

DIAX03 Drive With Electric Gear Function

Drive Configuration: ELS 05VRS

DOK-DIAX03-ELS-05VRS**-INF1-EN-P

Title	DIAX03 Drive With Electric Gear Function
Type of Documentation	Drive Configuration
Documentation Type	DOK-DIAX03-ELS-05VRS**-INF1-EN-P
Internal Filing Notation	<ul style="list-style-type: none"> • Mapped 50-05V-EN / Register 6 • 209-0072-4323-01
What is the purpose of this documentation?	<p>This documentation serves to identify the designation for a configured drive of the DIAX03 drive family, based on:</p> <ul style="list-style-type: none"> • Determining the motor type • Choosing the motor - motor feedback combination • Choosing the desired function of the drive control device <p>In addition, an overview is provided of the available basic functions and possible additional functions.</p>

Course of modifications

Document identification of previous and present output	Release date	Remarks
DOK-DIAX03-ELS-05VRS**-INF1-EN-P	10.97	First edition

Copyright © INDRAMAT GmbH, 1998

Copying this document, and giving it to others or the use or communication of the contents there of without express authority, are forbidden. Offenders are liable for the payment of damage. 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)

Published by INDRAMAT GmbH • Bgm.-Dr.-Nebel-Str. 2 • D-97816 Lohr a. Main
Telefon 09352/40-0 • Tx 689421 • Fax 09352/40-4885

Dept. END (KT/HP)

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

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
DSF/RSF or resolver without feedback data memory.....	3-2
Sine encoder	3-2
Indramat gear wheel encoder	3-3
EnDat encoder	3-3
Resolver without feedback data memory + sine encoder	3-4
Gear wheel encoder with 1Vss signals	3-4
4 Selecting Features - Determining Configuration Labeling	4-1
4.1 Basic Features	4-1
4.2 Selection of additional features.....	4-2
Motor encoder interface: DSF / RSF or resolver without feedback data memory.....	4-3
Motor encoder interface: sine encoder.....	4-5
Motor encoder interface: 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 1Vss signals	4-13

Directory of Customer Service Centers

Notes

1 Determining Drive Configuration

1.1 Explanation of Terms

Digital drive controllers of the type DIAX03 from INDRAMAT 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 without additional plug-in modules are defined as basic devices. The basic device DDS 3.1 has two slots for plug-in modules (U1, U2). All other basic devices are equipped with 4 slots for plug-in modules (U1, U2, U3, U4). All devices are equipped with one specific slot (U5), which is used for a parameter/software module.

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
- Encoder emulation module

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., BE04-01-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.

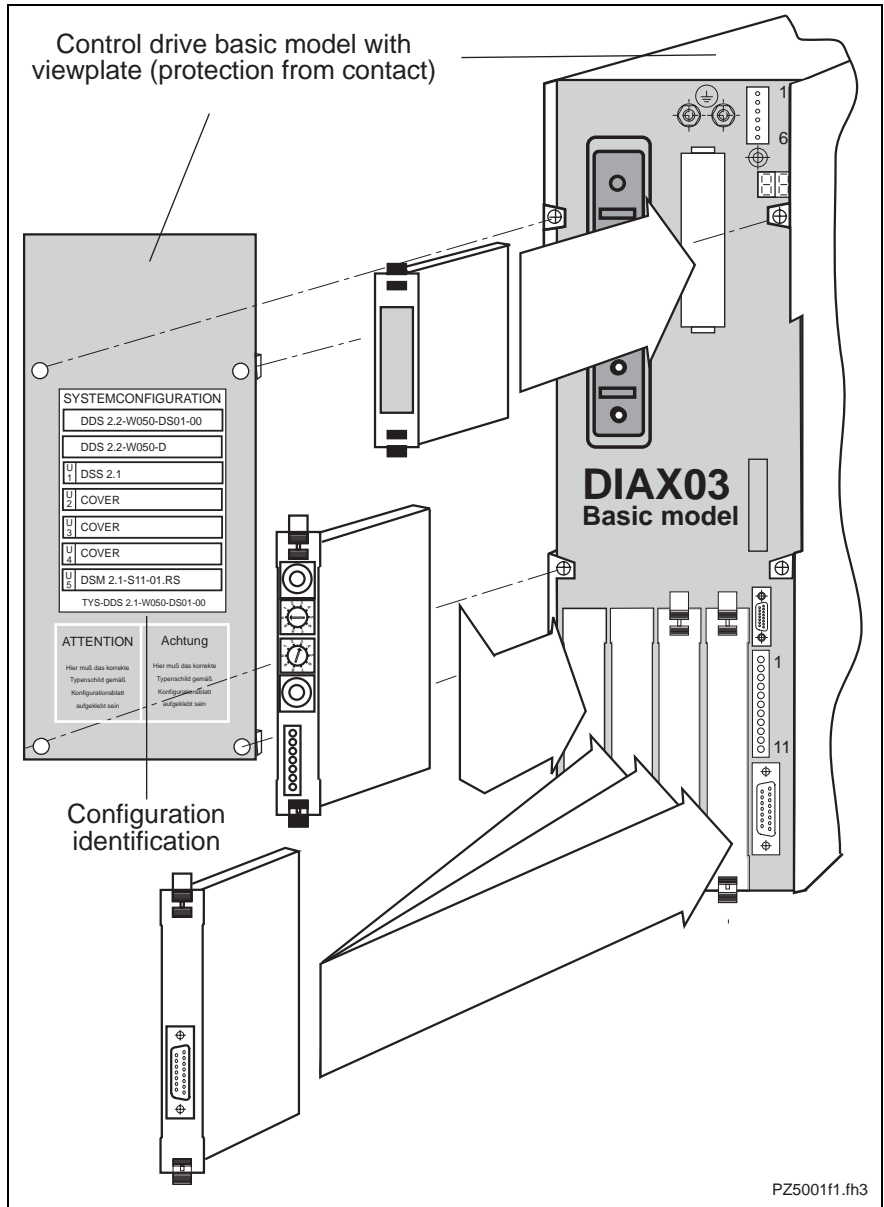


Fig. 1-1: Components of a hardware configuration

1.2 Procedure

To determine the drive configuration or to specify the hardware configuration labeling of a DIAX03 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 labelling:
 - Motor - Select a motor feedback combination.
 - Select the desired features.
 - Determine the configuration labelling based on the plug-in modules required for the desired features.

