

X300_HF



Feedbacksystem HIPERFACE®



**Product
Manual**

Further descriptions, that relate to this document:

UL: 07-02-09-01



Product manual 637+

UL: 07-02-10-01



Product manual 637f

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Made in Germany, 2004

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The most important think first

Thanks for your confidence choosing our product.

These operating instructions present themselves as an overview of the technical data and features.

Please read the operating instructions before operating the product.

If you have any questions, please contact your nearest SSD Drives representative. Improper application of the product in combination with dangerous voltage can lead to injuries.

In addition, damage can also occur to motors or other products.

Therefore please observe our safety precautions strictly.

Safety precautions

We assume that, as an expert, you are familiar with the relevant safety regulations, especially in accordance with VDE 0100, VDE 0113, VDE 0160, EN 50178, the accident prevention regulations of the employers liability insurance company and the DIN regulations and that you are able to use and apply them. As well, relevant European Directives must be observed.

Depending on the kind of application, additional regulations e.g. UL, DIN are subject to be observed.

If our products are operated in connection with components from other manufacturers, their operating instructions are also subject to be observed strictly.

1 General

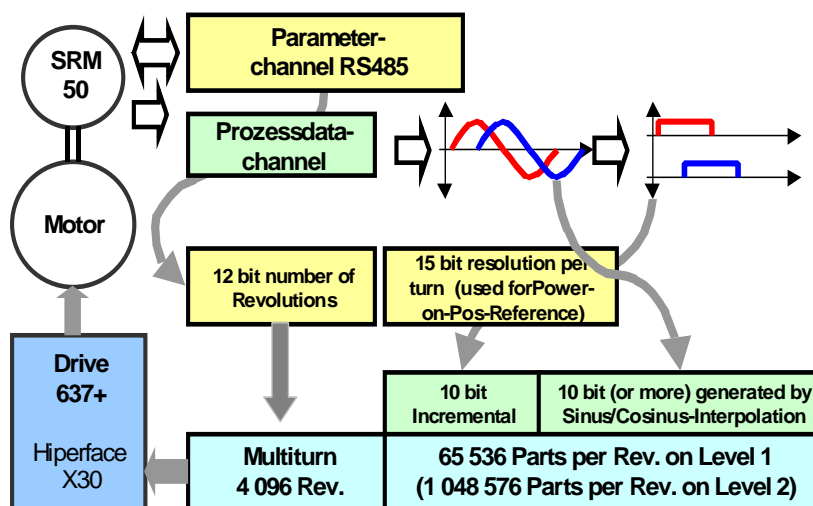
The term “HIPERFACE[®]” is derived from “High Performance Interface” and typifies a certain kind of connection from encoder towards controller.

The system is a compound of incremental- and absolute-encoder. The absolute value will be generated at power-on the device and transmitted via RS 485 interface to an external counter, which counts further incremental with a sine/cosine track, outgoing from this absolute value. Optional you can choose between a Singleturn or a Multiturn variant.

Advantages of feedback–HIPERFACE[®]–system over the traditional resolver system

- Multiturn – possible
- High resolution possible by sine/cosine–interpolation
- High accuracy
- Operable instantly after power-on, without search for reference

Parameter-channel for Absolute-Pos. and general Data
 Prozessdata-channel for Analog Sin- and Cos- signal



Technical data	Version LEVEL 1	Version LEVEL 2
Encoder-Types		being prepared
Stegmann SRS (Singleturn)	Ok	
Stegmann SRM (Multiturn) 4096 Revolutions	Ok	
Number of sine- cosineperiod per revolution	1024	
Encoder - EEPROM	Not used	
Baudrate RS485	9600 Baud	
Position - Preset	Stored in EEPROM of drive	
Max. Speed	6000 min ⁻¹	
Validated resolution per turn	65536	
Speed - Ripple (reference – measurements AC MHM 0090-4/1-3)	< 0,3% bei 4000 min ⁻¹	
Max. mechanical Position - Error	+/-0,75 min.	
FIRMWARE 637+ Version	>=6.13	
EASYRIDER Version	>=6.15	



Important!

Kindly note Chapter 7: Maintenance, Repair and Service

General

Singleturn:

At applications of HIPERFACE® motors AC MHS only one revolution can be absolute resolved. The handling does not differ from Resolver handling generally.

