

Assembly instruction  
torque motor iTM180-240  
rotation unit.  
Item number: 26740X 0048I

**Manufacturer:**

isel Germany AG

Bürgermeister-Ebert-Str., 40

D-36124, Eichenzell

+49 6659 981 800

+49 6659 981 782

automation@isel.com

www.isel.com

Executive Board: Hugo Isert, Werner Kister, Marcus Walter-Krisch

Supervisory Board: Gunter Zumpf, Lars Rohrlack-Soth, Manuela Hohmann

n.v.

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1	03.08.2021	Erstellung	Christian Bley

## Contents

<b>1</b>	<b>General</b>	<b>7</b>
1.1	Importance of documentation	7
1.2	Scope of delivery	7
1.3	Declaration of incorporation according to Machinery directive 2006/42/EC Annex II B	8
1.4	General data, contact persons	9
1.5	User requirements	9
1.6	Explanation of symbols and instructions	10
1.7	Symbols used in the Assembly instruction and on the machine	11
1.8	List of abbreviations	12
<b>2</b>	<b>Overview</b>	<b>13</b>
2.1	General information	13
2.2	Function overview	13
2.3	Technical data	16
2.3.1	Mechanical data and dimensions	16
2.3.1.1	Dimension sheet iTM 180-240 according to EZ8851	17
2.3.1.2	Dimension sheet iTM 180-240 according to EZ8851	18
2.3.2	Characteristic curves	19
2.3.3	Error list	20
2.4	Type plate	21
<b>3</b>	<b>Safety</b>	<b>22</b>
3.1	Operator's liability	22
3.2	Intended use	23
3.2.1	Reasonably foreseeable misuse	23
3.3	Safety instructions	23
3.3.1	General safety instructions	24
3.3.2	Special safety instructions	24
3.3.3	Fire protection	26
3.4	Personal Protective Equipment	26
<b>4</b>	<b>Transport</b>	<b>27</b>
<b>5</b>	<b>Assembly and commissioning</b>	<b>28</b>
5.1	Assembly	28
5.1.1	Commissioning	29
<b>6</b>	<b>Maintenance, repair</b>	<b>30</b>
6.1	Cleaning	30
<b>7</b>	<b>Dismantling and disposal</b>	<b>31</b>

## List of figures

Fig. 1 - Characteristics torque motor iTM 180-48 .....	19
Fig. 2 - Characteristics torque motor iTM 180-320 .....	19
Fig. 3 - Characteristics torque motor iTM 240-48 .....	19
Fig. 4 - Characteristics torque motor iTM 240-320 .....	20
Fig. 5 - Type plate .....	21
Fig. 6 - Mounting instruction torque motor iTM 180-240 .....	28

## List of tables

Table 1 - Pin assignment connector (Mixed D-Sub connector) .....	13
Table 2 - Pin assignment connector power 320V (M23, 8-pin).....	14
Table 3 - Pin assignment connector power 48V (M23, 6-pin).....	14
Table 4 - Assignment signals (M23, 17-pin) .....	15
Table 5 - Technical data iTM.....	16

# 1 General

Dear Customer,

Dear operator,

with this Assembly instruction we would like to support you in your work with the torque motor iTM 180-240 hereinafter referred to as the machine. It contains information and everything you need to know about the machine and will be a helpful companion for you.

## NOTE



Before commissioning the machine, working with the machine or making additions or changes to the electrical installation of the machine/in the control cabinet of the machine, be sure to read carefully:

- > the safety instructions in this Assembly instruction as well as
- > the safety instructions for the attachment parts in the applicable documents.

If you still have questions, please contact us. Despite all due care, we cannot rule out printing errors and mistakes. If you notice any printing errors or mistakes, or if you see any possibilities for improving our technical documentation, we would be grateful for any information or suggestions!

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## 1.1 Importance of documentation

This Assembly instruction and the related documentation are a part of the rotation unit. The operator is obliged to keep the Assembly instruction for the entire service life of the rotation unit and to grant access to the personnel working with the machine.

If the rotation unit undergoes modifications, the Assembly instruction and associated documentation shall be revised accordingly. If the rotation unit is dismantled and reassembled at a new location, the owner is obliged to pass on the Assembly instruction and the associated documentation to the new owner.

The Assembly instruction in German language is the original Assembly instruction. All other language versions are translations of the original Assembly instruction.

## 1.2 Scope of delivery

The scope of delivery of the torque motor iTM 180-240 includes:

- Assembly instructions with declaration of incorporation according to Machinery directive 2006/42/EC
- torque motor iTM 180-240
- associated/s motor cable

## 1.3 Declaration of incorporation according to Machinery directive 2006/42/EC Annex II B

The manufacturer

isel Germany AG  
Bürgermeister-Ebert-Str., 40  
D-36124, Eichenzell

hereby declares that the following product

product description:	rotation unit iTm 180-240
model name:	iTm 180-240
item number:	26740X 0048I

meets the essential health and safety requirements of Machinery directive 2006/42/EC Annex II.

### The following harmonized norms were applied:

DIN EN ISO 12100:2011-03	Safety of machinery - General principles for design - Risk assessment and risk reduction.
DIN EN 60204-1:2019-06; VDE 0113-1:2019-06	DIN EN 60204-1:2019-06; VDE 0113-1:2019-06

The technical documentation for this machine has been prepared in accordance with Annex VII, part B. The manufacturer undertakes to electronically transmit these specific technical documentations to national authorities on request.

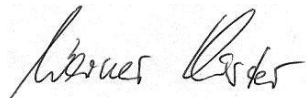
**The authorized representative for the compilation of the special technical documentation is:**

<b>name:</b>	Christian Bley	<b>capacity:</b>	CE Beauftragter
<b>company:</b>	isel Germany AG	<b>address:</b>	Bürgermeister-Ebert-Str., 40, D-36124, Eichenzell

The product (incomplete machine) is intended for incorporation into a machine or for assembly with other incomplete machines into a machine within the meaning of MRL, 2006/42/EC, Article 1, Section (1), letter a.