The following two illustrations offer an idea on how to determine the configuration labelling.

Illustration: Determining the motor/controller combination

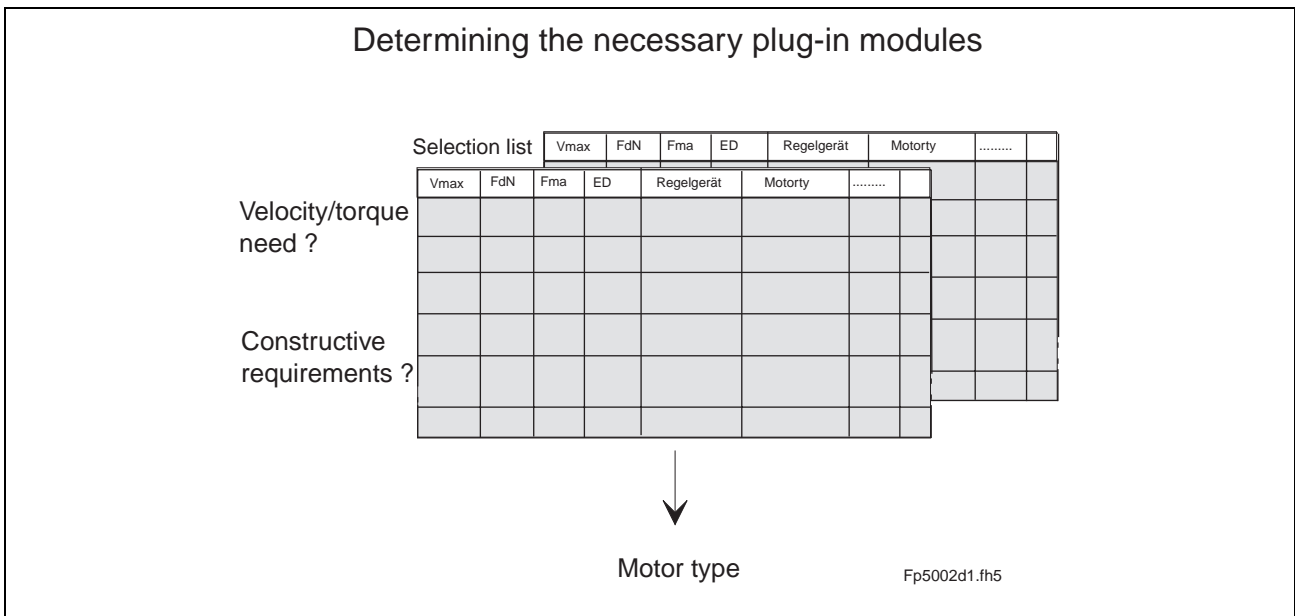
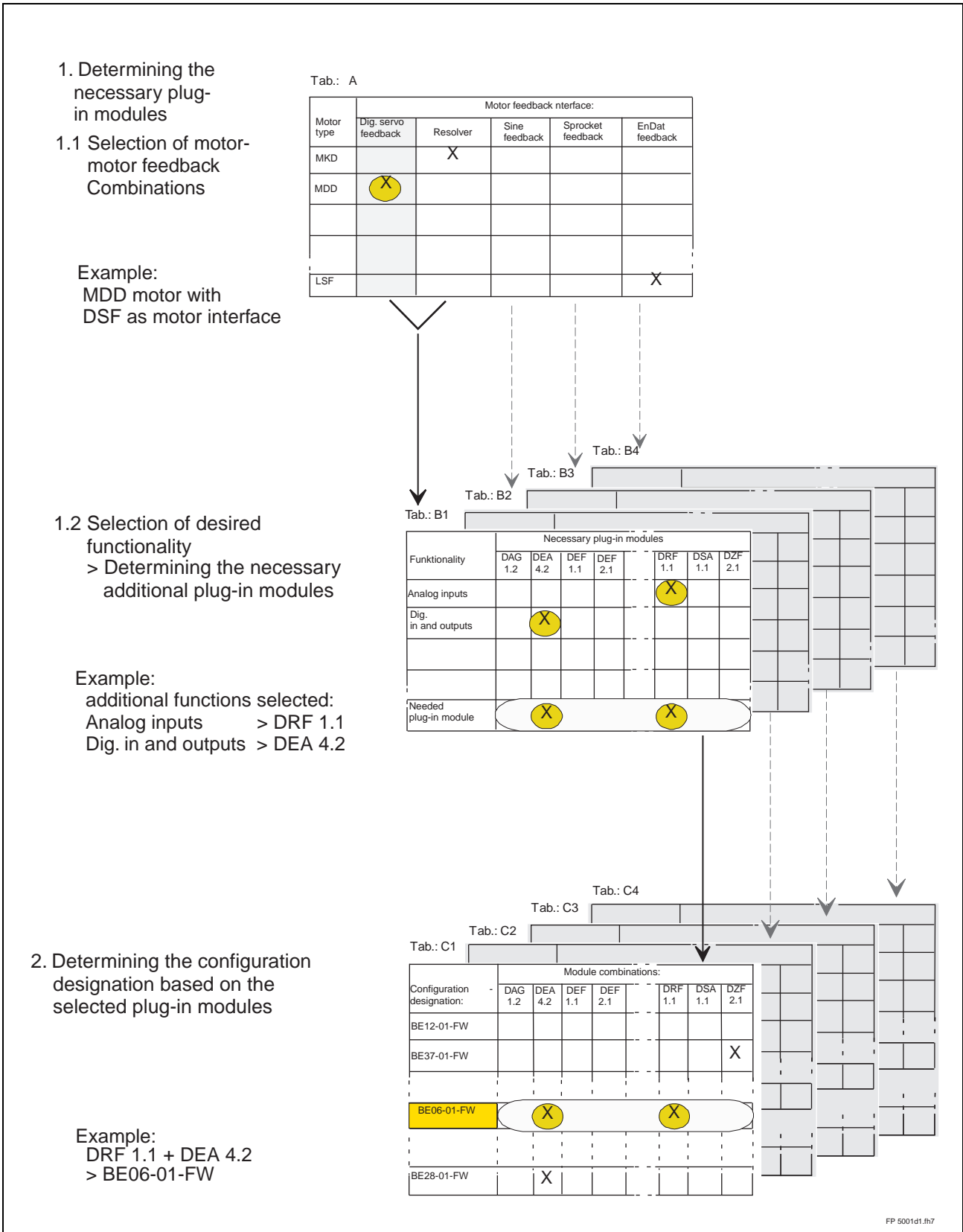


