

## DIAX04 Drive With Servo Function

Drive Configuration: SSE 02VRS

**SYSTEM200**

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<b>Purpose of Documentation</b>	<p>This documentation serves to identify the designation for a configured drive of the DIAX04 drive family, based on:</p> <ul style="list-style-type: none"> <li>• Determining the motor type</li> <li>• Choosing the motor - motor feedback combination</li> <li>• Choosing the desired function of the drive control device</li> </ul>

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

**Record of Revisions**

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## Notes

# 1 Determining Drive Configuration

## 1.1 Explanation of Terms

Digital drive controllers of the type DIAX04 from Rexroth 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 not fitted with plug-in modules are basic units. The following are available:

- HDS 04.1 4 plug-in modules (U1-U4) + software module U5
- HDS 03.1 4 plug-in modules (U1-U4) + software module U5
- HDS 02.1 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

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**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.

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**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.

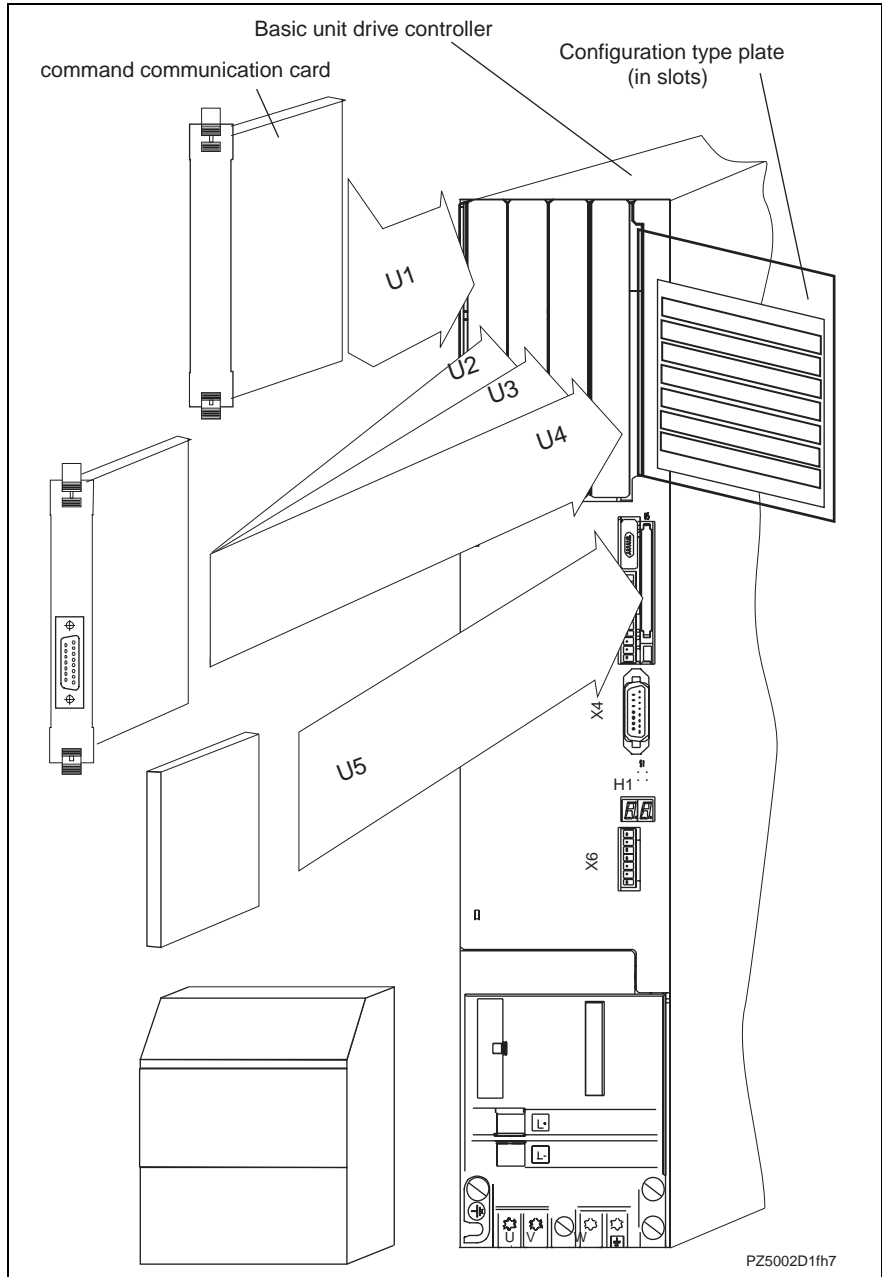


Fig. 1-1: Components of a hardware configuration for HDS

## 1.2 Procedure

To determine the drive configuration or to specify the hardware configuration labelling 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 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