**The commissioning of the incomplete machine (product) is prohibited until the machine in which this product has been incorporated or of which it is a component complies with the requirements of all relevant directives and this complete machine has a CE marking.**

Eichenzell, 14.09.2021



Werner Kister, Chairperson isel Germany AG



## 1.4 General data, contact persons

Manufacturer	isel Germany AG Bürgermeister-Ebert-Str., 40 D-36124, Eichenzell +49 6659 981 800 +49 6659 981 782 automation@isel.com
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You can reach our contact persons for technical advice and sales as well as service using the contact details listed here.

Technical advice and sales	+49 6659 981 800 +49 6659 981 800
Service and support	+49 6659 981 800 support@isel.com






## 1.5 User requirements

### *User groups*

Capacity	Training, qualification
Operator/skilled worker	Instruction in the operation of the machine
Machine setter	Instruction in the operation of the machine Instruction in the safety functions of the machine
Electrical maintenance engineer	Electrician Instruction in the operation of the machine Instruction in the safety functions of the machine
Mechanical maintenance engineer	Specialist in pneumatics Instruction in the operation of the machine Instruction in the safety functions of the machine









## 1.6 Explanation of symbols and instructions

Notes on hazards that occur in connection with work on the machine are marked as follows in these Assembly instruction. They warn you of possible personal injury or property damage or give you work aids.

NOTE	
	If, in the event of a dangerous situation, the maximum result of an accident is a damage to property, the notice bears the "NOTE" mark.
⚠ CAUTION	
	If, in the event of a dangerous situation, the maximum result of an accident is at most a minor injury, the note bears the "CAUTION" mark.
⚠ WARNING	
	If, in the event of a dangerous situation, an accident resulting in <b>serious or fatal injury is possible</b> , the notice bears the "WARNING" mark.
Information	
	Indicates important information, application tips and useful information for proper work.
Environment	
	In this way, information regarding the environment is identified.
/1/	Refers to a document in the list of applicable documents. See Chapter <a href="#">RS</a>

## 1.7 Symbols used in the Assembly instruction and on the machine

The use of the symbols is in accordance with the valid regulations of the country of operation.

warning symbol	description
	General warning sign
	Warning against hand injuries
	Warning of danger of pulling in
	Warning against hot surfaces
mandatory sign	description
	Use eye protection!
	Use hand protection!
	Use foot protection!
	Request to read instructions and regulations

## 1.8 List of abbreviations

	Declaration	
EN	European Norm	Harmonised European Standard
ISO	International Organization for Standardization	International Organization for Standardization
LES	Linear unit with spindle drive (LES4, LES5 and LES6)	Components used in the machine.
Gantry	also called gantry mode or gantry axis	Two synchronously running linear or rotary units with separate drives which can be mechanically connected to each other are considered as one drive axis. Both drives are operated angle-synchronously via the controller and the control software.
PSA	Personal protective equipment	e.g. gloves, work shoes, safety goggles, hearing protection

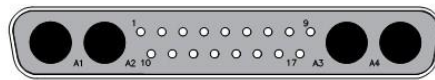
## 2 Overview

### 2.1 General information

The torque motor iTM 180-240 are ready-to-install modules with direct drive, which are primarily used in factory automation, handling technology and light mechanical engineering.

### 2.2 Function overview

external electrical interfaces (mixed D-Sub version)



**FM21WA4**

PIN	Signal
A1	Motor U
A2	Motor V
A3	Motor W
A4	Motor PE
1	A
2	/A
3	B
4	/B
5	Z
6	/Z
7	Reference switch
8	H1
9	H2
10	Temp 1 <sup>1</sup>
11	Temp 2 <sup>2</sup>
12	Brake+ <sup>3</sup>
13	GND 24 VDC
14	GND 5VDC
15	+5VDC
16	+24VDC
17	H3

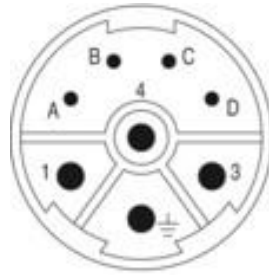
Table 1 - Pin assignment connector (Mixed D-Sub connector)

<sup>1</sup> Optional connections, depending on version

<sup>2</sup> Optional connections, depending on version

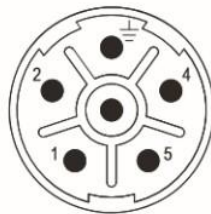
<sup>3</sup> Optional connections, depending on version

## external electrical interfaces (M23 version)



PIN	Signal
1	Motor U
2	Motor V
4	Motor W
PE	Motor PE
A	Brake +24VDC <sup>1</sup>
B	Brake GND <sup>2</sup>
C	Temperatur sensor <sup>3</sup>
D	Temperatur sensor <sup>4</sup>

Table 2 - Pin assignment connector power 320V (M23, 8-pin)



PIN	Signal
1	Motor U
2	Motor V
PE	Motor PE
4	Brake +24VDC <sup>5</sup>
5	Brake GND <sup>6</sup>
6	Motor W

Table 3 - Pin assignment connector power 48V (M23, 6-pin)

<sup>1</sup> Optional connections, depending on version

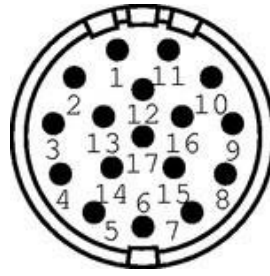
<sup>2</sup> Optional connections, depending on version

<sup>3</sup> Optional connections, depending on version

<sup>4</sup> Optional connections, depending on version

<sup>5</sup> Optional connections, depending on version

<sup>6</sup> Optional connections, depending on version



PIN	Signal
1	Encoder track A (V1 +)
2	Encoder track /A (V1-)
3	Encoder track Z (V0 +)
4	Hall 1
5	Hall 2
6	Hall 3
7	GND Encoder/ Hall
8	Not occupied, N.C.
9	Not occupied, N.C.
10	+5V Encoder/ Hall
11	Encoder trackB (V2 +)
12	Encoder track /B (V2-)
13	Encoder track /Z (V0-)
14	+24VDC Limit position switch
15	GND Limit position switch
16	Limit position switch 1
17	Limit position switch 2 <sup>1</sup>

Table 4 - Assignment signals (M23, 17-pin)

## Measuring system

The products operate with a non-contact measuring system IMS. The "incremental measuring system" variant is installed in the standard rotary unit with direct drive. Other available variants are available on request. Here, a measuring head scans a magnetically coded measuring tape and provides the data incrementally according to RS422 standard (sin/cos interface and absolute measuring system are in preparation). A decisive advantage over much more expensive optical systems is the insensitivity to contamination by liquids, grease or dust.