Multiturn:

HIPERFACE® motors AC MHM provide an absolute resolution of 4096 revolutions. The absolute position is available instantly (without search for reference).
At initial start-up or replacement of motor or controller, an absolute position related to the mechanical system must be set and power fail-safe stored. (see Chapter 6, Step 4)

Operation of motors from other manufacturers:

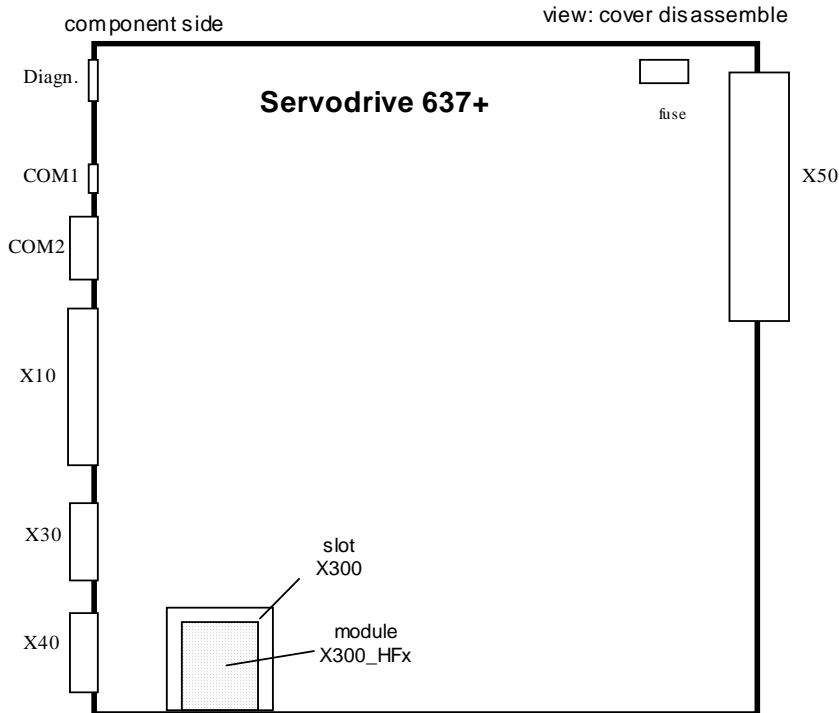
Operation of motors from other manufacturers requires general consultation with SSD Drives, especially for evaluation of proper encoder adjusting parameters.

Machine starting:

By power-on a servo axis, the absolute position mechanical stored in the encoder will be transmitted via parameter channel.
To prevent position errors at starting, the motor should not move as possible during power-on.

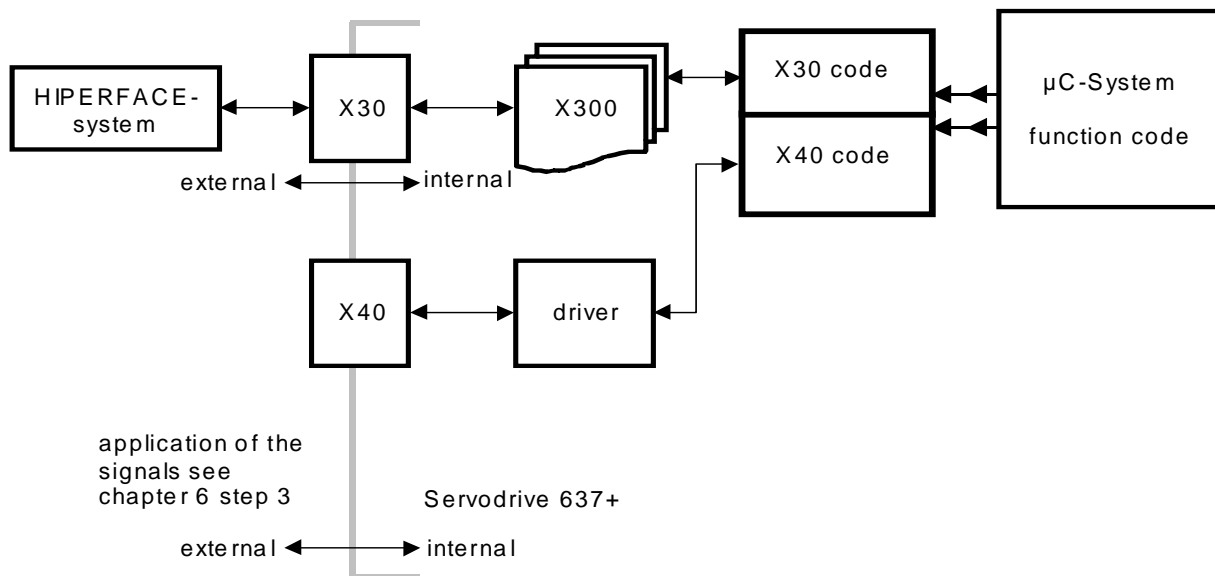
2 Mechanical design

Layout of controller board



Note: The module X300_HFx can only be reached after removing the cooling plate.

