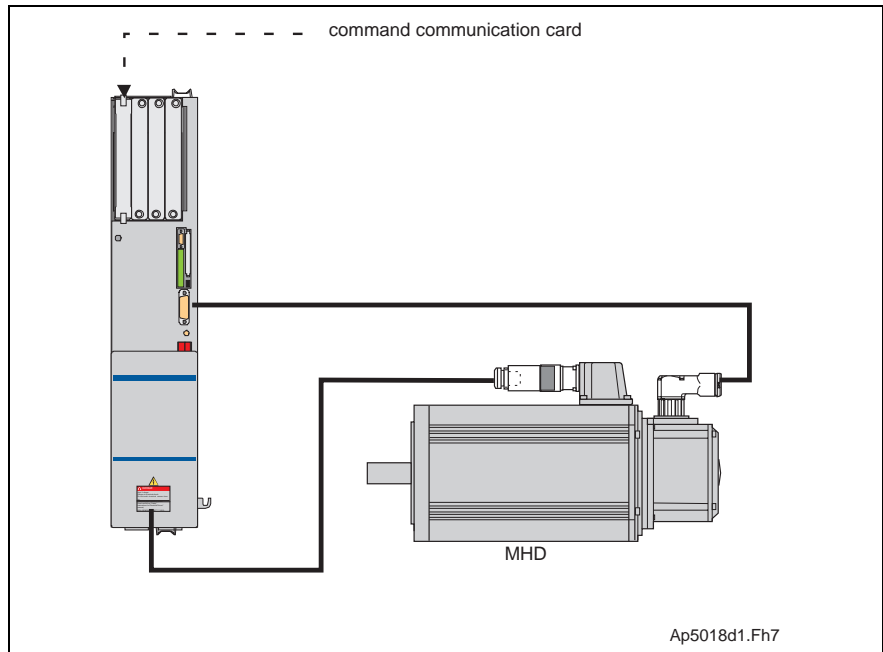


Fig. 3-2: MHD motor with HSF motor encoder to standard interface

Sine encoder

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

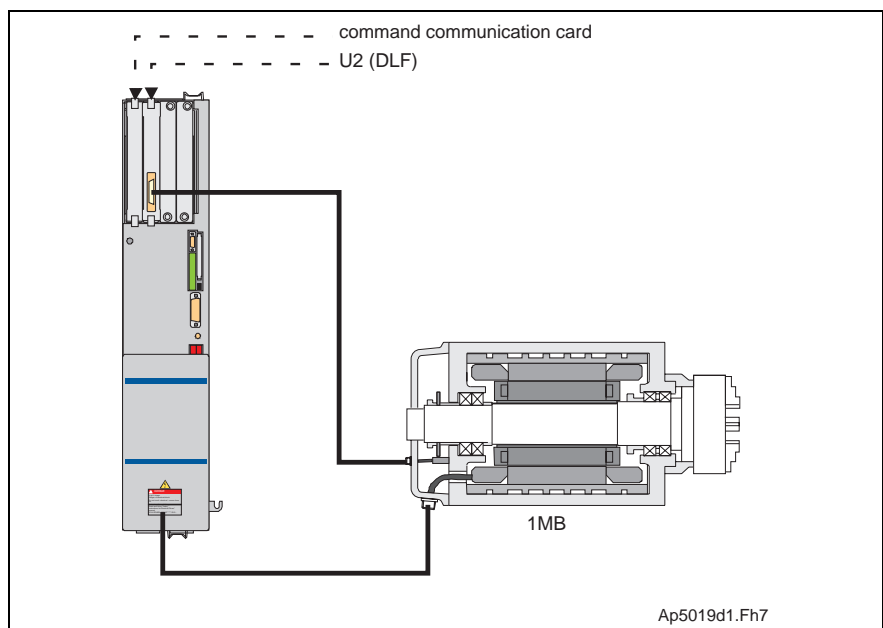


Fig. 3-3: 1MB motor with incremental sine encoder from Heidenhain, connected to a DLF01.1M module