<sup>1</sup> Optional connections, depending on version

## 2.3 Technical data

### 2.3.1 Mechanical data and dimensions

Data iTM 180-240

Parameter	Unit	iTM 180-48	iTM 240-48	iTM 180-320	iTM 240-320
Rated voltage	VDC	48	48	320	320
Rated current	A	7.4	8.8	1.3	1.8
Rated power	W	350	425	350	475
Nominal torque	Nm	15	25	13	27
Peak current	A	18.5	26.5	3.2	5.4
Peak torque	Nm	38	75	32	75
Rated speed	min <sup>-1</sup>	220	130	220	160
Max. Speed	min <sup>-1</sup>	260	155	250	200
Resistance (20°C) Phase-Phase	Ω	1.1	0.8	21	14.8
Inductance phase-phase	mH	1.4	2.0	66	60.6
Voltage constant	V/min	0.128	0.123	0.77	1.15
Torque constant	Nm/A	2.11	2.83	10	15
Pole		40	46	40	40
Thermal protection		optional			
Moment of inertia	Kgm <sup>2</sup>	0.0085	0.0114	0.0085	0.0114
Weight	kg	8	13	8	13
Max. Axle load	N	3100	4000	3100	4000
Max. Radial load	N	3100	4000	3100	4000
Protection class		IP40			

Table 5 - Technical data iTM



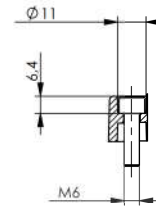
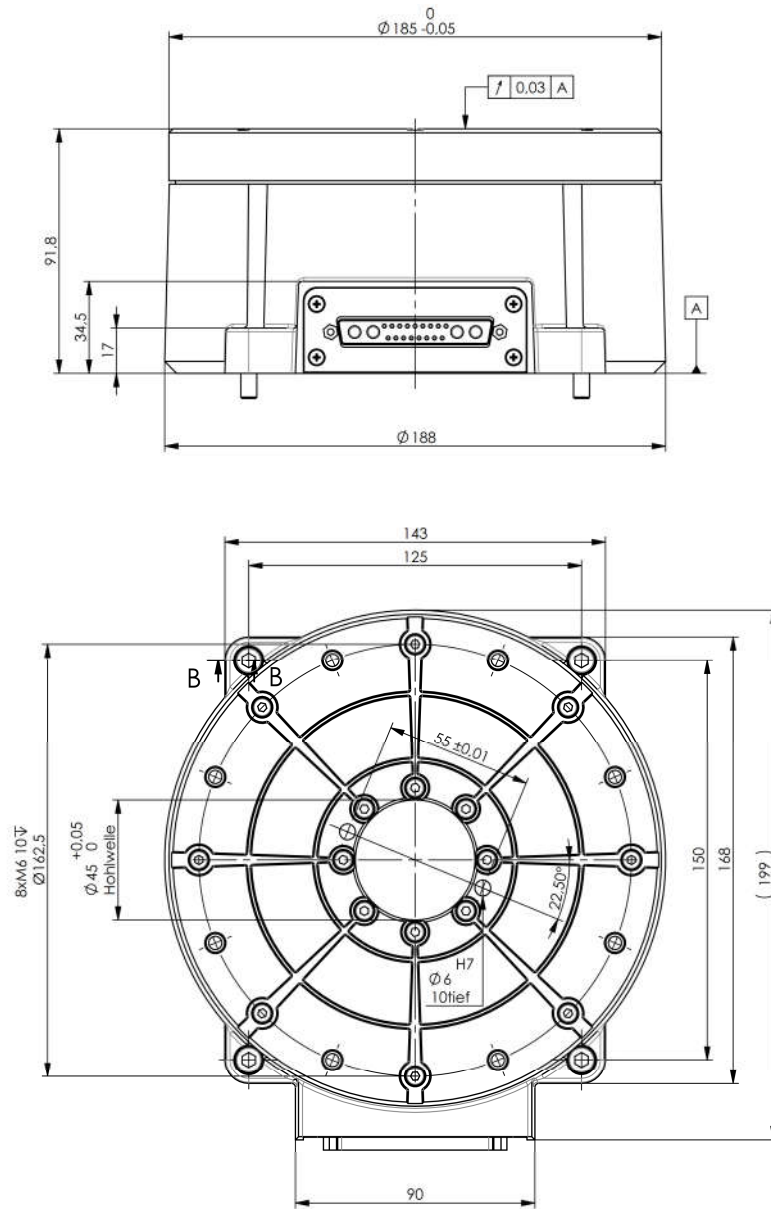
*Data incremental measuring system / RS422*

Parameter	Unit	Value
Type		RS422
Signals		A, /A, B, /B <sup>1</sup>
Supply voltage	VDC	5
Current consumption	mA	< 100
Distance sensor - magnetic tape	mm	0,4 -0,7
Resolution (depending on variant)	Increments/U	iTM180 (Standard: 276.000, optional: up to 2.260.000 <sup>2</sup> ) iTM240 (Standard: 420.000, optional: up to 3.440.000 <sup>3</sup> )
Repeatability	Inkrement(s)	± 1
Positioning accuracy	arc/sec	270
Working temperature range	°C	-5 up to +80
Storage temperature range	°C	-20 up to +100