3 Electrical block diagram



4 Electric connector

Hiperfac connector

motorside

SSD Drives - motor size 1...3

Model: AC MHS / MHM

regulator side

SSD Drives - servo drive

Model: 637+/637f

view solderside

keying

case - black

view solderside

SIR	KIR-B		SUB - D 09 S/M
ST.0200.0001	KA.0003.6301		ST.1002.2001
PIN - Nr.	colouer	function	PIN - Nr.
1	white	sin +	4
2	brown	Ref sin	8
3	green	cos +	3
4	yellow	Ref cos	7
9	pink	Data +	9
10	gray	Data -	5
11	red	10 VDC	2
12	blue	GND	1
case		screen	case

				Maßstab / scale:			
				Typ / model:		KK H MHx-xx.x/B	
		Bear.	22.04.02	DL	Bezeichnung / designation: Blue Hiperface cable for SSD Drives AC MHS / MHM motors and 637+/637f servo drives		
		Gep.	23.04.02	EH			
		Norm					
				Zeichnungsnummer / drawing No:			Z-RK.8630.xxxx Blatt sheet 1
01	637f	16.04.03	DL				
Zust	Änderung	Datum	Name	Ursprung	Dateiname / File name: Z-RK-8630-E.cdr		

Kindly note keying of plugs / motor flange connectors !

Important:

The signals of the HIPERFACE® encoder are sensitive signals with low amplitude of 0,5 V. Please take special care of correct screening of the encoder cable and the motor cable. Further on motor cables and encoder cables must run separately. Please observe minimum space of 300 mm.

Note:

Setting in software EASYRIDER® Windows
 Configuration – Motor – Temperature sensor **sensor type “NTC“**

5 Commissioning / Configuration



CAUTION !

**Wiring errors or incompatible operation may cause unpredictable motions.
Avoid danger for men and machine !**

Preparation

- Expertise of function scope of 637+ servo controller (see documentation 07-02-09-01)
- For PC-link use the SSD Drives communication software EASYRIDER® Windows. This chapter presumes the knowledge how to handle EASYRIDER. Suggestions: Use testequipment to train yourself. EASYRIDER® - Windows contains interactive HELP - functions.
- For security-reasons the access to several functions is blocked by password. Commissioning has to be executed by trained stuff only.
- Users may have their application-adapted commissioning methode when familiar with the product, on their own responsibility.
- The system must be in accordance with all valid safety specifications. The function of all safety equipment (limit-switches for example) have to be checked.

6 HIPERFACE® – Configuration

The following steps relate to special configuration settings for HIPERFACE®.
Know-how of general controller configuration is presupposed.