Rexroth Indramat gear wheel encoder

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

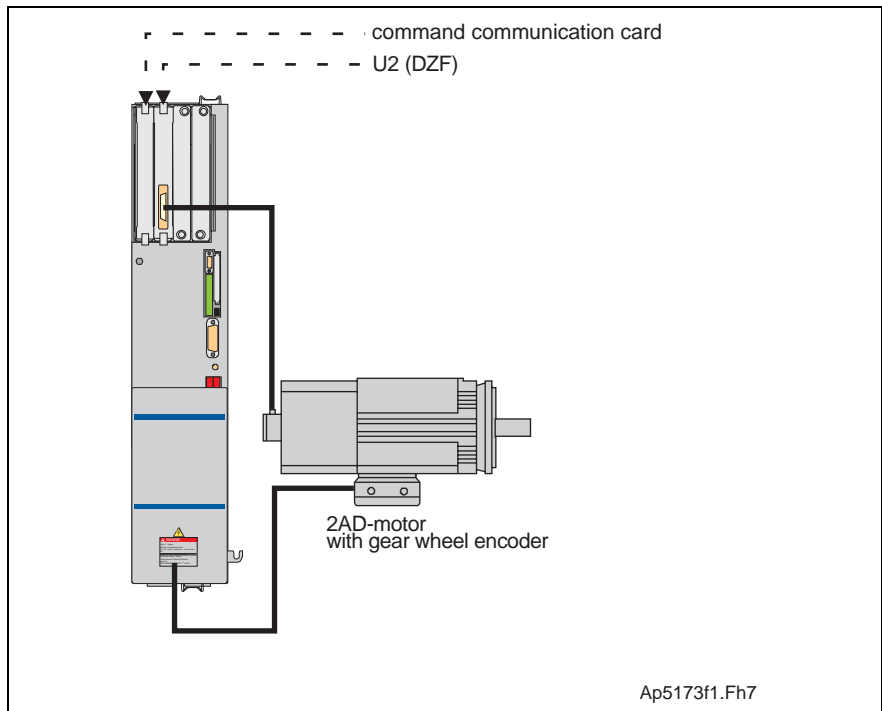


Fig. 3-4: 2AD motor with gear wheel encoder, connected to a DZF02.1M module

EnDat encoder

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

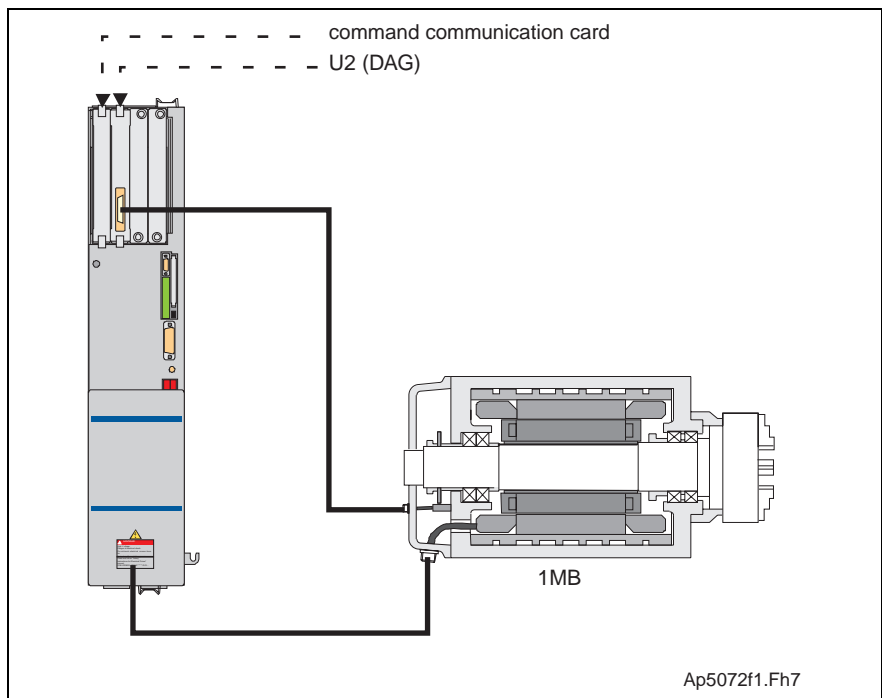


Fig. 3-5: 1MB motor with EnDat encoder, connected to a DAG01.2M module

Resolver without feedback data memory + sine encoder

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

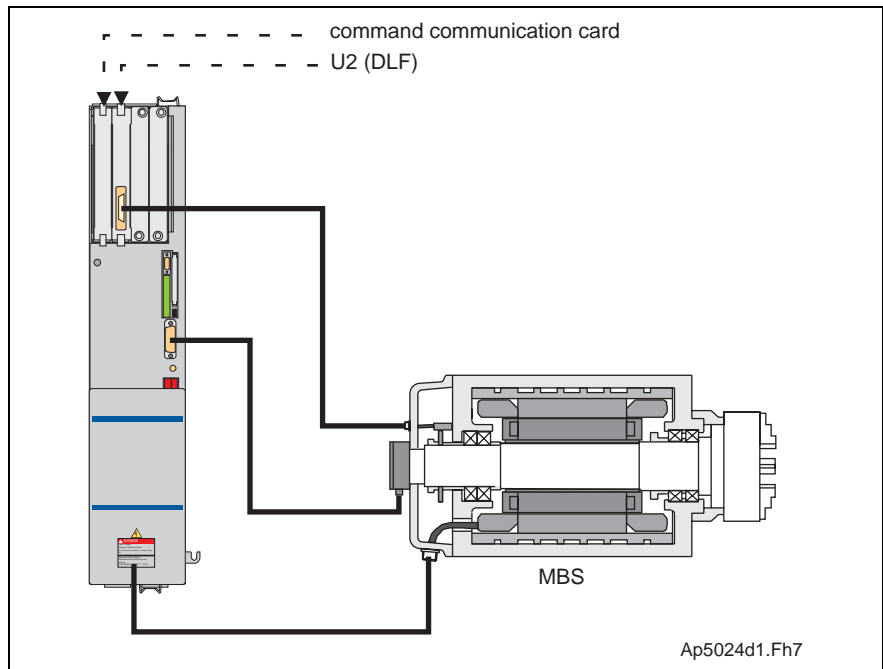


Fig. 3-6: MBS motor with sine encoder on a DLF01.1M plug-in module

Gear wheel encoder with 1Vpp signals

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

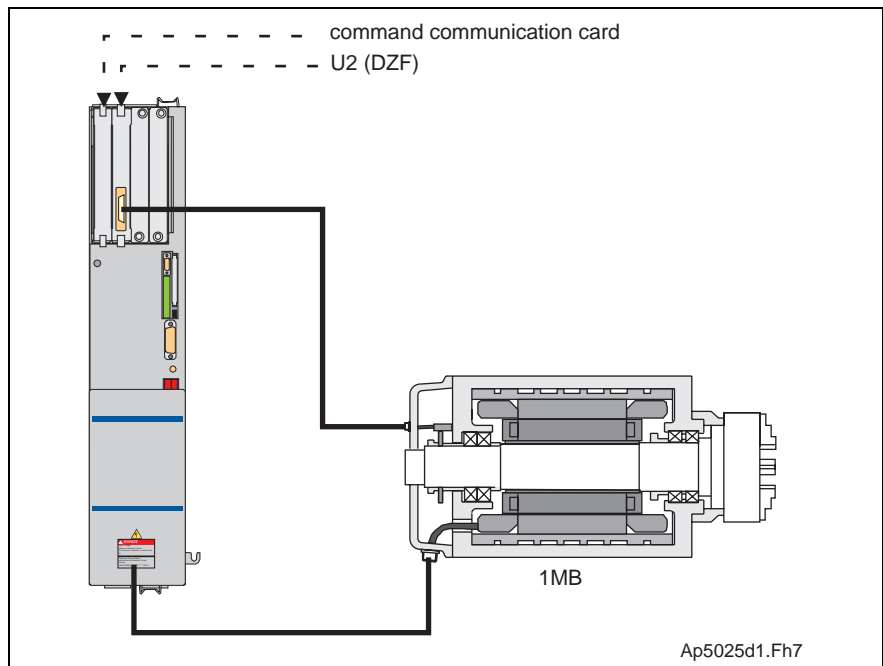


Fig. 3-7: 1MB motor with gear wheel encoder with 1Vpp signals on a DZF03.1M plug-in module

4 Selecting Features - Determining Configuration Labelling

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
- Diagnostic possibilities
- Basic parameter block that can be activated for a defined setting of the drive parameters to default values.
- configurable signal status word
- Supports five (5) languages for parameter names and units and diagnoses (S-0-0095)
 - German
 - English
 - French
 - Spanish
 - Italian
- Programmable, drive-internal position resolution
- Evaluation of option (load-side) encoder for position and/or velocity control
- Evaluates absolute measuring system with setting of absolute dimension
- Modulo function
- Parametrizable torque limit
- Current limit
- Velocity limit
- Travel range limitations
- Intelligent Safety Technology IST:
 - Safe operating stop
 - Safely reduced velocity with safely limited absolute position
 - Reset key
 - Safe referencing
- Starting lockout
- E-Stop-Function

- Drive-side error reactions:
 - best possible standstill "velocity command to zero"
 - best possible standstill "Torque free"
 - best possible standstill "velocity command to zero with ramp and filter"
 - power shutdown with fault
 - NC reaction with fault
- Control loop settings
 - base load function
 - acceleration precontrol
 - velocity mix factor
 - velocity precontrol
- Velocity control loop monitor
- Position control loop monitor
- Drive halt
- Command "Drive-Controlled Homing"
- Command "Set Absolute Measuring"
- Analog output
- Digital I/Os
- Oscilloscope function
- Command "Detect marker position"
- Command park axes

4.2 Additional Firmware Features: Drive With Main Spindle Functions

- Parameter block switching
- Gear switching
- Star/Delta transitions
- Drive controlled spindle positioning
- Spindle positioning with spindle homing switch
- Drive controlled oscillating

4.3 Selection of additional features

Additional plug-in modules are required Additional to the basic features DIAX04 offers a range of further features. When you select these additional features which are presented in the following chapters and tables, you should consider that additional plug-in modules will be required.

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

HDS 04.* max. 4 plug-in modules

HDS 03.* max. 4 plug-in modules

HDS 02.* max. 3 plug-in modules

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

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