**2.3.1.1 Dimension sheet iTM 180-240 according to EZ8851**

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<sup>1</sup> optional Z and /Z<sup>2</sup> others on request<sup>3</sup> others on request

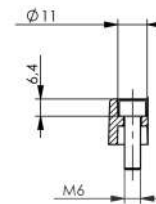
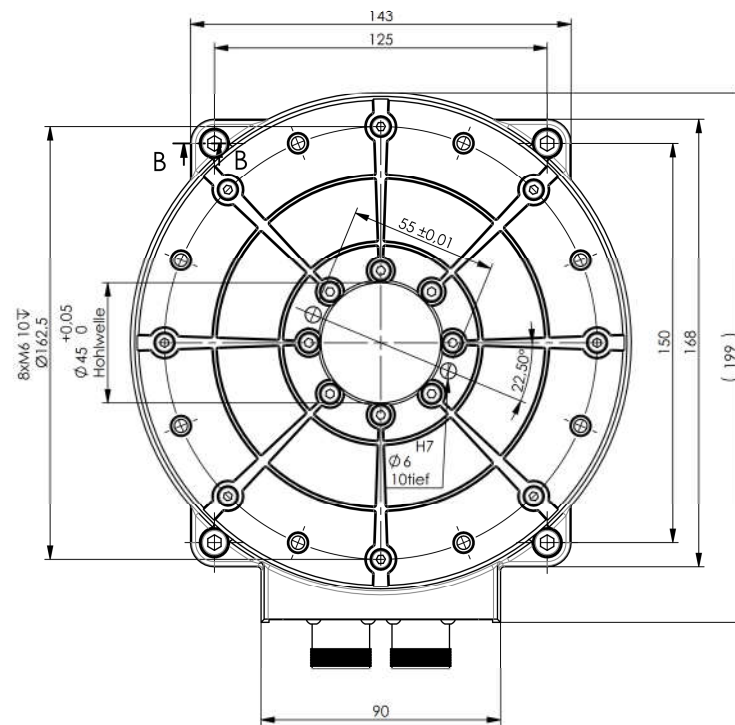
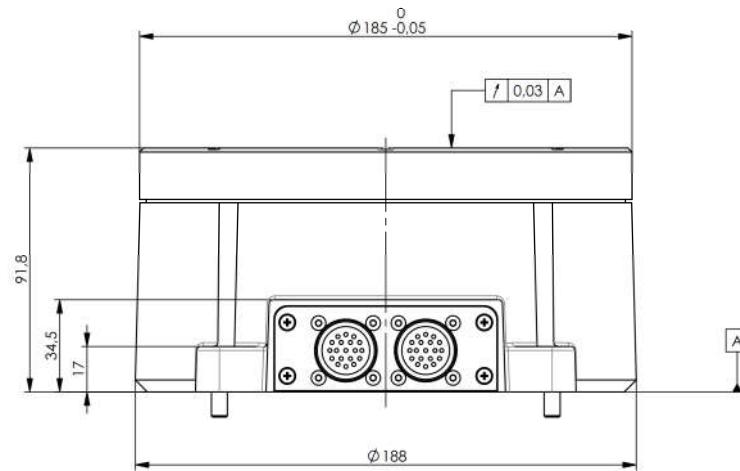


B-B

Anschlußstecker Mixed SubD 17+4

Diese Zeichnung ist nach DIN ISO 18016 urheberrechtlich geschützt.			 		Toleranz		Oberfläche		Maßstab 1:2		Gewicht		Pos. Nr.			
									Werkstoff		Halbzeug					
							Datum		Name		Benennung					
							Bearb. 27.04.15		Latsch		Torque-Motor Ø185x90 -Maßzeichnung-					
							Gepr. 27.04.15									
							Blattgröße		DIN A3		Zeichnungsnummer		EZ8851		Blatt 2	
															von 4	
											Artikelnummer		267401 0048			
											Baugruppe					
											Projektbezeichnung					
02 Motor Ø170					06.04.16		ML									
Zust. Änderung				Datum Name												

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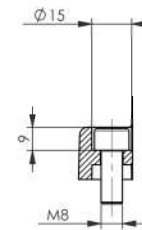
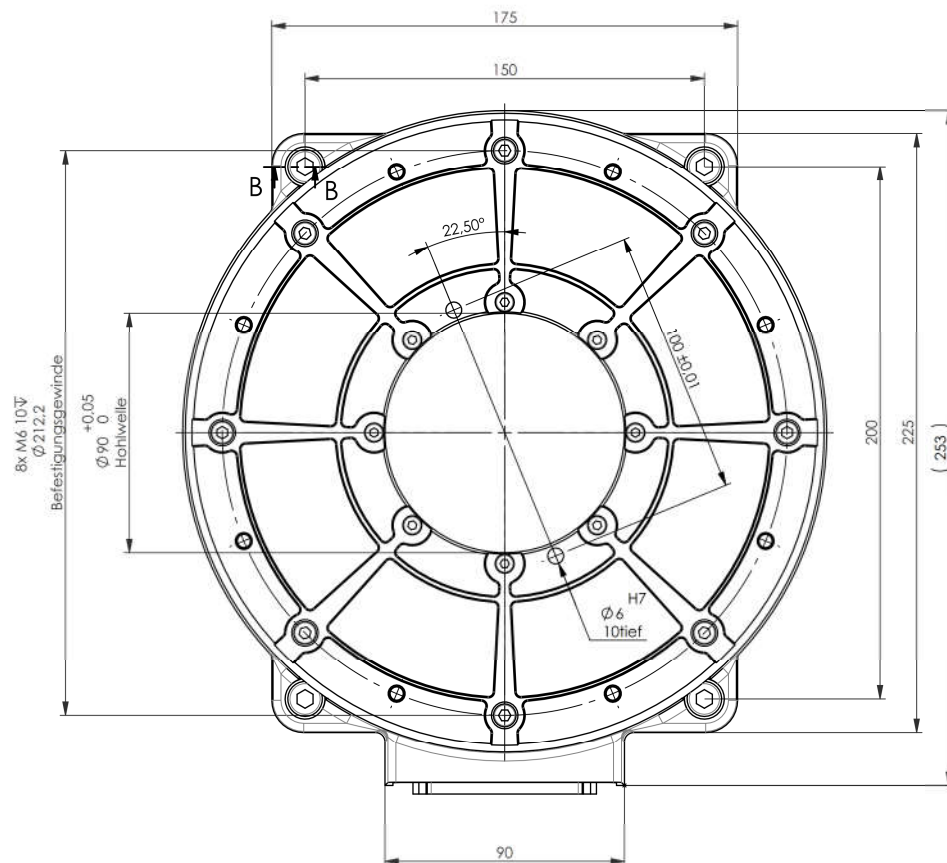