Step 1

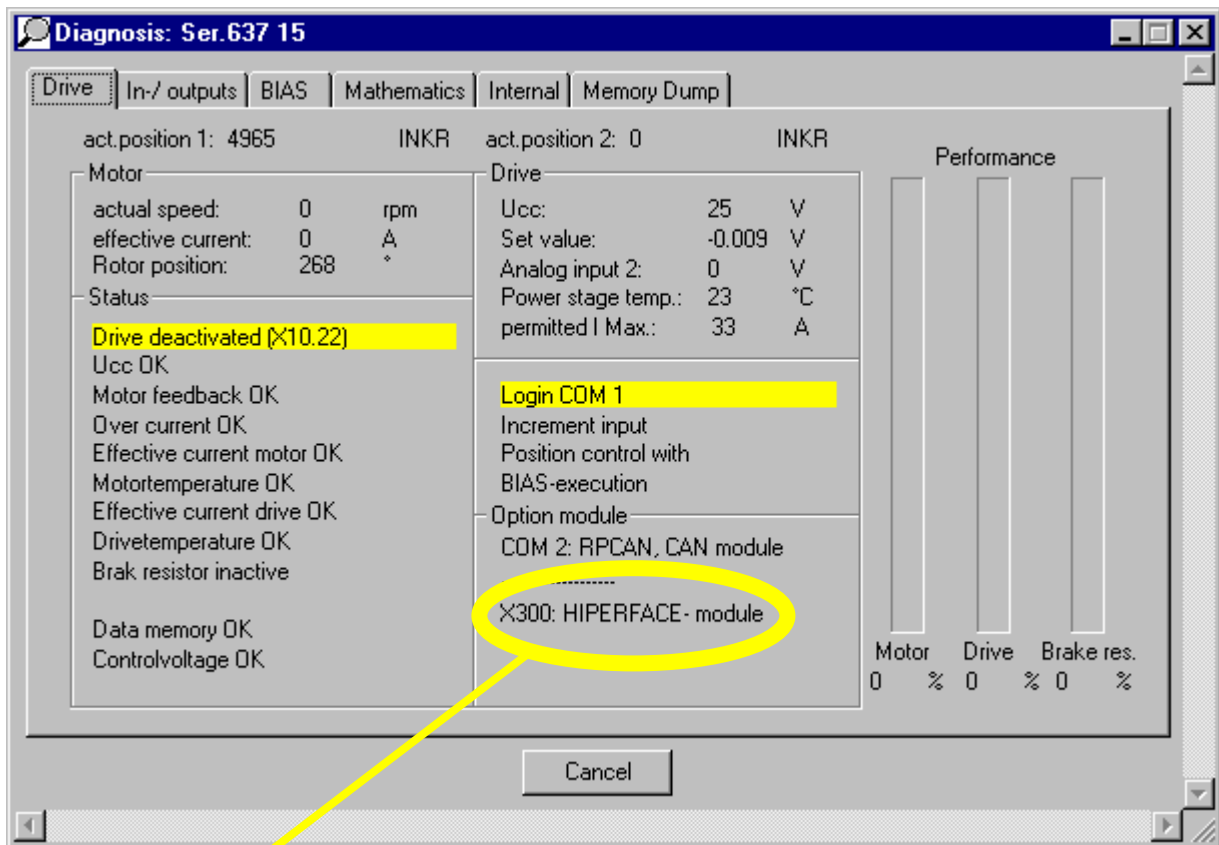
Establishing preconditions

- PC operable with **EASYRIDER® Windows - Software** from Version 6.15 onwards
- Interface connection PC with controller (COM1/RS232) from Firmware 6.13 onwards
- Connection HIPERFACE® with controller (X30 connection)
- Control supply voltage +Us (24 V DC) power-on