Fig. 1-2: Illustration for working with selection lists

Illustration: Determining the hardware configuration labelling



FP 5001d1.fn7

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 for use from the selection list is the most decisive factor in determining hardware configuration labelling.

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	Digital servo feedback (1)	Resolver with FDM (2)	Sine-encoder (3)	Indramat gear wheel encoder	EnDat-encoder (4)	Resolver without FDM (5)	Resolver without FDM + sine-encoder (6)	Gear wheel encoder with 1Vss-signals (7)
P-0-0074*	1	1	2	3	8	10	11	9
MKD		X						
MDD	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 DSF
- (2) : resolver or multiturn resolver (RSF) with feedback data memory (FDM)
- (3) : incremental scale with sine signals or incremental sine rotary encoder with μA or 1Vss 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 1Vss signals, evaluation via module DZF3.1

* P-0-0074, Motor encoder interface

3.2 Connection examples

DSF/RSF or resolver without feedback data memory

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

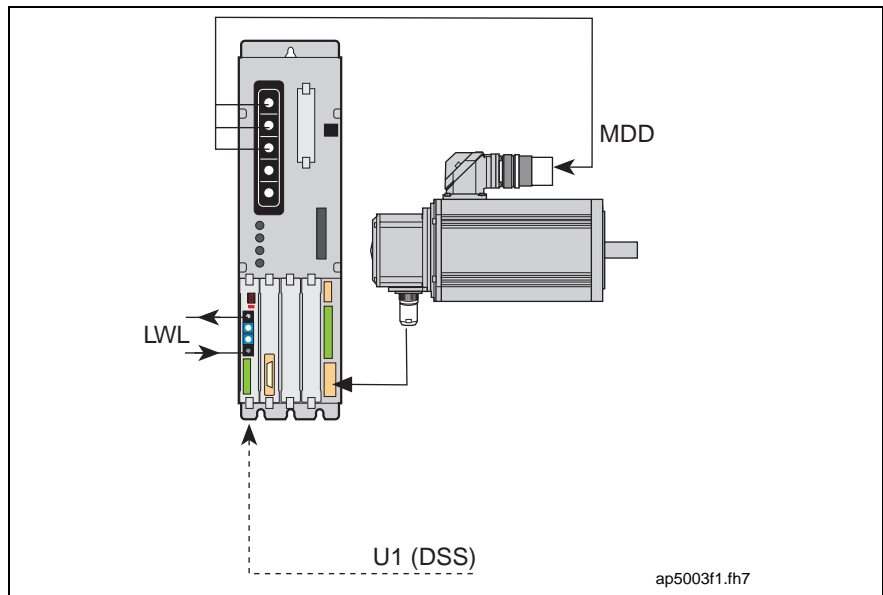


Fig. 3-2: MDD motor with DSF motor encoder to standard interface

Sine encoder

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

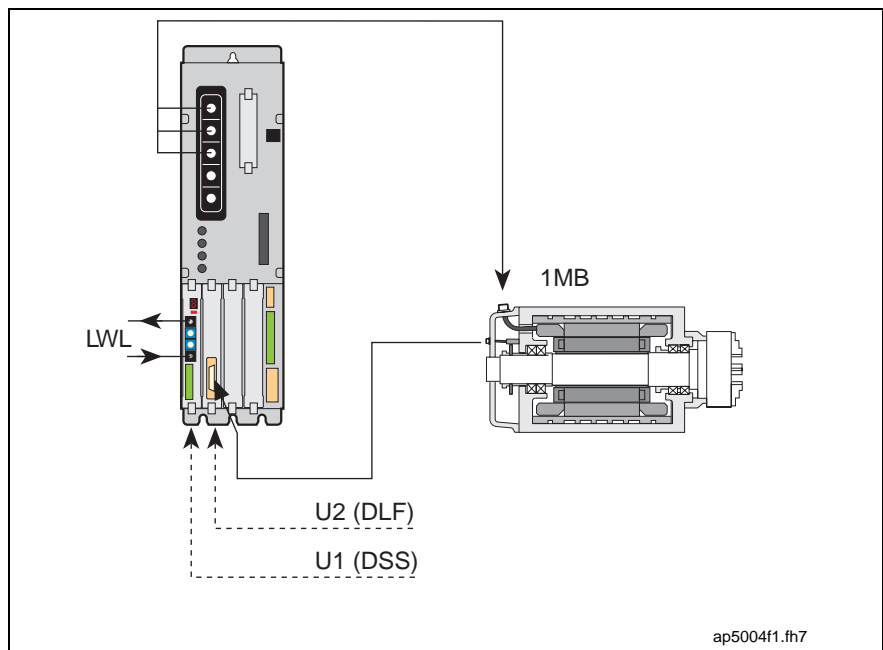


Fig. 3-3: 1MB motor with incremental sine encoder from Heidenhain, connected to a DLF01.1M module