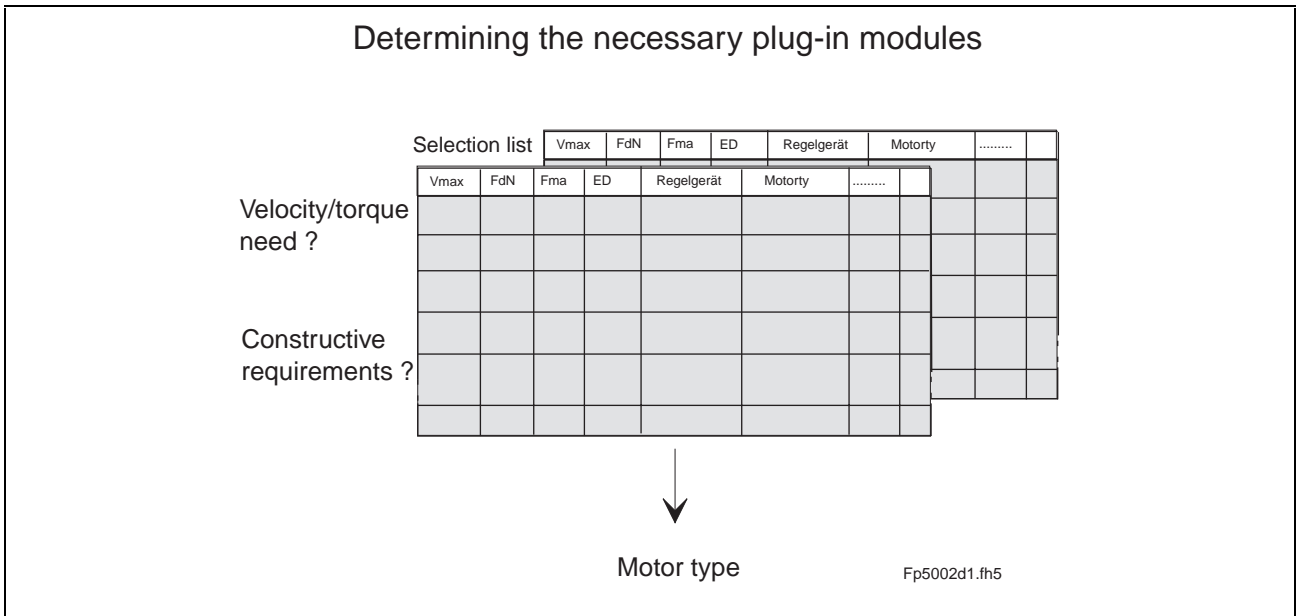


Fig. 1-2: Illustration for working with selection lists



### Illustration: Determining the hardware configuration labelling

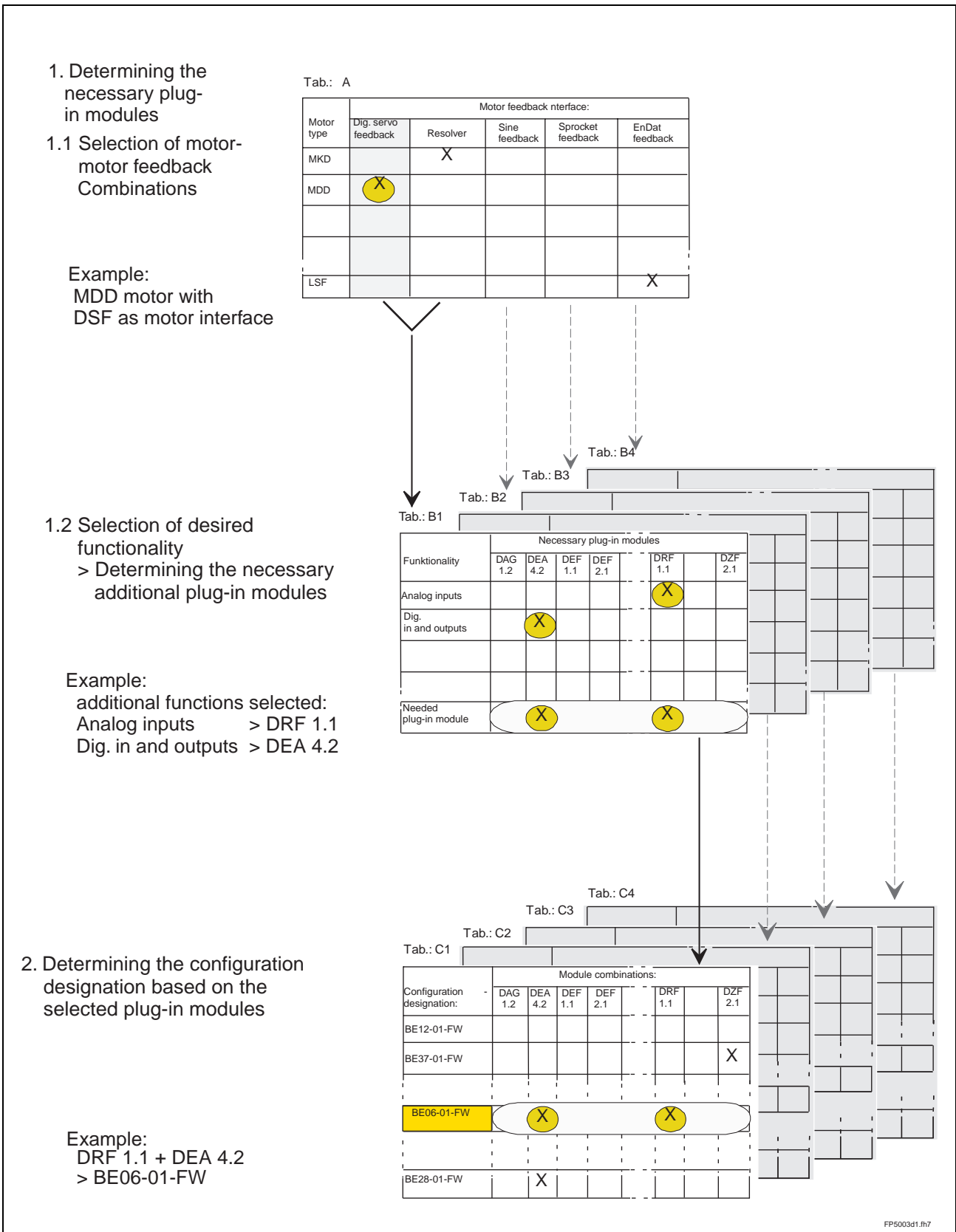


Fig. 1-3: Illustration for determining configuration labelling

## 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 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.

Motor feed-back type	Tab A: Motor encoder interface							
	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: Permissible motor type - motor/feedback combinations

- (1) : singleturn or multiturn HSF
- (2) : resolver or multiturn 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 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.