B-B

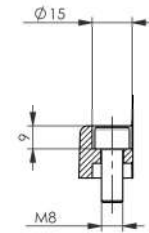
Anschlußstecker Mixed 2xM23

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									Werkstoff		Halbzeug			
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					Gepr.	27.04.15								
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									Artikelnummer 267401 0048					
									Baugruppe					
									Projektbezeichnung					
02 Motor Ø170			06.04.16		ML									
Zust. Änderung		Datum Name												

2.3.1.2 Dimension sheet iTM 180-240 according to EZ8851



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										Werkstoff		Halbzeug			
						Datum		Name		Benennung Torque-Motor Ø240x95 - Maßzeichnung -					
						Bearb. 13.01.15		Latsch							
						Gepr. 13.01.15									
						Blattgröße		DIN A3		Zeichnungsnummer <b>EZ8784</b>				Blatt 2	
														von 4	
										Artikelnummer					
						Baugruppe									
						Projektbezeichnung									
Zust.		Änderung		Datum		Name									



Technical drawing of a circular component, likely a motor or pump housing, showing dimensions and specifications.

**Dimensions:**

- Overall diameter: 175
- Inner diameter: 150
- Outer diameter (flange): 200
- Flange thickness: 22.5
- Flange width: 22.5
- Flange thickness (bottom): 90
- Flange thickness (top): 22.5
- Flange thickness (bottom): 90

**Labels and Specifications:**

- 8x M6 10-7
- Befestigungsgewinde
- $\phi 212.2$
- $\phi 90 \pm 0.05$
- Hohlwelle
- 22.50°
- 100.30.01
- $\phi 6 \text{ H7}$
- 10 tief

Diese Zeichnung ist nach DIN ISO 16016 urheberrechtlich geschützt.					Toleranz DIN ISO 2768-mK	Oberfläche	Maßstab 1:2	Gewicht	Pos. Nr.				
				Datum	Name	Benennung							
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			Gepr.	13.01.15									
			Blattgröße		DIN A3	Zeichnungsnummer <b>EZ8784</b>			Blatt 3 von 4				
02 überarbeitet			19.03.15	ML									
Zust.	Änderung	Datum	Name	Artikelnummer 267400 0001									
										Baugruppe			
					Projektbezeichnung								