Step 2

Menu: **Diagnosis \ Diagnosis Drive**

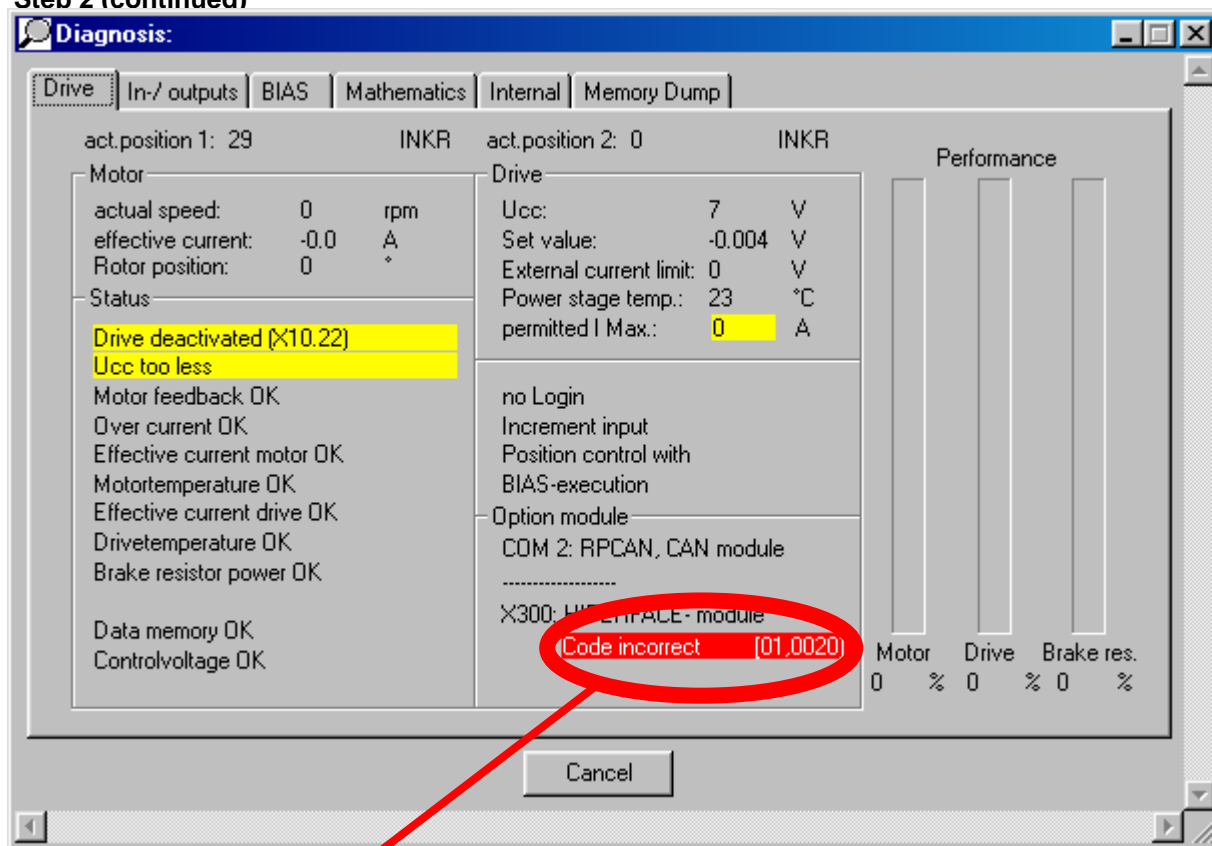
press F9



If HIPERFACE® module X300_HFx is identified by software - further with Step 3

HIPERFACE® – Configuration

Step 2 (continued)



Status report appears under fault condition only

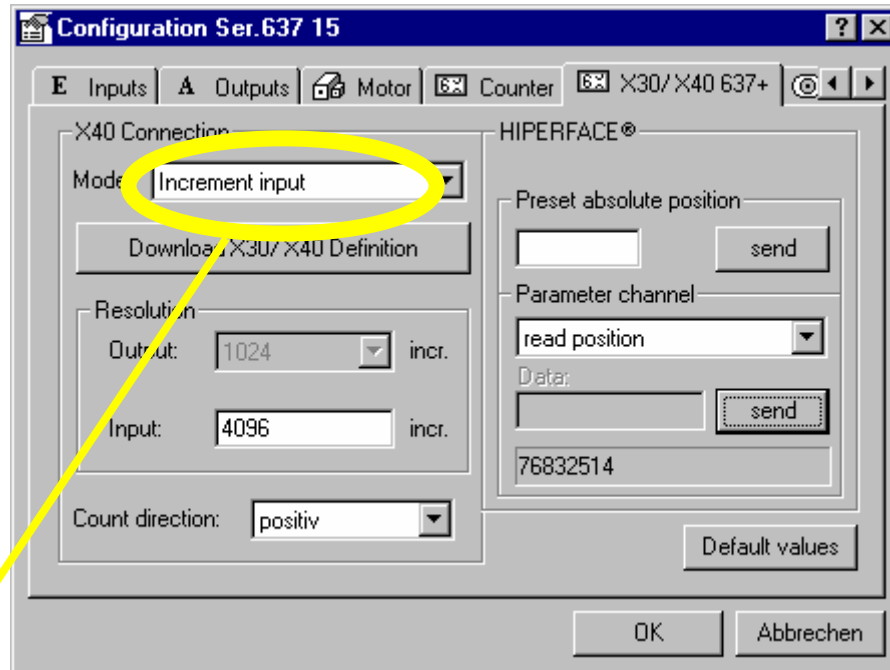
Status reports possible	Interpretation / Cause	Counter-measure
no module	no X300 module mounted	mount module
unknown module	the module identification is not known to the Firmware	load more recent Firmware replace module
module not supported	module is not supported by the Firmware	load more recent Firmware
Code unknown	Firmware does not support this (more recent) code	load more recent Firmware
Code not up to date	this code is not supported by the Firmware	load more recent function code
wrong Code	loaded code does not suit the X300 module	load proper function code
Code incorrect	code does not suit the X40 setting	check X40 configuration
download error	at download of X30/X40 function code an error occurred	re-load funktion code

HIPERFACE® – Configuration

Step 3

Menu: Configuration \ X30/X40 637+

X40 Connection / Mode:



Select as X40 connection mode: Increment input or Increment output.