Indramat gear wheel encoder

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

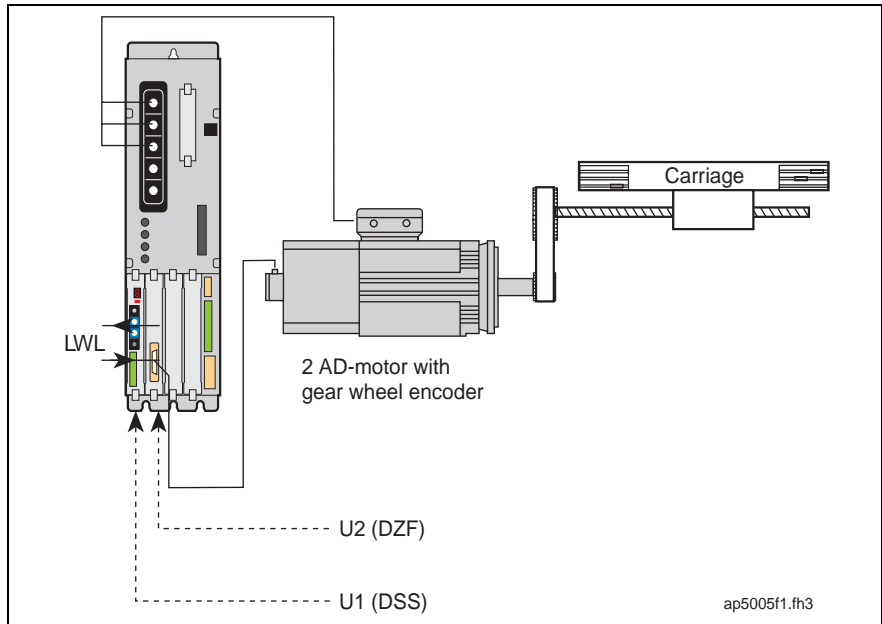


Fig. 3-4: 2AD motor with gear wheel encoder, connected to a DZF02.1M module

EnDat encoder

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

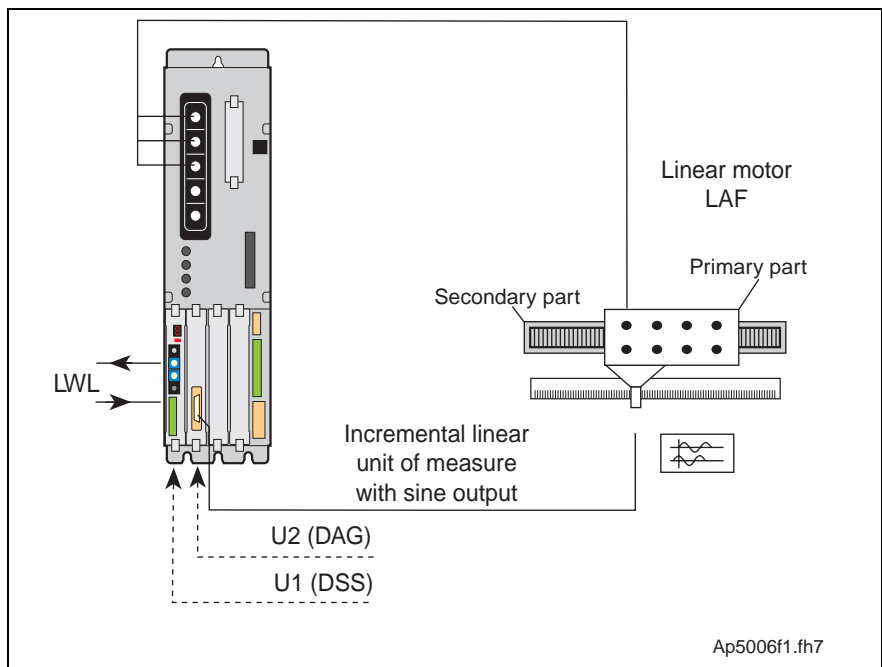


Fig. 3-5: LAF motor with EnDat encoder, connected to a DAG01.2M module

Resolver without feedback data memory + sine encoder

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

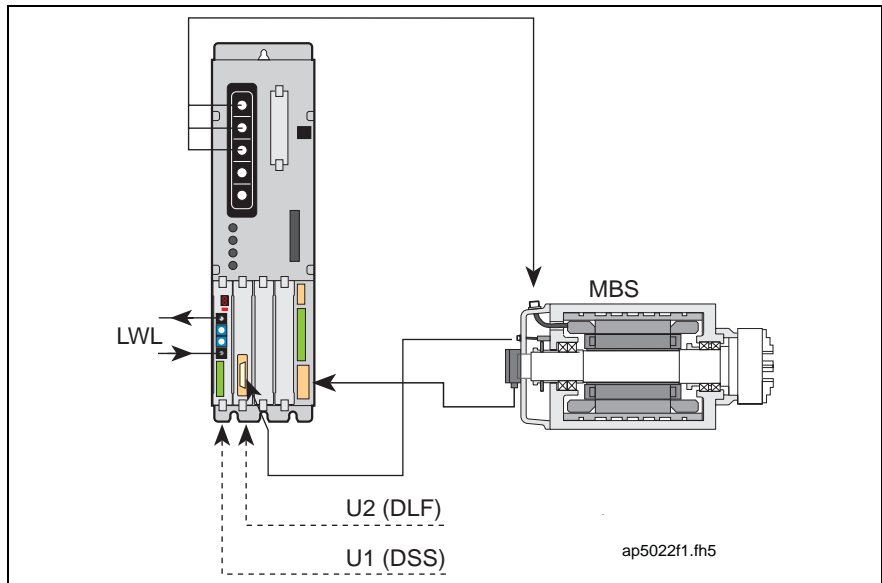


Fig. 3-6: MBS motor with sine encoder on a DLF01.1M plug-in module

Gear wheel encoder with 1Vss signals

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

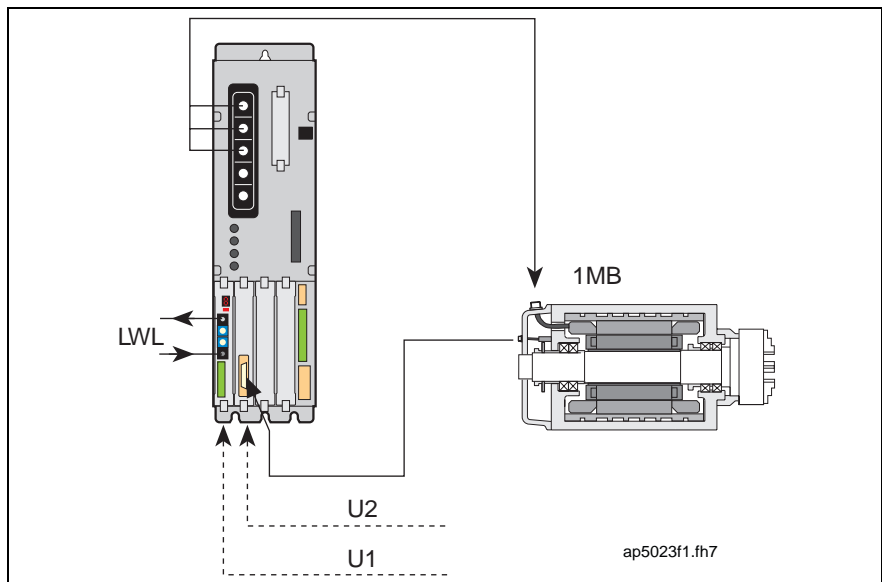


Fig. 3-7: 1MB motor with gear wheel encoder with 1Vss signals on a DZF03.1M plug-in module

4 Selecting Features - Determining Configuration Labeling

4.1 Basic Features

Independent of the motor type in use, a DIAX03 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-controlled interpolation
 - Relative drive-controlled interpolation
- Numerous diagnostic possibilities
- Programmable torque/force limits
- Current limitation
- Velocity limitation
- Transversing range limitation
- Driver-side error response:
 - Best possible deceleration "velocity command value zero-switch"
 - Best possible deceleration "torque-free"
 - Best possible deceleration "velocity command value zero-switch with slope and filter"
 - Return motions
 - NC response in error situation
 - Emergency stop feature
- Control loop setting Basic load feature
 - Acceleration feedforward
 - Velocity mix factor
 - Velocity feedforward
 - Friction torque compensation
- Language selection
- Drive Interlock
- Halt drive
- Drive-controlled homing procedure
- Evaluation of absolute measurement systems
- Set absolute measuring
- Analog outputs
- Oscilloscope function
- Probe feature
 - Measurement signal actual feedback value 1/2
 - Measurement signal time

- Modulo feature
- Axis error correction
- "Travel to positive stop" command
- Password-controller write access to amplifier and feedback data
- Analog inputs
- Park axis command
- Load base parameters command
- Error memory and operating hour counter
- Freely configurable signal status word
- Customer password

4.2 Selection of additional features

Additional plug-in modules are required	<p>Additional to the basic features DIAX03 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.</p>						
Max number of modules	<p>Depending on the basic device type being used, there may be differences in the number of plug-in modules used.</p> <table> <tr> <td data-bbox="561 1037 671 1064">DDS 3.2</td> <td data-bbox="762 1037 1161 1064">max. 2 additional plug-in modules</td> </tr> <tr> <td data-bbox="561 1077 671 1104">DDS 2.2</td> <td data-bbox="762 1077 1161 1104">max. 4 additional plug-in modules</td> </tr> <tr> <td data-bbox="561 1117 628 1144">DKR</td> <td data-bbox="762 1117 1161 1144">max. 4 additional plug-in modules</td> </tr> </table>	DDS 3.2	max. 2 additional plug-in modules	DDS 2.2	max. 4 additional plug-in modules	DKR	max. 4 additional plug-in modules
DDS 3.2	max. 2 additional plug-in modules						