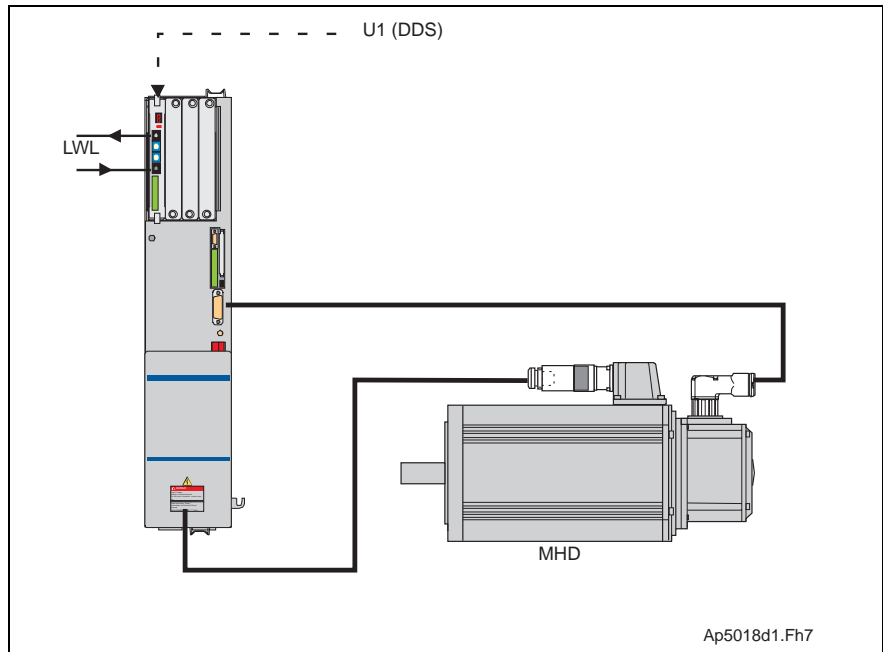


Fig. 3-5: MDD motor with HSF motor encoder to standard interface

### Sine encoder

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

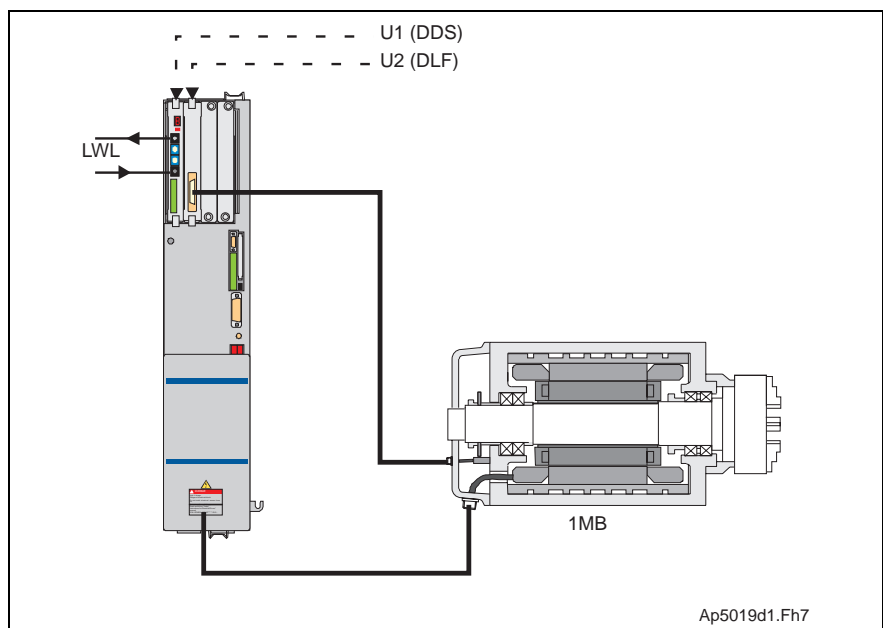


Fig. 3-6: 1MB motor with incremental sine encoder from Heidenhain, connected to a DLF01.1M module