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

- it is impossible to use any additional features for HDD 02.*-W040N-**HD12**-01-FW in form of plug-in modules.
 - For HDD 02.*-W040N-**HD32**-01-FW there always is the SERCOS interface (DSS02.1) and an optional 1Vpp encoder interface (DLF01.1) per axis. There aren't any further 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 function.
- A maximum of one external measurement 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 are made based on the motor encoder interface 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 then select the Additional features for motor with HSF/RSF or resolver without feedback data memory from the following table.

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

Using this module combination, you can define the corresponding configuration labeling in the table Configuration selection for motor with HSF/RSF or resolver without feedback data memory which is then used to order the correct components.

If the 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:**
- There aren't any additional features for HDD 02.*-W040N-HD12-01-FW.
 - It is possible to connect an external measurement system with 1Vpp signals to HDD 02.*-W040N-HD32-01-FW (DLF01.1 integrated).

Selection of features for the motor with HSF/RSF or resolver without feedback data memory

Features	Table B1: Plug-in modules:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
16 universal dig. outputs 15 universal dig. inputs		X							
32 universal dig. Inputs 24 universal dig. outputs			X						
Ext. measurement system with sine wave signals (1Vpp or 1uA)							X		
Ext. measurement system with square wave signals (TTL)				X	X				
Ext. measurement system with HSF encoder						X			
Ext. measurement system with SSI Interface	X								
Ext. measurement system with EnDat Interface (Heidenhain)	X								
Ext. measurement system with gear wheel encoder (Indramat)								X	
Ext. measurement system with gear wheel encoder (1Vpp signals)									X
No additional features									
Plug-in modules determined:									

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	Table C1: Module combination								
	DEA 04.2M	DEA 08.1M	DAG 01.2M	DEF 01.1M	DEF 02.1M	DFE 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
HS-12-01									
HS-23-01	X								
HT-20-01		X							
HS-45-01			X						
HS-74-02	X		X						
HT-30-01		X	X						
HS-76-01				X					
HS-78-01	X			X					
HT-31-01		X		X					
HS-09-01						X			
HS-30-01	X					X			
HT-32-01		X				X			
HS-32-01							X		
HS-33-01	X						X		
HT-33-01		X					X		
HS-37-01								X	
HS-38-01	X							X	
HT-34-01		X						X	
HS-79-01									X
HS-80-01	X								X
HT-35-01		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, and an incremental scale with sine signals or an incremental sine encoder is used for the motor encoder interface, then the desired additional feature can be selected from the table *Additional features for motor with sine encoder as a motor encoder*.

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

With this module combinations you can determine the configuration labeling from the table *Configuration selection for motor with sine encoder as a motor encoder* to order the correct components.