DDS 2.2	max. 4 additional plug-in modules						
DKR	max. 4 additional plug-in modules						
Selection requirements	<hr/> <p>Note: One slot is already used for the DSS communication module in every basic device type.</p> <hr/> <p>The following requirements must be taken into consideration when selecting an additional feature:</p> <ul style="list-style-type: none"> • Each module can only be used for one function. • A maximum of one external measurement system may be selected. <p>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.</p>						

Motor encoder interface: DSF / RSF or resolver without feedback data memory

If a motor type with a digital servo feedback or a resolver is used, you can then select the Additional features for motor with DSF/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 labelling in the table Configuration selection for motor with DSF/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.

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

		Table B1: Plug-in modules::								
Features	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog input Incremental encoder emulation							X			
Digital input/output		X								
Ext. measurement system with Heidenhain sine encoder						X				
Ext. measurement system with Heidenhain rectangle encoder			X	X						
Ext. measurement system with DSF encoder					X					
Ext. measurement system with SSI Interface	X									
Ext. measurement system with EnDat encoder	X									
Ext. measurement system with gear wheel encoder (Indramat)									X	
Master axis encoder measure- ment with DSF ecoder					X					
Master axis encoder measure- ment with EnDat encoder	X									
Master axis encoder measure- ment with SSI-Interface	X									
Master axis position output								X		
Plug-in modules determined:										

Fig. 4-1: Additional features for motor with DSF/RSFor resolver without feedback data memory

**Configuration Selection for Motor with DSF/RSF or resolver
without feedback data memory**

Name of configuration	Table C1: Module combination:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFE 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
BE12-01-FW										
BE37-01-FW									X	
BE54-01-FW								X		
BE56-01-FW							X			
BE32-01-FW						X				
BE09-01-FW					X					
BE23-01-FW		X								
BE45-01-FW	X									
BE70-01-FW								X	X	
BE19-01-FW							X		X	
BE27-01-FW					X				X	
BE38-01-FW		X							X	
BE04-02-FW	X								X	
BE62-01-FW						X		X		
BE47-01-FW					X			X		
BE58-01-FW						X	X			
BE59-01-FW					X		X			
BE60-01-FW			X				X			
BE84-01-FW		X					X			
BE66-01-FW	X						X			
BE08-01-FW					X	X				
BE33-01-FW		X				X				
BE30-01-FW		X			X					
BE74-02-FW	X	X								
BE65-01-FW					X			X	X	
BE63-01-FW		X						X	X	
BE72-02-FW	X							X	X	
BE67-01-FW		X					X		X	
BE22-01-FW		X			X				X	
BE02-02-FW	X				X				X	
BE03-02-FW	X	X							X	
BE57-01-FW					X	X		X		
BE55-01-FW		X				X		X		
BE25-01-FW		X			X			X		
BE68-01-FW		X				X	X			
BE73-01-FW		X			X		X			

BE86-01-FW		X	X				X			
BE87-01-FW	X	X					X			
BE28-01-FW		X			X	X				

Fig. 4-2: Configuration Selection for Motor with DSF/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.