For detailed X40 operating mode instructions please see 637+ manual 07-02-09-01 Chapter 2.5.

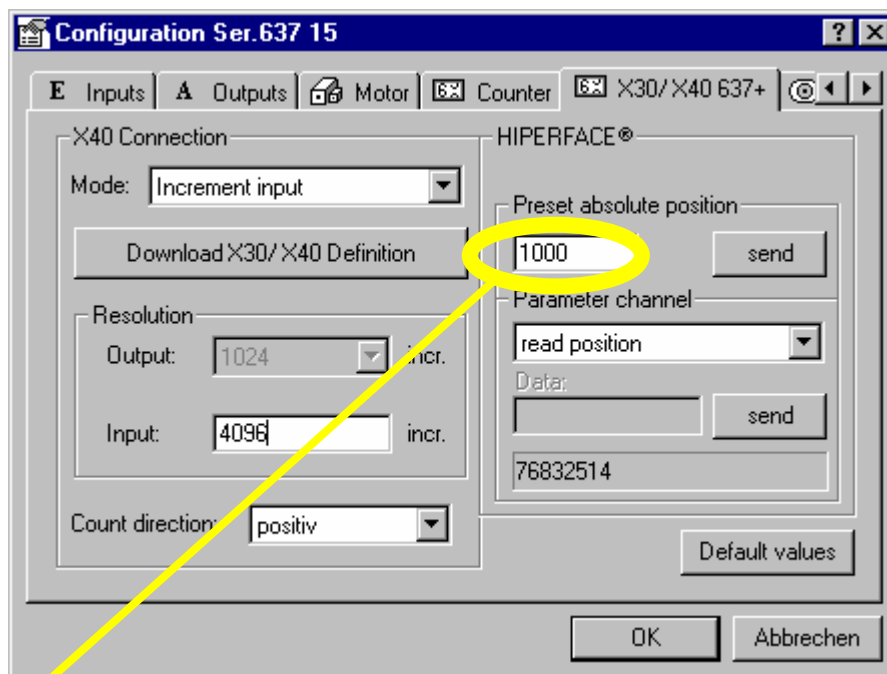
X40 Connection / Download X30/X40 Definition

By pressing the button **Download X30/X40 Definition** the corresponding function code will be loaded and stored in the controller. Close procedure with F7 (storing of mode specifier). After Power-ON – Reset (US 24 V DC off and restart) the selected configuration will be active.

HIPERFACE® – Configuration

Step 4

Menu: **Configuration \ X30/X40 637+**
HIPERFACE® / Preset absolute position



The absolute position will be defined by a numerical date between 0 and 268,435,455 (increments).

By pressing the button **send** the absolute position will be set.

To prevent loss of just made modifications at power-off, you should store them power fail-safe! [F7]

Please note:

Negative values are not valid. Therefore the machine zero point must always be selected below the low-end travel range. It must never lie within the travel range!

Travel range = (end position +) – (end position -)

Recommendation:

Reference position = (end position -) – 1000 increments

Fixing absolute position

Procedure	Installing
mathematical	mathematically by mechanical data (1 motor shaft revolution = 65536 increments)
experimental	determination by manual intervention or crawl speed along to mechanical end positions. Read out end positions in menu Diagnosis.

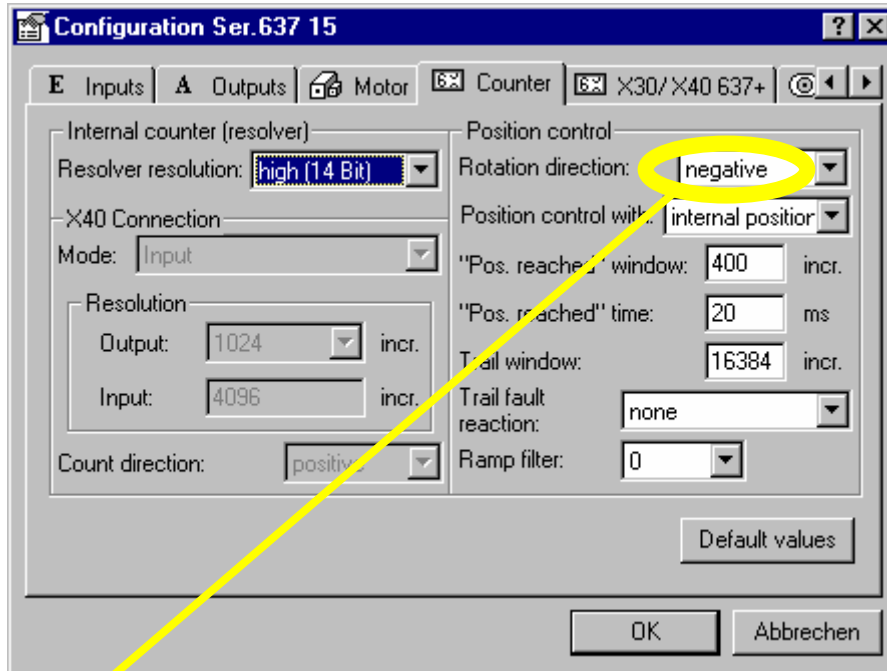
Absolute position value = actual position – reference position