If the 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:**
- It is impossible to connect a sine encoder as a motor encoder to HDD 02.*-W040N-HD12-01-FW.
 - It is possible to connect a sine encoder with 1Vpp signals as a motor encoder and, as an option, to connect an external measurement system (HSF encoder) to HDD 02.*-W040N-HD32-01-FW (DLF01.1 integrated).
-

Selection of features for motor with sine encoder

Features:	Table B2: Plug-in modules:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
16 universal dig. outputs 15 universal dig. inputs		X					X		
32 universal dig. Inputs 24 universal dig. outputs			X				X		
ext. measurement system with square wave signals (TTL)					X		X		
Ext. Measurement system with HSF encoder (1)						X	X		
Ext. Measurement system with SSI Interface	X						X		
Ext. Measurement system with EnDat Interface (Heidenhain)	X						X		
No additional features							X		
plug-in modules determined:							X		

(1) If the standard interface X4 is not used, there is then no need for the DFF module. The HSF feedback can be connected at 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:	Table C2: Module combination:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
HS-32-01							X		
HT-04-01					X		X		
HT-33-01			X				X		
HS-33-01		X					X		
HT-01-01	X						X		
HT-36-01			X		X		X		
HT-05-01		X			X		X		
HT-37-01	X		X				X		
HT-02-01	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 a motor encoder interface, then you can select the desired additional features from the table *Additional features for motor with Rexroth Indramat gear wheel encoder*.

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

With this module combination from the table *Configuration selection for motors with Indramat gear wheel encoder* you can determine the configuration label and order the correct components.

If the 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: It is impossible to connect a gear wheel encoder to
HDD 02.*-W040N-HD12-01-FW and
HDD 02.*-W040N-HD32-01-FW.

Selection of features for motor with Indramat gear wheel encoder

Features:	Table B3: Plug-in modules:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
16 universal dig. outputs 15 universal dig. inputs		X						X	
32 universal dig. Inputs 24 universal dig. outputs			X					X	
Ext. Measurement system with square wave signals (TTL)					X			X	
Ext. measurement system with HSF encoder (1)						X		X	
Ext. measurement system with SSI Interface	X							X	
ext. measurement system with EnDat Interface (Heidenhain)	X							X	
No additional features								X	
Plug-in modules determined:								X	

(1) If the standard interface X4 is not used, there is then no need for the DFF module. The HSF feedback can be connected at 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:	Table C3: Module combination:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
HS-37-01								X	
HT-38-01					X			X	
HT-34-01			X					X	
HS-38-01		X						X	
HS-04-02	X							X	
HT-39-01			X		X			X	
HT-40-01		X			X			X	
HT-41-01	X		X					X	
HS-03-02	X	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, then you can select the desired additional features from the table *Additional features for motors with EnDat motor encoder Interface*.

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

With this module combinations you can define the appropriate configuration label for ordering the correct components in the table *Configuration selection for Motor with EnDat motor encoder interface*.

If the 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: It is impossible to connect an EnDat encoder to
HDD 02.*-W040N-HD12-01-FW and
HDD 02.*-W040N-HD32-01-FW.

Selection of features for motor with EnDat encoder

Features	Table B4: Plug-in modules:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
16 universal dig. outputs 15 universal dig. inputs	X	X							
32 universal dig. Inputs 24 universal dig. outputs	X		X						
Ext. measurement system with sine wave signals (1Vpp or 1uA)	X						X		
Ext. Measurement system with square wave signals (TTL)	X			X					
Ext. measurement system with HSF encoder (1)	X					X			
Ext. measurement system with SSI Interface	X							X	
ext. measurement system with EnDat Interface (Heidenhain)	X								X
No additional features	X								
Plug-in modules determined:	X								

(1) If the standard interface X4 is not used, there is then no need for the DFF module. The HSF feedback can be connected at the standard interface X4.

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

Configuration selection for motors with EnDat encoder

Name of configuration	Table C4: Module combination:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
HS-45-01	X								
HS-93-01	X								X
HS-04-02	X							X	
HT-01-01	X						X		
HT-24-01	X			X					
HT-30-01	X		X						
HS-74-02	X	X							
HT-42-01	X		X						X
HT-12-01	X	X							X
HT-41-01	X		X					X	
HS-03-02	X	X						X	
HT-37-01	X		X				X		
HT-02-01	X	X					X		
HT-44-01	X	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, then you can select the desired additional features from the table *Additional features for motors with resolver without FDS + sine encoder interface*.

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

With this module combinations you can define the appropriate configuration label for ordering the correct components in the table *Configuration selection for Motor with resolver without FDS + sine encoder interface*.

If the 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:**
- It is impossible to connect a motor with resolver without FDM + sine encoder to HDD 02.*-W040N-HD12-01-FW.
 - It is possible to connect a motor with resolver without FDM + sine encoder to HDD 02.*-W040N-HD32-01-FW (DLF01.1 integrated).
-

Selection of features for motor with resolver without FDS + sine encoder

Features:	Table B5: Plug-in modules::								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
16 universal dig. outputs 15 universal dig. inputs		X					X		
32 universal dig. Inputs 24 universal dig. outputs			X				X		
Ext. Measurement system with square wave signals (TTL)					X		X		
Ext. measurement system with HSF encoder (1)						X	X		
Ext. measurement system with SSI Interface	X						X		
ext. measurement system with EnDat Interface (Heidenhain)	X						X		
No additional features							X		
Plug-in modules determined:							X		

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

Configuration selection for motors with resolver without FDS + sine encoder

Name of configuration	Table C5: Module combination:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
HS-32-01							X		
HS-08-01						X	X		
HT-04-01					X		X		
HT-33-01			X				X		
HS-33-01		X					X		
HT-01-01	X						X		
HT-45-01			X			X	X		
HS-28-01		X				X	X		
HT-36-01			X		X		X		
HT-05-01		X			X		X		
HT-37-01	X		X				X		
HT-02-01	X	X					X		

Fig. 4-10: Configuration Selection for Motor with resolver without FDS + sine encoder

Motor encoder interface: gear wheel encoder with 1Vpp signals

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

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

With this module combinations you can define the appropriate configuration label for ordering the correct components in the table *Configuration selection for Motor with gear wheel encoder interface with 1Vpp signals*.