### Rexroth Indramat gear wheel encoder

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

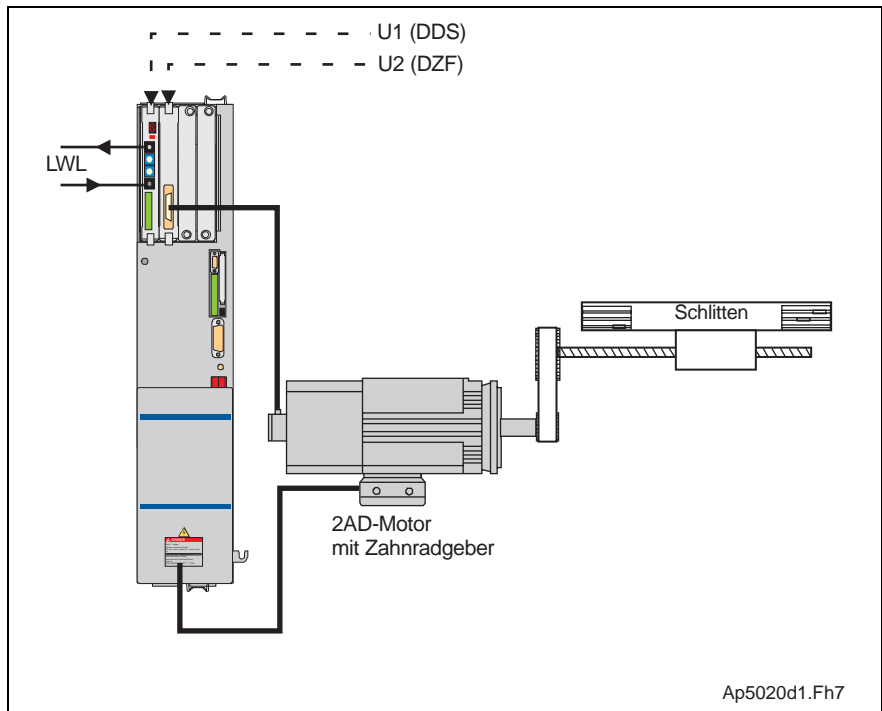


Fig. 3-7: 2AD motor with gear wheel encoder, connected to a DZF02.1M module

### EnDat encoder

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

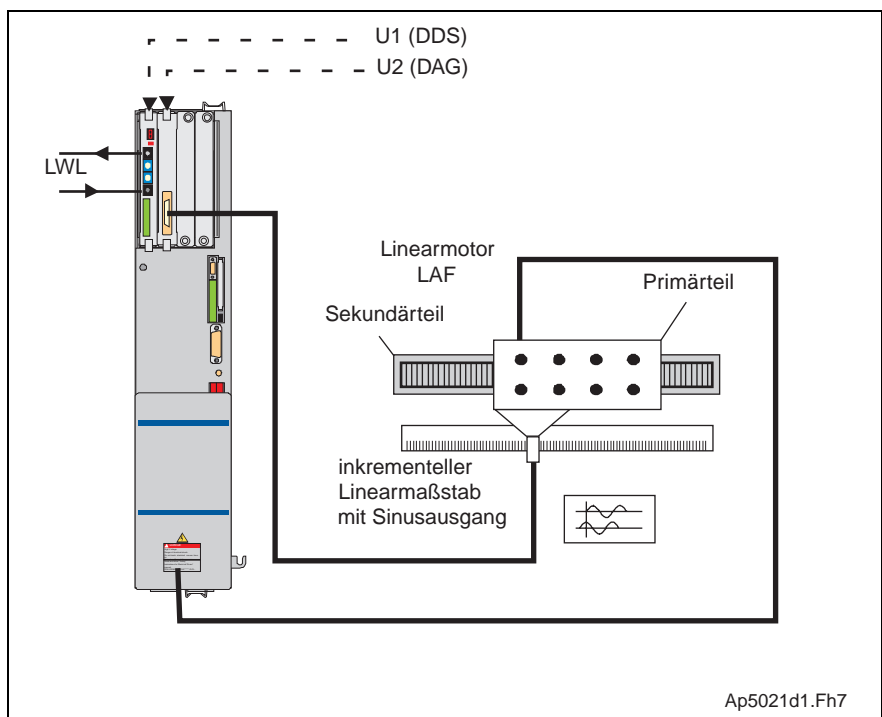


Fig. 3-8: LAF motor with EnDat encoder, connected to a DAG01.2M module

## Resolver without feedback data memory + sine encoder

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

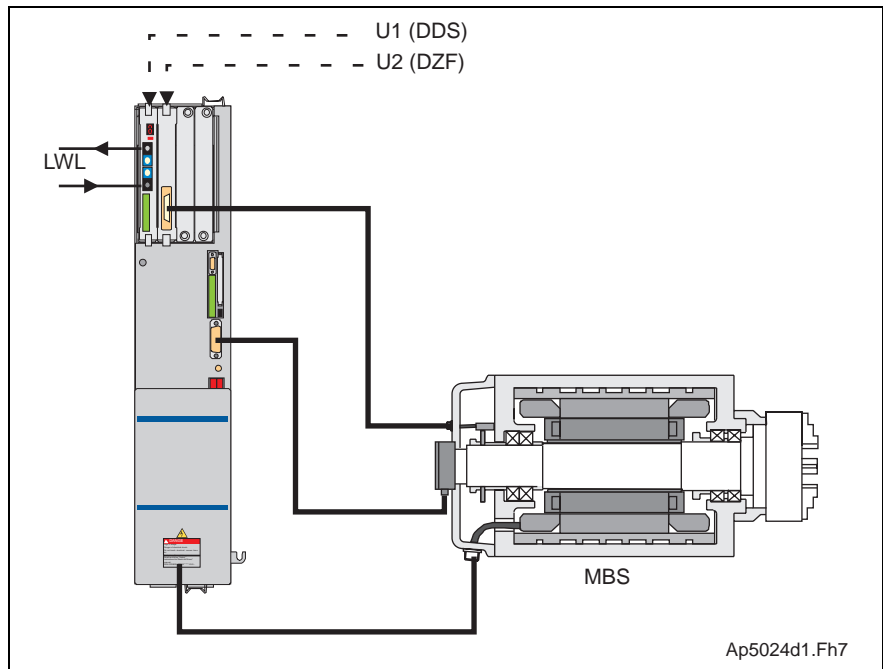


Fig. 3-9: MBS motor with sine encoder on a DLF01.1M plug-in module

## Gear wheel encoder with 1Vpp signals

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

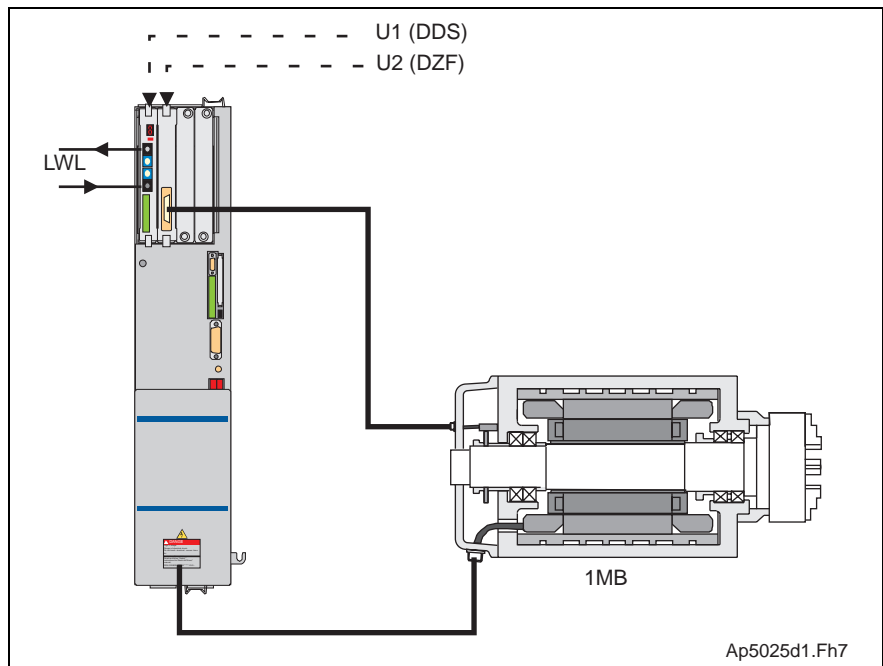


Fig. 3-10: 1MB motor with gear wheel encoder with 1Vpp signals on a DZF03.1M plug-in module



## 4 Selecting Features - Determining Configuration Labeling

### 4.1 Basic Features

Independent of the motor type in use, a 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-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** 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- <b>HD12</b> -01-FW	1 plug-in module / axis
HDD 02.*-W040N- <b>HD32</b> -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 or a resolver 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 labelling 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	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DZF 02.1M	DZF 03.1M
Analog input							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 HSF 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	
No additional features									
<b>Plug-in modules determined:</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	Table C1: Module combination								
	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DZF 02.1M	DZF 03.1M
HS12-01-FW									
HS37-01-FW								X	
HS56-01-FW							X		
HS32-01-FW						X			
HS09-01-FW					X				
HS23-01-FW		X							
HS45-01-FW	X								
HS19-01-FW							X	X	
HS27-01-FW					X			X	
HS38-01-FW		X						X	