## 2.3.2 Characteristic curves

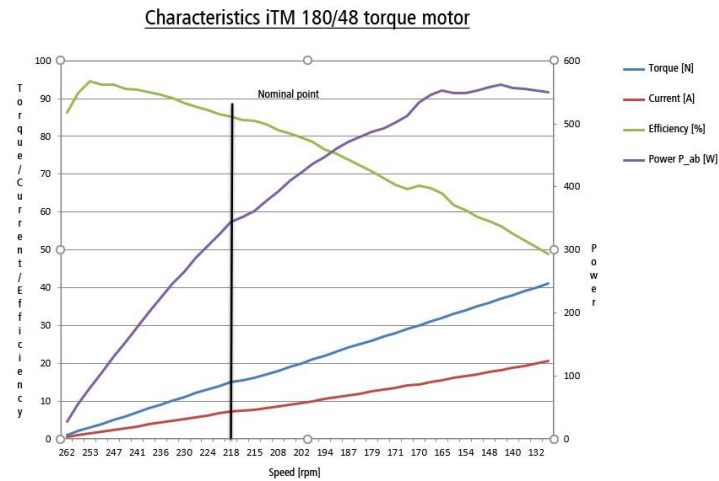


Fig. 1 - Characteristics torque motor iTM 180-48

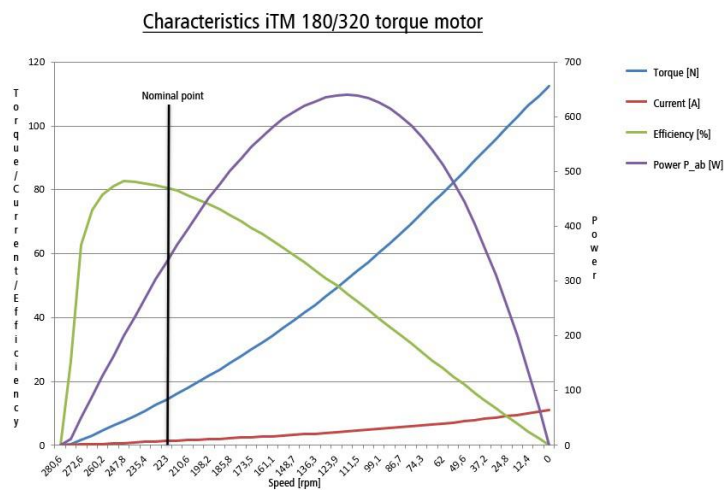


Fig. 2 - Characteristics torque motor iTM 180-320

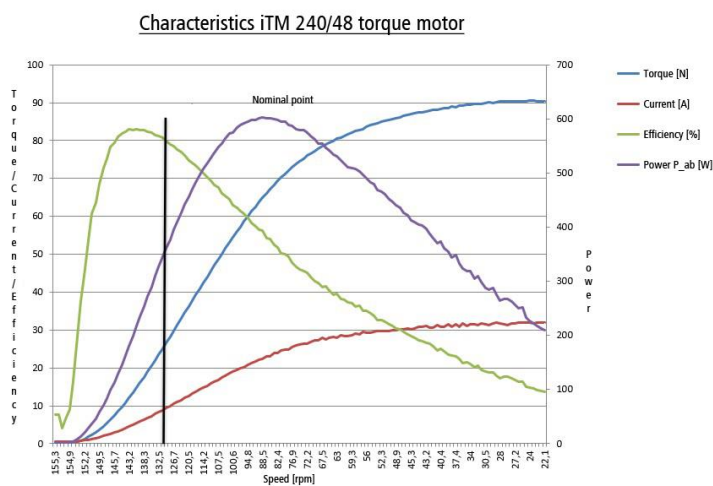


Fig. 3 - Characteristics torque motor iTM 240-48







Please do not carry out any manipulations on the controller or the output stage! This can lead to increased hazards for the user/operator.

## 2.4 Type plate

The type plate is attached to the front left of the rotation unit. Maintain the type plate in legible condition.

<b>iselGermanyAG</b>		www.isel.com
Bürgermeister-Ebert-Straße 40	Tel: +49 (0) 66 59 / 981 - 700	
D-36124 Eichenzell	E-Mail: automation@isel.com	
<hr/>		
<b>Rotation unit iTM 180-240</b>		
<b>Item no:</b>	26740X 0048I	
<b>Date of manufacture:</b>	01/2021	
<b>Serial no:</b>		
Made in Germany		


Fig. 5 - Type plate

### 3 Safety

This chapter informs you about possible dangers and about your protection options against these dangers when handling the machine.

You will receive information on personal and accident protection and on safety-related behaviour when working with this machine. The basic prerequisite for the safe handling and trouble-free operation of this machine is the knowledge of the safety instructions, the safety regulations and the safety equipment of the machine as well as their function. This information, in particular the safety instructions, must be observed by all persons working on the machine.

In addition, the generally applicable rules and regulations for accident prevention must be observed.

<b>⚠ DANGER!</b>	
	<p><b>Failure to observe the safety instructions in the operating instructions</b></p> <p>Failure to observe the safety instructions will result in serious injury or death!</p> <ul style="list-style-type: none"> <li>&gt; Carefully read this section of the operating instructions before connecting and commissioning the machine!</li> <li>&gt; As with all technical systems, perfect functioning and operational safety are only guaranteed with this machine if the usual safety precautions as well as the special safety instructions are observed during operation.</li> <li>&gt; Store the operating instructions near the machine</li> </ul>

#### 3.1 Operator's liability

##### Instruction duty

The safety in the plant can only be implemented in operational practice if all necessary measures have been taken. It is the operator's duty of care to plan these measures and to monitor the execution of the same.

- The operator must instruct the employees before the initial start-up of the potential risks, remaining risk and measures during the use of this machine so that they can use it. This instruction must be given to every employee operating the system or being in the immediate danger zone. The operating personnel must have understood the instruction and it must be ensured that it is complied with.
- The knowledge of the operation and maintenance according to the following maintenance, repair and cleaning regulations of the machine is a prerequisite for the perfect machine operation. The machine operator must have an appropriate qualification for such tasks (to be able to carry out the corresponding work according to the state of the art). This qualification includes the ability to assess the remaining risks.
- The plant may only be used under a technically perfect condition as well as according to its intended purpose and with regard to safety and dangers by taking into consideration these operating instructions! Especially, malfunctions which could impair safety must be remedied immediately!
- The machine operator is responsible for ensuring that these operating instructions are supplemented and followed by in-house instructions concerning work instructions, supervision and reporting duty, organization of work, personnel qualifications, etc. The individual competencies related to the different tasks on and with the machine and in the immediate vicinity of the same must be clearly defined, identified and observed by the operator. In this context, potential hazards and risks must be taken into account.
- The applicable work safety regulations as well as any other applicable rules and regulations concerning work safety and health protection must be observed.

- The competences for the various activities in the context of the operation, maintenance and repair of the plant must be clearly defined and complied with. This is the only way to avoid wrongdoing - especially in dangerous situations.
- The operator must oblige the operating personnel to wear personal protective equipment if this is provided by the local regulations. If necessary or required by the regulations, an additional personal protective equipment must be used.
- If safety-relevant changes to the operating behaviour or malfunctions occur on the plant, the latter must be immediately shut down and the process must be reported to the responsible body/person in charge!

#### **Determination of technological parameters**

- The machine operator is responsible for the selection and processing of the materials. In addition, a risk assessment of the workplace according to the paragraphs 5 and 6 of the Work Protection Law ArbSchG must be carried out.

### **3.2 Intended use**

The torque motor iTM 180-240 is used for the rotary movement of loads permanently mounted on the turntable in a non-hazardous environment with the operating and ambient conditions defined for this product. The mounting position can be any (horizontal, vertical or inclined).

The product is intended for incorporation into a machine or for assembly with other incomplete machines.

The product is not intended for outdoor use, transport of persons or in the food sector.



Any use other than that described above is not in accordance with the intended use and may result in injury to persons and damage to property.

#### **3.2.1 Reasonably foreseeable misuse**

##### **Reasonably foreseeable misuse includes**

- any use beyond the intended use.
- the processing/use of non-approved components.
- operation outside the specified performance data.
- disregarding the documentation
- unauthorized additions and modifications that impair safety
- if faults are not rectified immediately, that affect safety

### **3.3 Safety instructions**

 <b>WARNING!</b>	
	<p><b>Non-compliance with the safety instructions in the operating manual</b></p> <p>Non-observance of the safety instructions may cause slight to severe injuries and damage to the machine!</p> <ul style="list-style-type: none"> <li>&gt; Read this section of the operating manual carefully before connecting and commissioning the machine!</li> <li>&gt; As with all technical systems, perfect functioning and operational safety of this machine can only be guaranteed if both the generally applicable safety measures and the special safety instructions are observed during operation.</li> <li>&gt; Keep the operating instruction near the machine</li> </ul>

### 3.3.1 General safety instructions

#### Safety instructions

The following safety and hazard information is for your protection, the protection of third parties and the protection of the product. It is therefore essential that you observe them.