If the 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: It is impossible to connect a gear wheel encoder with 1Vpp signals to HDD 02.*-W040N-HD12-01-FW and HDD 02.*-W040N-HD32-01-FW.

Selection of features for motor with gear wheel *encoder* with 1Vpp signals

Features:	Table B6: Plug-in modules:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
16 universal dig. outputs 15 universal dig. inputs		X							X
32 universal dig. Inputs 24 universal dig. outputs			X						X
Ext. Measurement system with square wave signals (TTL)					X				X
Ext. measurement system with HSF encoder (1)						X			X
Ext. measurement system with SSI Interface	X								X
ext. measurement system with EnDat Interface (Heidenhain)	X								X
No additional features									X
Plug-in modules determined:									X

(1) If the standard interface X4 is not used, there is then no need for the DFF module. The HSF feedback can be connected at the standard interface X4.

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

Configuration selection for motors with gear wheel encoder with 1Vpp signals

Name of configuration	Table C6: Module combination:								
	DAG 01.2M	DEA 04.2M	DEA 08.1M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DZF 02.1M	DZF 03.1M
HS-79-01									X
HT-46-01					X				X
HT-35-01			X						X
HS-80-01		X							X
HS-93-01	X								X
HT-47-01			X		X				X
HT-48-01		X			X				X
HT-41-01	X		X						X
HT-12-01	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**

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 07:00 am -6:00 pm
- by fax: **+49 (0) 9352 40 49 41**
- by e-mail: **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

Weitere Hinweise zu Service, Reparatur und Training finden Sie im Internet unter

www.indramat.de

Außerhalb Deutschlands nehmen Sie bitte zuerst Kontakt mit Ihrem lokalen Ansprechpartner auf. Die Adressen sind im Anhang aufgeführt.

Additional notes about service, repairs and training are available on the Internet at

www.indramat.de

Please contact the sales & service offices in your area first. Refer to the addresses on the following pages.

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 betroffenen Produkte, insbesondere Typenschlüssel und Seriennummern.
3. Telefon-/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

Verkaufsniederlassungen
 Niederlassungen mit Kundendienst

sales agencies
 offices providing service

Deutschland – Germany

vom Ausland: (0) nach Landeskenziffer weglassen!
from abroad: don't dial (0) after country code!

Vertriebsgebiet Mitte Germany Centre Rexroth Indramat GmbH Bgm.-Dr.-Nebel-Str. 2 97816 Lohr am Main Kompetenz-Zentrum Europa Telefon: +49 (0)9352 40-0 Telefax: +49 (0)9352 40-4885	SERVICE CALL ENTRY CENTER MO – FR von 07:00 - 18:00 Uhr from 7 am – 6 pm Tel. +49 (0) 9352 40 50 60 service@indramat.de	SERVICE HOTLINE MO – FR von 17:00 - 07:00 Uhr from 5 pm - 7 am + SA / SO Tel.: +49 (0)172 660 04 06 oder / or Tel.: +49 (0)171 333 88 26	SERVICE ERSATZTEILE / SPARES verlängerte Ansprechzeit - extended office time - ♦ nur an Werktagen - only on working days - ♦ von 07:00 - 18:00 Uhr - from 7 am - 6 pm - Tel. +49 (0) 9352 40 42 22
Vertriebsgebiet Süd Germany South Rexroth Indramat GmbH Ridlerstraße 75 80339 München Telefon: +49 (0)89 540138-30 Telefax: +49 (0)89 540138-10 indramat.mue@t-online.de	Gebiet Südwest Germany South-West Mannesmann Rexroth AG Vertrieb Deutschland – VD-BI Geschäftsbereich Rexroth Indramat Regionalzentrum Südwest Ringstrasse 70 / Postfach 1144 70736 Fellbach / 70701 Fellbach Tel.: +49 (0)711 57 61–100 Fax: +49 (0)711 57 61–125	Vertriebsgebiet Ost Germany East Rexroth Indramat GmbH Beckerstraße 31 09120 Chemnitz Telefon: +49 (0)371 35 55-0 Telefax: +49 (0)371 35 55-333	Vertriebsgebiet Nord Germany North Mannesmann Rexroth AG Vertriebsniederlassung Region Nord Gesch.ber. Rexroth Indramat Wals- roder Str. 93 30853 Langenhagen Telefon: +49 (0) 511 72 66 57-0 Telefax: +49 (0) 511 72 66 57-95
Vertriebsgebiet West Germany West Mannesmann Rexroth AG Vertrieb Deutschland Regionalzentrum West Borsigstrasse 15 40880 Ratingen Telefon: +49 (0)2102 409-0 Telefax: +49 (0)2102 409-406	Vertriebsgebiet Mitte Germany Centre Mannesmann Rexroth AG Gesch.ber. Rexroth Indramat Lilistraße 14-18 63067 Offenbach Telefon: +49 (0) 69 82 00 90-0 Telefax: +49 (0) 69 82 00 90-80	Vertriebsgebiet Ost Germany East Mannesmann Rexroth AG GB Rexroth Indramat GmbH Holzhäuser Str. 122 04299 Leipzig Telefon: +49 (0)341 86 77-0 Telefax: +49 (0)341 86 77-219	Vertriebsgebiet Nord Germany North Rexroth Indramat GmbH Kieler Straße 212 22525 Hamburg Telefon: +49 (0) 40 81 955 966 Telefax: +49 (0) 40 85 418 978