Selection of features for motor with sine encoder

Features:	Table B2: Plug-in modules:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog input							X			
Digital input/output		X				X				
Ext. measurement system with Heidenhain rectangle encoder				X		X				
Ext. measurement system with DSF encoder (1)					X	X				
Ext. measurement system with SSI Interface	X					X				
Ext. measurement system with EnDat encoder	X					X				
Master axis encoder measurement with DSF ecoder (1)					X	X				
Master axis encoder measurement with EnDat encoder	X					X				
Master axis encoder measurement with SSI-Interface	X					X				
Master axis position output						X		X		
Plug-in modules determined:										

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

(1) If the standard interface X4 is not used, there is then no need for the DFF module.

Configuration selection for motor with sine encoder

Name of configuration:	Table C2: Module combination:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
BE32-01-FW						X				
BE62-01-FW						X		X		
BE58-01-FW						X	X			
BE08-01-FW					X	X				
BE33-01-FW		X				X				
BE57-01-FW					X	X		X		
BE55-01-FW		X				X		X		
BT07-01-FW					X	X	X			
BT06-01-FW				X		X	X			
BE68-01-FW		X				X	X			
BT03-01-FW	X					X	X			
BE28-01-FW		X			X	X				

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

Motor encoder interface: 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 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.

Selection of features for motor with Indramat gear wheel encoder

Features:	Table B3: Plug-in modules:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog input							X			
Digital input/output		X							X	
Ext. measurement system with Heidenhain rectangle encoder				X					X	
Ext. measurement system with DSF encoder (1)					X				X	
Ext. measurement system with SSI Interface	X								X	
Ext. measurement system with EnDat encoder	X								X	
Master axis encoder measurement with DSF ecoder (1)					X				X	
Master axis encoder measurement with EnDat encoder	X								X	
Master axis encoder measurement with SSI-Interface	X								X	
Master axis position output								X	X	
Plug-in modules determined:										

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

(1) If the standard interface X4 is not used, there is then no need for the DFF module.

Configuration selection for motor with Indramat gear wheel encoder

Name of configuration:	Table C3: Module combination:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
BE37-01-FW									X	
BE70-01-FW								X	X	
BE27-01-FW					X				X	
BE38-01-FW		X							X	
BE04-02-FW	X								X	
BE65-01-FW					X			X	X	
BE63-01-FW		X						X	X	
BE72-02-FW	X							X	X	
BE88-01-FW					X		X		X	
BE89-01-FW				X			X		X	
BE67-01-FW		X					X		X	
BE90-01-FW	X						X		X	
BE22-01-FW		X			X				X	
BE02-02-FW	X				X				X	
BE03-02-FW	X	X							X	

Fig. 4-6: Configuration Selection for Motor with 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.

Selection of features for motor with EnDat encoder

Features	Table B4: Plug-in modules:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog input	X						X			
Digital input/output	X	X								
Ext. measurement system with Heidenhain sine encoder	X					X				
Ext. measurement system with Heidenhain rectangle encoder	X		X	X						
Ext. measurement system with DSF encoder (1)	X				X					
Ext. measurement system with gear tooth encoder (Indramat)	X								X	
Master axis encoder measurement with DSF ecoder (1)	X				X					
Master axis position output	X							X		
Plug-in modules determined:										

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

(1) If the standard interface X4 is not used, there is then no need for the DFF module.

Configuration selection for motors with EnDat encoder

Name of configuration	Table C4: Module combination:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
BE45-01-FW	X									
BE04-02-FW	X								X	
BE74-02-FW	X	X								
BE72-02-FW	X							X	X	
BE02-02-FW	X				X				X	
BE03-02-FW	X	X							X	
BE72-02-FW	X							X	X	
BE74-02-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, then you can select the desired additional features from the table *Additional features for motors with resolver without FDM + 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 FDM + 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.

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

Features:	Table B5: Plug-in modules:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog input						X	X			
Digital input/output		X				X				
Ext. measurement system with Heidenhain rectangle encoder				X		X				
Ext. measurement system with DSF encoder (1)					X	X				
Ext. measurement system with SSI Interface	X					X				
Ext. measurement system with EnDat encoder	X								X	
Plug-in modules determined:										

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

(1) If the standard interface X4 is not used, then the DFF module is not needed.

**Configuration selection for motors with resolver without FDM
+ sine encoder**

Name of configuration	Table C5: Module combination:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
BE12-01-FW										
BE08-01-FW					X	X				
BT04-01-FW				X		X				
BT01-01-FW	X					X				
BT07-01-FW					X	X	X			
BT06-01-FW				X		X	X			
BT03-01-FW	X					X	X			
BE28-01-FW		X			X	X				
BT05-01-FW		X		X		X				
BT02-01-FW	X	X				X				

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

Motor encoder interface: gear wheel encoder with 1Vss signals

If a motor type was specified for an application where an gear wheel encoder with 1Vss 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 1Vss 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 1Vss 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.