HIPERFACE® – Configuration

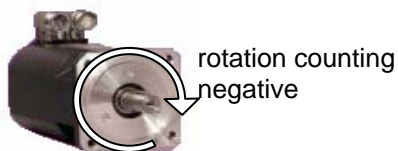
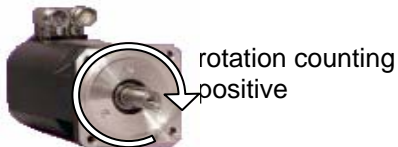
Step 5

Menu: **Configuration \ Counter**

Position control / Rotation direction:



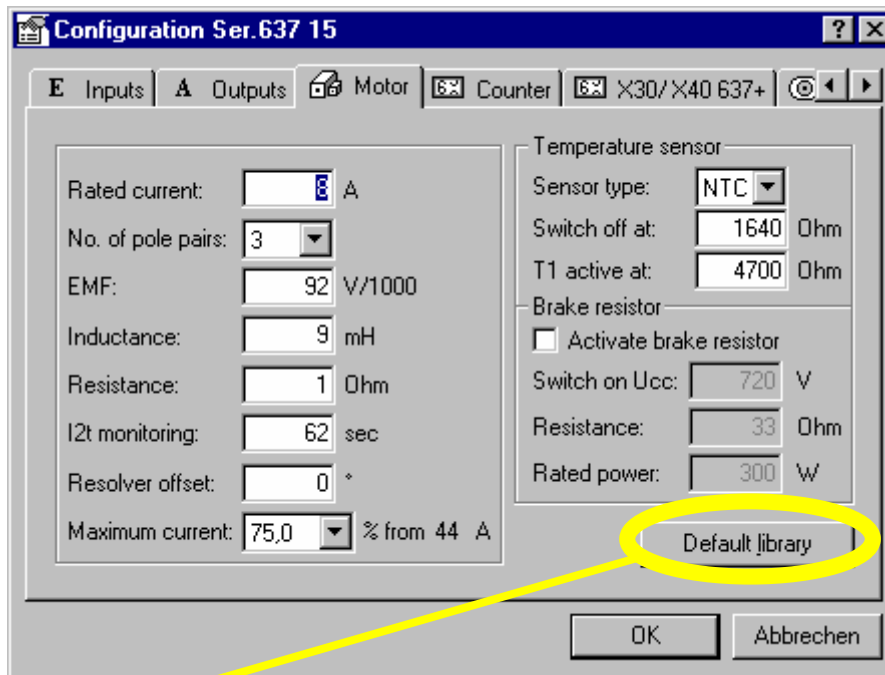
Entry of rotation direction negative (default value) results in the following rotational counting