- All work with the system may only be carried out in accordance with these instructions.
- The product must not come into direct contact with moisture or water. The system (the machine/plant in which the product is installed) is only suitable for dry indoor areas. (degree of protection IP40)
- Avoid environments with direct sunlight, intense heat, cold, humidity or moisture.
- When changing from cold to warm environments, allow the product to temper for a few hours before commissioning, otherwise damage may occur due to condensation.
- The torque motor may only be opened by authorized specialist personnel. If the torque motor is defective, we recommend contacting the manufacturer or sending the system in for repair.
- Wear the required personal protective equipment (PPE) during all work.
- For safety reasons, unauthorized conversion and / or modification of the torque motor is not permitted.
- If the torque motor is installed in an inclined or vertical position, the turntable must be secured against falling during all work (assembly, disassembly, maintenance)
- The operating parameters and technical data specified by isel Germany AG must not be exceeded.
- The type plate must remain legible. The data must be retrievable at any time and without effort.
- Hazard symbols used for safety purposes identify hazardous areas.
- The product must not be covered during operation by supply lines (electrical or pneumatic), objects (e.g. tools) or tarpaulins, packaging material or fabrics etc. (e.g. clothing), as this may cause mechanical damage or heat accumulation and possibly lead to fire.
- Do not touch or remove any internal parts of the product while the product is connected to an electrical voltage. For maintenance or disassembly of components, the product must be disconnected from the power supply.
- Take precautions to protect against the ingress of ferromagnetic parts/particles, otherwise the product may be destroyed. (applies only to products supplied with a suitable motor output stage or controller).
- Do not touch the products when using them at high cycle rates (acceleration/deceleration). The products could be too hot and thus cause burn injuries!
- The product could be dangerous for persons with pacemakers or other magnetically sensitive medical devices. Magnetically sensitive devices/applications may be negatively affected by the magnetic fields.

### 3.3.2 Special safety instructions

You have to work on and with the machine exclusively with authorised, trained and instructed personnel. These personnel must have received special instruction about potential dangers (especially about remaining risk).

**Product-specific safety instructions**
**NOTE!**

**Service life / wear**

Failure to observe the safety instructions may result in damage to property!

- > The torque motor is not designed for continuous use and must be serviced at regular intervals. In order to be able to detect possible failures due to wear or material fatigue at an early stage, regular visual and functional checks must be carried out.
- > Unauthorized conversion and / or modification of the torque motor is not permitted.
- > The torque motor under no circumstances subject it to inadmissible mechanical stress. Observe the technical data in this Assembly instruction.
- > The torque motor must not be covered during operation by supply lines, objects or tarpaulins, packaging material or substances, etc., as this may result in mechanical damage or heat accumulation and possibly fire.

**NOTE!**

**Electric drives**

Failure to observe the safety instructions may result in damage to property and/or personal injury!

- > Before handling the product, read and observe the safety instructions in the manuals for the motor, controller and control unit.

**NOTE!**

**Transport**

Failure to observe the safety instructions may result in damage to property and/or personal injury!

- > Observe the transport instructions.
- > When transporting the product, support it only at the points provided for this purpose.
- > Observe the weight and use suitable and tested load handling attachments for lifting and transport.


**NOTE!**

**Commissioning / Operation**

Failure to observe the safety instructions may result in damage to property and/or personal injury!


- > Only start up a fully installed and fixed product.
- > Do not touch into moving parts (e.g. slides).
- > Wear suitable hearing protection in case of excessive noise.
- > Ensure that only persons authorized by the operator operate adjustment devices on components and parts within the scope of the intended use of the torque motor and have access to the working area of the torque motor.
- > In case of emergency, error or other irregularities, shut down the product and secure it against restarting.
- > Observe safety functions and devices and do not disable them.

### 3.3.3 Fire protection

<b>ATTENTION!</b>	
	<p><b>Risk of fire if machine parts overheat due to overload, dust formation and irregular cleaning / maintenance of motors and storage of drives!</b></p> <p>Non-observance of the safety instructions may result in damage to the torque motor and the environment!</p> <ul style="list-style-type: none"> <li>&gt; Regular instruction of the operating personnel.</li> <li>&gt; Pollutions on the components must be removed immediately.</li> <li>&gt; Regularly check the tool for wear.</li> <li>&gt; Do not operate components such as motors and gears above the specified nominal values.</li> <li>&gt; Maximum feed speed (with optional drive motor mounted) must not be exceeded.</li> </ul>

### 3.4 Personal Protective Equipment

In the following chapters, the operating instructions explicitly describe the use of the personal protective equipment.

<b>⚠ WARNING!</b>	
	<p><b>Do not wear personal protective equipment!</b></p> <p>If you do not wear the specified personal protective equipment or you use faulty personal protective equipment, you may be involved in an occupational accident.</p> <ul style="list-style-type: none"> <li>&gt; Always wear the instructed personal protective equipment.</li> <li>&gt; Immediately exchange damages personal protective equipment.</li> </ul>

## 4 Transport

Below you will find information on how to transport the machine correctly, without damaging it and without endangering persons.

### NOTE!



#### **Improper lifting of the torque motor**

If you do not lift the torque motors correctly, damage may occur due to deflection!

If you do not lift the torque motors correctly n musculoskeletal injuries may occur due to incorrect lifting!

- > Get information about the weight of the unit.
- > Observe the DGUV and BG instructions for the correct carrying and lifting of loads.
- > Avoid long transport distances after lifting. If necessary, use a transport table or place the unit on a pallet for further transport with a suitable industrial truck.