Selection of features for motor with gear wheel encoder with 1Vss signals

	Table B6: Plug-in modules:									
Features:	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
Analog input							X			
Digital input/output		X								X
Ext. measurement system with Heidenhain rectangle encoder				X						X
Ext. measurement system with DSF encoder (1)					X					X
Ext. measurement system with SSI Interface	X									X
Ext. measurement system with EnDat encoder	X									X
Master axis encoder measurement with DSF ecoder (1)					X					X
Master axis encoder measurement with EnDat encoder	X									X
Master axis encoder measurement with SSI-Interface	X									X
Master axis position output								X		X
Plug-in modules determined:										

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

(1) If the standard interface X4 is not used, there is then no need for the DFF module.

**Configuration selection for motors with gear wheel encoder
with 1Vss signals**

Name of configuration	Table C6: Module combination:									
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DSA 01.1M	DZF 02.1M	DZF 03.1M
BE79-01-FW										X
BE91-01-FW								X		X
BE92-01-FW					X					X
BE80-01-FW		X								X
BE93-01-FW	X									X
BE94-01-FW					X			X		X
BT13-01-FW		X						X		X
BT14-01-FW	X							X		X
BT15-01-FW					X		X			X
BE99-01-FW				X			X			X
BT08-01-FW		X					X			X
BT09-01-FW	X						X			X
BT10-01-FW		X			X					X
BT11-01-FW	X				X					X
BT12-01-FW	X	X								X

Fig. 4-12: Configuration Selection for Motor with gear wheel encoder with 1Vss signals

Directory of Customer Service Centers

Customer Service Locations

Germany

<p>Sales area Center</p> <p>INDRAMAT GmbH D-97816 Lohr am Main Bgm.-Dr.-Nebel-Str. 2 Telefon: 09352/40-4817 Telefax: 09352/40-4989</p>	<p>Sales area East</p> <p>INDRAMAT GmbH D-09120 Chemnitz Beckerstraße 31 Telefon: 0371/3555-0 Telefax: 0371/3555-230</p>	<p>Sales area West</p> <p>INDRAMAT GmbH D-40880 Ratingen Harkortstraße 25 Telefon: 02102/4318-0 Telefax: 02102/41315</p>	<p>Sales area North</p> <p>INDRAMAT GmbH D-22525 Hamburg Kieler Str.212 Telefon: 040/853157-0 Telefax: 040/853157-15</p>
<p>Sales area South</p> <p>INDRAMAT GmbH D-80339 München Ridlerstraße 75 Telefon: 089/540138-30 Telefax: 089/540138-10</p>	<p>Sales area South-West</p> <p>INDRAMAT GmbH D-71229 Leonberg Böblinger Straße 25 Telefon: 07152/972-6 Telefax: 07152/972-727</p>		<p>INDRAMAT Service-Hotline</p> <p>INDRAMAT GmbH Telefon: D-0172/660 040 6 -oder- Telefon: D-0171/333 882 6</p>

Customer service locations in Germany

Europe

<p>Austria</p> <p>G.L.Rexroth Ges.m.b.H. Geschäftsbereich INDRAMAT Hägelingasse 3 A-1140 Wien Telefon: +43 1/985 25 40-400 Telefax:+43 1/985 25 40-93</p>	<p>Austria</p> <p>G.L.Rexroth Ges.m.b.H. Geschäftsbereich INDRAMAT Randlstraße 14 A-4061 Pasching Telefon: +43 7229/644 01-36 Telefax: +43 7229/644 01-80</p>	<p>Belgium</p> <p>Mannesmann Rexroth N.V.-S.A. Geschäftsbereich INDRAMAT Industrielaan 8 B-1740 Ternat Telefon: +32 2/582 31 80 Telefax: +32 2/582 43 10</p>	<p>Denmark</p> <p>BEC AS Zinkvej 6 DK-8900 Randers Telefon: +45 87/11 90 60 Telefax: +45 87/11 90 61</p>
<p>England</p> <p>Mannesmann Rexroth Ltd. INDRAMAT Division Broadway Lane, South Cerney Cirencester, Glos GL7 5UH Telefon: +44 1285/86 30 00 Telefax: +44 1285/86 30 03</p>	<p>Finnland</p> <p>Rexroth Mecman OY Riihimiehentie 3 SF-01720 Vantaa Telefon: +358 9/84 91 11 Telefax: +358 9/84 63 87</p>	<p>France</p> <p>Rexroth - Sigma S.A. Division INDRAMAT Parc des Barbanniers 4, Place du Village F-92632 Gennevilliers Cedex Telefon: +33 1/41 47 54 30 Telefax: +33 1/47 94 69 41</p>	<p>France</p> <p>Rexroth - Sigma S.A. Division INDRAMAT 17, Loree du Golf F-69380 Dommartin Telefon: +33 4/78 43 56 58 Telefax: +33 4/78 43 59 05</p>
<p>France</p> <p>Rexroth - Sigma S.A. Division INDRAMAT 270, Avenue de lardenne F-31100 Toulouse Telefon: +33 5/61 49 95 19 Telefax: +33 5/61 31 00 41</p>	<p>Italy</p> <p>Rexroth S.p.A. Divisione INDRAMAT Via G. Di Vittoria, 1 I-20063 Cernusco S/N/MI Telefon: +39 2/923 65-270 Telex: 331695 Telefax: +39 2/92 36 55 12</p>	<p>Italy</p> <p>Rexroth S.p.A. Divisione INDRAMAT Via Borgomanero, 11 I-10145 Torino Telefon: +39 11/771 22 30 Telefax: +39 11/771 01 90</p>	<p>Netherlands</p> <p>Hydraudyne Hydrauliek B.V. Kruisbroeksestraat 1a P.O. Box 32 NL-5280 AA Boxtel Telefon: +31 41 16/519 51 Telefax: +31 41 16/514 83</p>
<p>Spain</p> <p>Rexroth S.A. Centro Industrial Santiago Obradors s/n E-08130 Santa Perpetua de Mogoda (Barcelona) Telefon: +34 3/7 47 94 00 Telefax: +34 3/7 47 94 01</p>	<p>Spain</p> <p>Goimendi S.A. División Indramat Jolastokieta (Herrera) Apartado 11 37 San Sebastian, 20017 Telefon: +34 43/40 01 63 Telex: 361 72 Telefax: +34 43/39 93 95</p>	<p>Sweden</p> <p>AB Rexroth Mecman INDRAMAT Division Varuvägen 7 S-125 81 Stockholm Telefon: +46 8/727 92 00 Telefax: +46 8/64 73 277</p>	<p>Switzerland</p> <p>Rexroth SA Département INDRAMAT Chemin de l'Ecole 6 CH-1036 Sullens Telefon:+41 21/731 43 77 Telefax: +41 21/731 46 78</p>
<p>Switzerland</p> <p>Rexroth AG Geschäftsbereich INDRAMAT Gewerbstraße 3 CH-8500 Frauenfeld Telefon: +41 52/720 21 00 Telefax: +41 52/720 21 11</p>	<p>Russia</p> <p>Tschudnenko E.B. Arsenia 22 153000 Ivanovo Rußland Telefon: +7 93/22 39 633</p>		