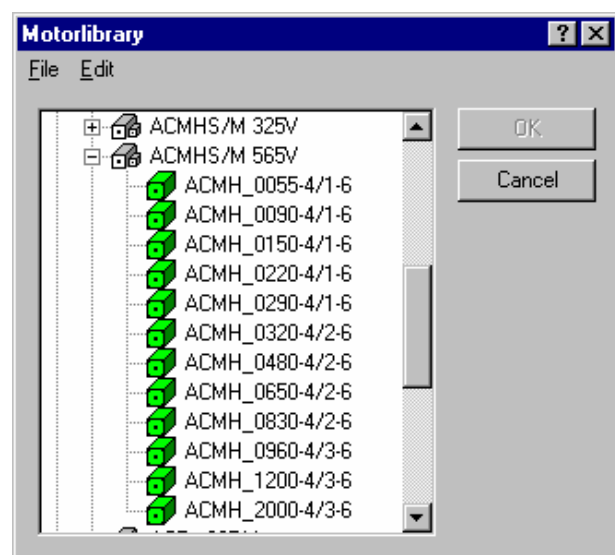
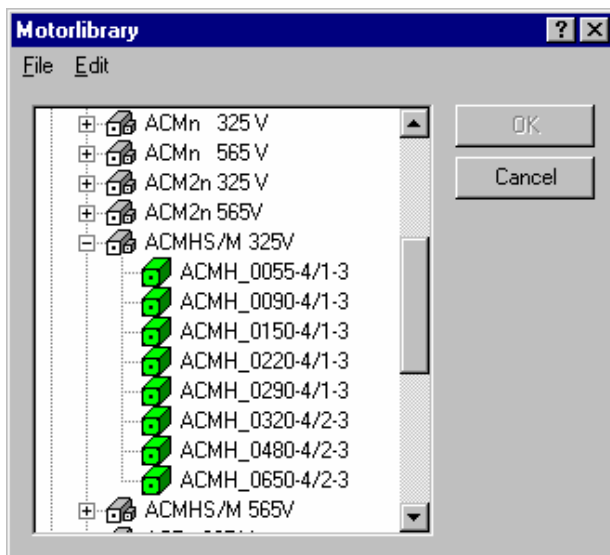
HIPERFACE® – Configuration

Step 6

Menu: Configuration \ Motor



Please select the corresponding HIPERFACE® motor from the default library.

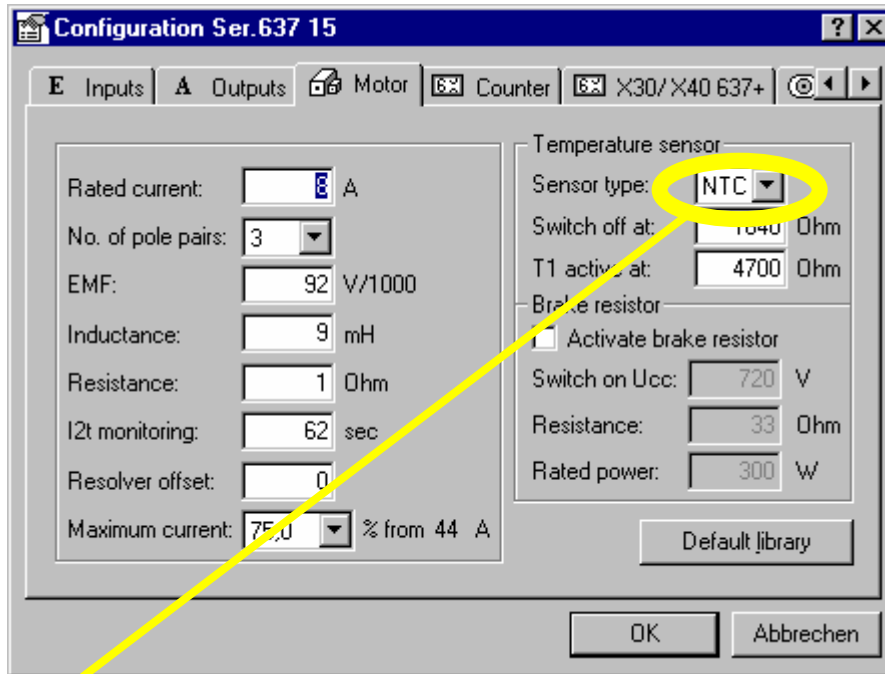


HIPERFACE® – Configuration

Step 7

Menu: **Configuration \ Motor**

Temperature sensor / Sensor type:



At HIPERFACE® motors, the motor–thermistor interpretation is not activ in standard. Therefore the sensor type has to be adjusted to NTC.

7 Maintenance, Repair and Service



General:

Services or repairs should be carried out by **SSD DRIVES** personnel only!

Please note:

Motor will be shipped with mechanical adjusted encoder (instead of resolver).
It is not possible to handle motor and encoder as separate components.

Warning:

For Speed-Loop-Tuning, too high loop-gain may generate torsion-resonances.

Important:

At initial start-up, in case of Multiturn-encoders, initial position-preset must be performed using EASYRIDER PC-software. This is also needed after replacement of HIPERFACE[®] motors.
(see Chapter 6, Step 4)

8 Modification Record

Version	Modification	Chapter	Date	Name	Comment
0102	-	-	14.05.2002	M.Dewald	new
0204	SSD Drives		25.11.2004	N. Dreilich	Logos

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