Europa – Europe

vom Ausland: (0) nach Landeskennziffer weglassen, **Italien:** 0 nach Landeskennziffer mitwählen
from abroad: don't dial (0) after country code, **Italy:** dial 0 after country code

Austria - Österreich Mannesmann Rexroth Ges.m.b.H. Gesch.ber. Rexroth Indramat Hägelingasse 3 1140 Wien Telefon: +43 (0)1 9852540-400 Telefax: +43 (0)1 9852540-93	Austria - Österreich Mannesmann Rexroth G.m.b.H. Gesch.ber. Rexroth Indramat Industriepark 18 4061 Pasching Telefon: +43 (0)7221 605-0 Telefax: +43 (0)7221 605-21	Belgium - Belgien Mannesmann Rexroth N.V.-S.A. Gesch.ber. Rexroth Indramat Industrielaan 8 1740 Ternat Telefon: +32 (0)2 5830719 Telefax: +32 (0)2 5830731 indramat@rexroth.be	Denmark - Dänemark BEC AS Zinkvej 6 8900 Randers Telefon: +45 (0)87 11 90 60 Telefax: +45 (0)87 11 90 61
Czech Republic - Tschechien Mannesmann-Rexroth, spol.s.r.o. Hviezdoslavova 5 627 00 Brno Telefon: +420 (0)5 48 126 358 Telefax: +420 (0)5 48 126 112	England Mannesmann Rexroth Ltd. Rexroth Indramat Division Broadway Lane, South Cerney Cirencester, Glos GL7 5UH Telefon: +44 (0)1285 863000 Telefax: +44 (0)1285 863030	Finland - Finnland Rexroth Mecman Oy Rexroth Indramat division Ansatie 6 017 40 Vantaa Telefon: +358 (0)9 84 91-11 Telefax: +358 (0)9 84 91-13 60	France - Frankreich Mannesmann Rexroth S.A. Division Rexroth Indramat Parc des Barbanniers 4, Place du Village 92632 Gennevilliers Cedex Telefon: +33 (0)141 47 54 30 Telefax: +33 (0)147 94 69 41 Hotline: +33 (0)608 33 43 28
France - Frankreich Mannesmann Rexroth S.A. Division Rexroth Indramat 270, Avenue de Lardenne 31100 Toulouse Telefon: +33 (0)5 61 49 95 19 Telefax: +33 (0)5 61 31 00 41	France - Frankreich Mannesmann Rexroth S.A. Division Rexroth Indramat 91, Bd. Irène Joliot-Curie 69634 Vénissieux – Cedex Telefon: +33 (0)4 78 78 53 65 Telefax: +33 (0)4 78 78 53 62	Hungary - Ungarn Mannesmann Rexroth Kft. Angol utca 34 1149 Budapest Telefon: +36 (1) 364 00 02 Telefax: +36 (1) 383 19 80	Italy - Italien Mannesmann Rexroth S.p.A. Divisione Rexroth Indramat Via G. Di Vittoria, 1 20063 Cernusco S/N.MI Telefon: +39 02 2 365 270 Telefax: +39 02 700 408 252378
Italy - Italien Mannesmann Rexroth S.p.A. Divisione Rexroth Indramat Via Borgomanero, 11 10145 Torino Telefon: +39 011 7 50 38 11 Telefax: +39 011 7 71 01 90	Italy - Italien Mannesmann Rexroth S.p.A. Divisione Rexroth Indramat Via del Progresso, 16 (Zona Ind.) 35020 Padova Telefon: +39 049 8 70 13 70 Telefax: +39 049 8 70 13 77	Italy - Italien Mannesmann Rexroth S.p.A. Divisione Rexroth Indramat Via Mascia, 1 80053 Castellammare di Stabia NA Telefon: +39 081 8 71 57 00 Telefax: +39 081 8 71 68 85	Italy - Italien Mannesmann Rexroth S.p.A. Divisione Rexroth Indramat Viale Oriani, 38/A 40137 Bologna Telefon: +39 051 34 14 14 Telefax: +39 051 34 14 22
Netherlands - Niederlande/Holland Rexroth B.V. Kruisbroeksestraat 1 (P.O. Box 32) 5281 RV Boxtel Telefon: +31 (0)411 65 19 51 Telefax: +31 (0)411 65 14 83 indramat@hydrauldyne.nl	Netherlands - Niederlande/Holland Rexroth Hydrocare B.V. Kruisbroeksestraat 1 (P.O. Box 32) 5281 RV Boxtel Telefon: +31 (0)411 65 19 51 Telefax: +31 (0)411 67 78 14	Norway - Norwegen Rexroth Mecman AS Rexroth Indramat Division Berghagan 1 or: Box 3007 1405 Ski-Langhus 1402 Ski Telefon: +47 (0)64 86 41 00 Telefax: +47 (0)64 86 90 62	Poland - Polen Mannesmann Rexroth Sp.zo.o. Biuro Poznan ul. Dabrowskiego 81/85 60-529 Poznan Telefon: +48 061 847 67 99 Telefax: +48 061 847 64 02
Rumania - Rumänien Mannesmann Rexroth Sp.zo.o. Str. Drobety nr. 4-10, app. 14 70258 Bucuresti, Sector 2 Telefon: +40 (0)1 210 48 25 +40 (0)1 210 29 50 Telefax: +40 (0)1 210 29 52	Russia - Russland Tschudnenko E.B. Arsenia 22 153000 Ivanovo Telefon: +7 093 223 96 33 oder/or +7 093 223 95 48 Telefax: +7 093 223 46 01	Spain - Spanien Mannesmann Rexroth S.A. Division Rexroth Indramat Centro Industrial Santiga Obradors s/n 08130 Santa Perpetua de Mogoda Barcelona Telefon: +34 9 37 47 94 00 Telefax: +34 9 37 47 94 01	Spain - Spanien Goimendi S.A. Division Rexroth Indramat Parque Empresarial Zuatzu C/ Francisco Montagne no.2 20018 San Sebastian Telefon: +34 9 43 31 84 21 - service: +34 9 43 31 84 56 Telefax: +34 9 43 31 84 27 - service: +34 9 43 31 84 60 satindramat-goimendi@adegi.es
Sweden - Schweden Rexroth Mecman Svenska AB Rexroth Indramat Division Varuvägen 7 125 81 Stockholm Telefon: +46 (0)8 727 92 00 Telefax: +46 (0)8 647 32 77	Slowenia - Slowenien Rexroth Indramat elektromotorji d.o.o. Otoki 21 64 228 Zelezniki Telefon: +386 64 61 73 32 Telefax: +386 64 64 71 50	Switzerland East - Schweiz Ost Mannesmann Rexroth Schweiz AG Gesch.ber. Rexroth Indramat Gewerbstraße 3 8500 Frauenfeld Telefon: +41 (0)52 720 21 00 Telefax: +41 (0)52 720 21 11	Switzerland West - Schweiz West Mannesmann Rexroth Suisse SA Département Rexroth Indramat Rue du village 1 1020 Renens Telefon: +41 (0)21 632 84 20 Telefax: +41 (0)21 632 84 21
Turkey - Türkei Mannesmann Rexroth Hidropar A.S. Fevzi Cakmak Cad No. 3 34630 Sefaköy Istanbul Telefon: +90 212 541 60 70 Telefax: +90 212 599 34 07			