HS04-02-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							
HS67-01-FW		X					X	X	
HS22-01-FW		X			X			X	
HS02-02-FW	X				X			X	
HS03-02-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		
HS28-01-FW		X			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 labelling 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	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	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 HSF encoder (1)					X	X			
Ext. measurement system with SSI Interface	X					X			
Ext. measurement system with EnDat encoder	X					X			
No additional features						X			
<b>Plug-in modules determined:</b>									

(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	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DZF 02.1M	DZF 03.1M
HS32-01-FW						X			
HS58-01-FW						X	X		
HS08-01-FW					X	X			
HS33-01-FW		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			

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 Rexroth 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 Rexroth 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	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 HSF encoder (1)					X			X	
Ext. measurement system with SSI Interface	X							X	
Ext. measurement system with EnDat Encoder	X							X	
No additional features	X								
<b>Plug-in modules determined:</b>									

(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	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DZF 02.1M	DZF 03.1M
HS37-01-FW								X	
HS27-01-FW					X			X	
HS38-01-FW		X						X	
HS04-02-FW	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	

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	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	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 HSF encoder (1)	X				X				
Ext. measurement system with gear wheel encoder (Indramat)	X							X	
No additional features	X								
<b>Plug-in modules determined:</b>									

(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**

		Table C4: Module combination:							
Name of configuration	DAG 01.2M	DEA 04.2M	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DZF 02.1M	DZF 03.1M
HS45-01-FW	X								
HS04-02-FW	X							X	
HS74-02-FW	X	X							
HS02-02-FW	X				X			X	
HS03-02-FW	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 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.

- 
- 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 FDM + sine encoder

	Table B5: 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	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 HSF encoder (1)					X	X			
Ext. measurement system with SSI Interface	X					X			
Ext. measurement system with EnDat Encoder	X							X	
<b>Plug-in modules determined:</b>									

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

**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	DZF 02.1M	DZF 03.1M
HS12-01-FW									
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			

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 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	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	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 HSF encoder (1)					X				X
Ext. measurement system with SSI Interface	X								X
Ext. measurement system with EnDat Encoder	X								X
No additional features	X								
<b>Plug-in modules determined:</b>									

(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	DEF 01.1M	DEF 02.1M	DFF 01.1M	DLF 01.1M	DAE 02.1M	DZF 02.1M	DZF 03.1M
HS79-01-FW									X
HS92-01-FW					X				X
HS80-01-FW		X							X
HS93-01-FW	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

## Notes



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

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- 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

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

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**+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 betreffenden 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.

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