European Customer service locations without Germany

Outside Europe

<p>Argentina</p> <p>Mannesmann Rexroth S.A.I.C. Division INDRAMAT Acassusso 48 41/7 1605 Munro (Buenos Aires) Argentina</p> <p>Telefon: +54 1/756 01 40 +54 1/756 02 40 Telex: 262 66 rexro ar Telefax: +54 1/756 01 36</p>	<p>Argentina</p> <p>Nakase Asesoramiento Tecnico Diaz Velez 2929 1636 Olivos (Provincia de Buenos Aires) Argentina Argentina</p> <p>Telefon +54 1/790 52 30</p>	<p>Australia</p> <p>Australian Industrial Machinery Services Pty. Ltd. Unit 3/5 Home ST Campbellfield VIC 2061 Australia</p> <p>Telefon: +61 3/93 59 0228 Telefax: +61 3/93 59 02886</p>	<p>Brazil</p> <p>Mannesmann Rexroth Automação Ltda. Divisão INDRAMAT Rua Georg Rexroth, 609 Vila Padre Anchieta BR-09.951-250 Diadema-SP Caixa Postal 377 BR-09.901-970 Diadema-SP</p> <p>Telefon: +55 11/745 90 65 +55 11/745 90 70 Telefax: +55 11/745 90 50</p>
<p>Canada</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>China</p> <p>Rexroth (China) Ltd. Shanghai Office Room 206 Shanghai Intern. Trade Centre 2200 Yanan Xi Lu Shanghai 200335 P.R. China</p> <p>Telefon: +86 21/627 55 333 Telefax: +86 21/627 55 666</p>	<p>China</p> <p>Rexroth (China) Ltd. Shanghai Parts & Service Centre 199 Wu Cao Road, Hua Cao Minhang District Shanghai 201 103 P.R. China</p> <p>Telefon: +86 21/622 00 058 Telefax: +86 21/622 00 068</p>	<p>China</p> <p>Rexroth (China) Ltd. 1430 China World Trade Centre 1, Jianguomenwai Avenue Beijing 100004 P.R. China</p> <p>Telefon: +86 10/50 50 380 Telefax: +86 10/50 50 379</p>
<p>China</p> <p>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>Hongkong</p> <p>Rexroth (China) Ltd. 19 Cheung Shun Street 1st Floor, Cheung Sha Wan, Kowloon, Honkong</p> <p>Telefon: +852 2741 13 51/-54 und +852 741 14 30 Telex: 3346 17 GL REX HX Telefax: +852 786 40 19 +852 786 07 33</p>	<p>India</p> <p>Mannesmann Rexroth (India) Ltd. INDRAMAT Division Plot. 96, Phase III Peenya Industrial Area Bangalore - 560058</p> <p>Telefon: +91 80/839 21 01 +91 80/839 73 74 Telex: 845 5028 RexB Telefax: +91 80/839 43 45</p>	<p>Japan</p> <p>Rexroth Co., Ltd. INDRAMAT Division I.R. Building Nakamachidai 4-26-44 Tsuzuki-ku, Yokohama 226 Japan</p> <p>Telefon: +81 45/942-72 10 Telefax: +81 45/942-03 41</p>
<p>Korea</p> <p>Rexroth-Seki Co Ltd. 1500-12 Da-Dae-Dong Saha-Gu, Pusan, 604-050</p> <p>Telefon: +82 51/264 90 01 Telefax: +82 51/264 90 10</p>	<p>Korea</p> <p>Seo Chang Corporation Ltd. Room 903, Jeail Building 44-35 Yoido-Dong Youngdeungpo-Ku Seoul, Korea</p> <p>Telefon: +82 2/780-82 07 ~9 Telefax: +82 2/784-54 08</p>	<p>Mexico</p> <p>Motorización y Diseño de Controles, S.A. de C.V. Av. Dr. Gustavo Baz No. 288 Col. Parque Industrial la loma Apartado Postal No. 318 54060 Tlalnepantla Estado de Mexico</p> <p>Telefon: +52 /397 86 44 Telefax: +52 /398 98 88</p>	
<p>USA</p> <p>Rexroth Corporation INDRAMAT Division 5150 Prairie Stone Parkway Hoffman Estates, Illinois 60192</p> <p>Telefon: +1 847/645-36 00 Telefax: +1 847/645-62 01</p>	<p>USA</p> <p>Rexroth Corporation INDRAMAT Division 2110 Austin Avenue Rochester Hills, Michigan 48309</p> <p>Telefon: +1 810/853-82 90 Telefax: +1 810/853-82 90</p>	<p>USA</p> <p>Rexroth Corporation INDRAMAT Division Northeastern Sales Office 7 Columbia Blvd. Peabody, MA 019660</p> <p>Telefon: +1 508/531-25 74 Telefax: +1 508/531-2574</p>	<p>USA</p> <p>Rexroth Corporation INDRAMAT Division Southeastern Sales Office 3625 Swiftwater Park Drive Suwanee, GA 30174</p> <p>Telefon: +1 770/932 3200 Telefax: +1 770/932-1903</p>

Customer service locations outside Europe