The following guidelines should be followed:

- Lifting by one person:
  - max.  $\leq 20$  kg and/or max.  $\leq 1000$ mm length.
  - Grasp the unit with two hands, the distance between the right and left hands should be maximum.
- Lifting by two persons:
  - max.  $\leq 40$  kg and/or max.  $\leq 2000$ mm length.
  - Grasp the unit with two hands, the distance between the right and left hands should be maximum.
  - Grip the unit at the beginning or end of the last third so that the unit does not bend in the middle.
- Lifting by several people:
  - max.  $\leq 60$  kg and/or max.  $\leq 3000$ mm length.
  - Grasp the unit with two hands, the distance between the right and left hands should be maximum.
  - Grip the unit at the beginning or end of the last third so that the unit does not bend in the middle.

## 5 Assembly and commissioning

### 5.1 Assembly

To mount the product, mount the 4 suitable mounting screws (iTm180 4xM6, iTm240 4xM10) on a solid surface. (iTm180 with 5Nm / iTm240 with 10Nm) For mounting workpieces on the turntable, use only the threads provided for this purpose (mounting threads).

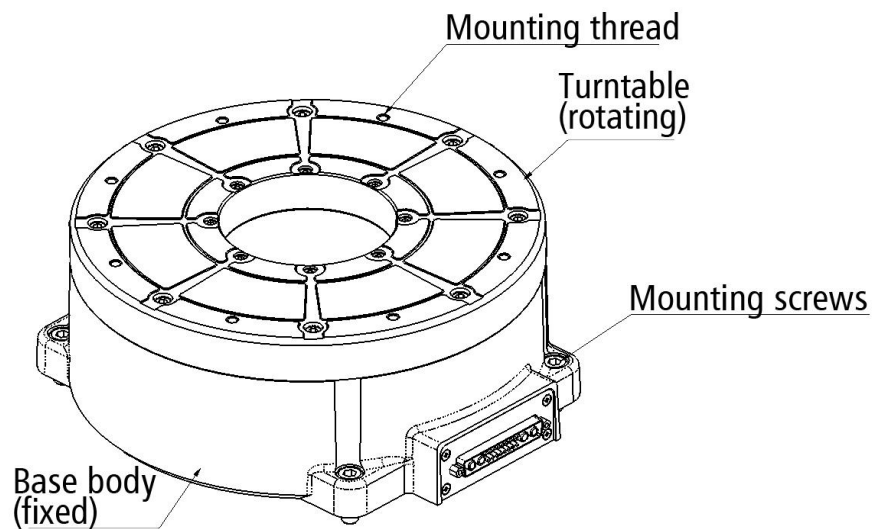
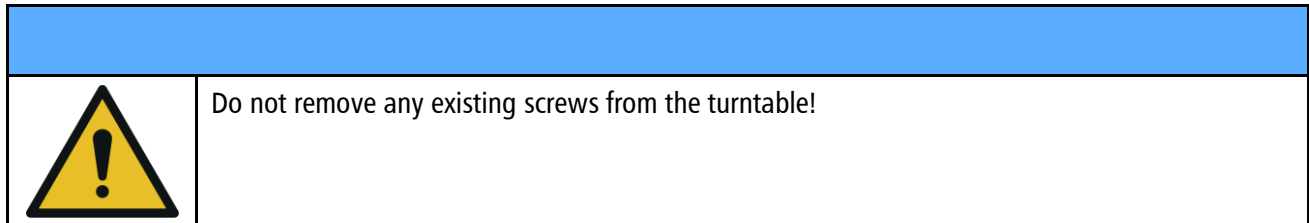


Fig. 6 - Mounting instruction torque motor iTm 180-240





### 5.1.1 Commissioning

The commissioning of the products takes place after the assembly of the respective drive modules and the necessary wiring.

To do this, follow the corresponding instructions in the documentation of the motor modules, output stages or controller used.

**Proceed as follows to prepare the product for commissioning:**


1. Securely fasten the torque motor to the designated position (wall, rack, floor, ...)
2. Make the necessary connections (motor cables) to the controller.
3. If a brake/clamp is integrated, the corresponding pneumatic supply must be ensured according to the data sheet of the brake used.
4. In the following, follow the commissioning instructions for the controller. The motor data required for this can be found in these "Technical data" instructions.

	Note thereby,
	<ul style="list-style-type: none"> <li>• that only original motor cables are used,</li> <li>• that the cable routing is carried out professionally (if necessary via drag chains).</li> </ul>
	Improper installation (including loading of the product), wiring or commissioning may result in increased risk to the user.

## 6 Maintenance, repair


The regular and preventive maintenance are prerequisites for the safety of the personnel located in the machine area. In addition, the maintenance contributes to the maintenance of the value and the functionality of the machine.

Perform the works listed in the maintenance schedule within the specified intervals. If during the machine operation it turns out that the intervals mentioned are too long or too short, adjust the intervals accordingly.

Information	
	<p>Every right related to the guarantee or warranty automatically expires in the following cases:</p> <ul style="list-style-type: none"> <li>• Unintended maintenance by the operator or third parts,</li> <li>• Installation of manufactured components which have not been produced by isel Germany AG.</li> </ul> <p>In this case, isel Germany AG is liable for any personal injury and property damage. Make sure that the safety devices are regularly maintained and checked for proper functioning.</p>

The torque motor with direct drive worked with high precision and reliability. The maintenance effort is comparatively low and limited to cleaning. Further maintenance or repair work should be carried out directly by the service department of isel Germany AG.

### 6.1 Cleaning

	<p>Clean the surface of the product with a lint-free, dry cloth. Do not use any abrasive cleaning agents or scouring agents. These could attack the surface coating or seals used.</p>

## 7 Dismantling and disposal

### Information



Only after all work required for decommissioning and after approval by an authorized specialist, the dismantling operations may be started.



Under disassembly you can find the definition of the the dismantling of the machine for the implementation on another positioning location or for scrapping.

The electrical and electronic components belonging to the machine as well as the operating fluids in the machine for the production of operational readiness are to be disposed exclusively in a professional way according to the valid jurisprudence of the operating country. A disposal in the household or general industrial waste is strictly prohibited!