Africa, Asia, Australia – incl. Pacific Rim

vom Ausland:
from abroad:

(x) nach Landeskenziffer weglassen!
don't dial (x) after country code!

<p>Australia - Australien</p> <p>AIMS - Australian Industrial Machinery Services Pty. Ltd. Unit 3/45 Horne ST Campbellfield, VIC 3061 Melbourne</p> <p>Telefon: +61 (0)3 93 59 02 28 Telefax: +61 (0)3 93 59 02 86</p>	<p>Australia - Australien</p> <p>Mannesmann Rexroth Pty. Ltd. No. 7, Endeavour Way Braeside Victoria, 31 95 Melbourne</p> <p>Telefon: +61 (0)3 95 80 39 33 Telefax: +61 (0)3 95 80 17 33 mel@rexroth.com.au</p>	<p>China</p> <p>Shanghai Mannesmann Rexroth Hydraulics & Automation Ltd. Wai Gaoqiao Free Trade Zone No.122, Fu Te Dong Yi Road Shanghai 200131 - P.R.China</p> <p>Telefon: +86 21 58 66 30 30 Telefax: +86 21 58 66 55 23</p>	<p>China</p> <p>Mannesmann Rexroth (China) Ltd. 15/F China World Trade Center 1, Jianguomenwai Avenue Beijing 100004, P.R.China</p> <p>Telefon: +86 10 65 05 03 80 Telefax: +86 10 65 05 03 79</p>
<p>China</p> <p>Mannesmann Rexroth (China) Ltd. A-5F., 123 Lian Shan Street Sha He Kou District Dalian 116 023, P.R.China</p> <p>Telefon: +86 411 46 78 930 Telefax: +86 411 46 78 932</p>	<p>China</p> <p>Mannesmann Rexroth (China) Ltd. Guangzhou Repres. Office Room 1014-1016, Metro Plaza, Tian He District, 183 Tian He Bei Rd Guangzhou 510075, P.R.China</p> <p>Telefon: +86 20 8755-0030 +86 20 8755-0011 Telefax: +86 20 8755-2387</p>	<p>Hongkong</p> <p>Rexroth (China) Ltd. 1/F., 19 Cheung Shun Street Cheung Sha Wan, Kowloon, Hongkong</p> <p>Telefon: +852 22 62 51 00 Telefax: +852 27 41 33 44</p>	<p>India - Indien</p> <p>Mannesmann Rexroth (India) Ltd. Rexroth Indramat Division Plot. A-58, TTC Industrial Area Thane Turbhe Midc Road Mahape Village Navi Mumbai - 400 701</p> <p>Telefon: +91 (0)22 7 61 46 22 Telefax: +91 (0)22 7 68 15 31</p>
<p>India - Indien</p> <p>Mannesmann Rexroth (India) Ltd. Rexroth Indramat Division Plot. 96, Phase III Peenya Industrial Area Bangalore - 560058</p> <p>Telefon: +91 (0)80 8 39 73 74 Telefax: +91 (0)80 8 39 43 45</p>	<p>Indonesia - Indonesien</p> <p>PT. Rexroth Wijayakusuma Jl. Raya Bekasi Km 21 Pulogadung Jakarta Timur 13920</p> <p>Telefon: +62 21 4 61 04 87 +62 21 4 61 04 88 Telefax: +62 21 4 60 01 52</p>	<p>Japan</p> <p>Rexroth Automation Co., Ltd. Service Center Japan Yutakagaoka 1810, Meito-ku, NAGOYA 465-0035, Japan</p> <p>Telefon: +81 (0)52 777 88 41 +81 (0)52 777 88 53 +81 (0)52 777 88 79 Telefax: +81 (0)52 777 89 01</p>	<p>Japan</p> <p>Rexroth Automation Co., Ltd. Rexroth Indramat Division 1F, I.R. Building Nakamachidai 4-26-44, Tsuzuki-ku YOKOHAMA 224-0041, Japan</p> <p>Telefon: +81 (0)45 942 72 10 Telefax: +81 (0)45 942 03 41</p>
<p>Korea</p> <p>Mannesmann Rexroth-Korea Ltd. Rexroth Indramat Division 1500-12 Dadae-Dong- Saha-Ku Pusan, 604-050 Republic of South Korea</p> <p>Telefon: +82 (0)51 26 00 741 Telefax: +82 (0)51 26 00 747 gyhan@rexrothkorea.co.kr</p>	<p>South Africa - Südafrika</p> <p>TECTRA Automation (Pty) Ltd. 28 Banfield Road, Industria North RSA - Maraisburg 1700</p> <p>Telefon: +27 (0)11 673 20 80 Telefax: +27 (0)11 673 72 69</p>	<p>Taiwan</p> <p>Rexroth Uchida Co., Ltd. No.17, Lane 136, Cheng Bei 1 Rd., Yungkang, Tainan Hsien Taiwan, R.O.C.</p> <p>Telefon: +886 (0)6 25 36 565 Telefax: +886 (0)6 25 34 754</p>	<p>Thailand</p> <p>NC Advance Technologies Co. Ltd. 59/76 Moo 9 Soi Ramintra 34 Ramintra Road, Tharang, Bangkhen Bangkok 10220</p> <p>Telefon: +66 2 943 70 62 +66 2 943 71 21 Telefax: +66 2 509 23 62 sonkawin@hotmail.com</p>

Nordamerika – North America

<p>USA Hauptniederlassung - Headquarters</p> <p>Mannesmann Rexroth Corporation Rexroth Indramat Division 5150 Prairie Stone Parkway Hoffman Estates, IL 60192-3707</p> <p>Competence Centre America</p> <p>Telefon: +1 847 6 45 36 00 Telefax: +1 847 6 45 62 01 service@indramat.com</p>	<p>USA Central Region - Mitte</p> <p>Mannesmann Rexroth Corporation Rexroth Indramat Division Central Region Technical Center Auburn Hills, MI 48326</p> <p>Telefon: +1 248 3 93 33 30 Telefax: +1 248 3 93 29 06</p>	<p>USA Southeast Region - Südwest</p> <p>Mannesmann Rexroth Corporation Rexroth Indramat Division Southeastern Technical Center 3625 Swiftwater Park Drive Suwanee, Georgia 30174</p> <p>Telefon: +1 770 9 32 32 00 Telefax: +1 770 9 32 19 03</p>	<p>USA SERVICE-HOTLINE</p> <p>- 7 days x 24hrs -</p> <p>+1-800-860-1055</p>
<p>USA Northeast Region – Nordost</p> <p>Mannesmann Rexroth Corporation Rexroth Indramat Division Charlotte Regional Sales Office 14001 South Lakes Drive Charlotte, North Carolina 28273</p> <p>Telefon: +1 704 5 83 97 62 +1 704 5 83 14 86</p>	<p>USA Northeast Region – Nordost</p> <p>Mannesmann Rexroth Corporation Rexroth Indramat Division Northeastern Technical Center 99 Rainbow Road East Granby, Connecticut 06026</p> <p>Telefon: +1 860 8 44 83 77 Telefax: +1 860 8 44 85 95</p>	<p>Canada East - Kanada Ost</p> <p>Basic Technologies Corporation Burlington Division 3426 Mainway Drive Burlington, Ontario Canada L7M 1A8</p> <p>Telefon: +1 905 335 55 11 Telefax: +1 905 335-41 84</p>	<p>Canada West - Kanada West</p> <p>Basic Automation Burnaby 5345 Goring St. Burnaby, British Columbia Canada V7J 1R1</p> <p>Tel. +1 604 205-5777 Fax +1 604 205-6944 dave.gunby@basic.ca</p>

Südamerika – South America

<p>Argentina - Argentinien</p> <p>Mannesmann Rexroth S.A.I.C. Division Rexroth Indramat Acassuso 48 41/7 RA - 1605 Munro (Buenos Aires)</p> <p>Telefon: +54 (0)11 4756 01 40 Telefax: +54 (0)11 4762 6862 mannesmann@mannesmannsaic.com.ar</p>	<p>Argentina - Argentinien</p> <p>NAKASE Servicio Tecnico CNC Calle 49, No. 5764/66 RA - 1653 Villa Balester Prov. - Buenos Aires</p> <p>Telefon: +54 (0) 11 4768 36 43 Telefax: +54 (0) 11 4768 24 13 nakase@usa.net nakase@infovia.com.ar</p>	<p>Brazil - Brasilien</p> <p>Mannesmann Rexroth Automação Ltda. Divisão Rexroth Indramat Rua Georg Rexroth, 609 Vila Padre Anchieta BR - 09951-270 Diadema-SP [Caixa Postal 377] [BR-09901-970 Diadema-SP]</p> <p>Telefon: +55 (0)11 4075 90 60 +55 (0)11 4075 90 70 Telefax: +55 (0)11 4075 35 52 awittwer@rexroth.com.br</p>	<p>Brazil - Brasilien</p> <p>Mannesmann Rexroth Automação Ltda. Divisão Rexroth Indramat R. Dr.Humberto Pinheiro Vieira, 100 Distrito Industrial BR - 89220-390 Joinville - SC [Caixa Postal 1273]</p> <p>Tel./Fax: +55 (0)47 473 58 33 Mobil: +55 (0)47 974 66 45 prochnow@zaz.com.br</p>
<p>Mexico</p> <p>Mannesmann Rexroth Mexico S.A. de C.V. Calle Neptuno 72 Unidad Ind. Vallejo MEX - 07700 Mexico, D.F.</p> <p>Telefon: +52 5 754 17 11 +52 5 754 36 84 +52 5 754 12 60 Telefax: +52 5 754 50 73 +52 5 752 59 43</p>			

Notizen - Notes

284096

Printed in Germany