

# ELECTRONIC CONTROL CARD

# **USER MANUAL**

TD0080A-EN00-0000-00

082018\_1.0\_EN





Table of contents

# Table of contents

1	Introd	luction	4
	1.1	About this user manual	4
	1.2	Intended use	4
	1.3	Predictable incorrect application	4
	1.4	Applicable documents	5
2	Safety	/	6
	2.1	Safety messages and hazard categories	6
	2.2	Hazard symbols	6
	2.3	Responsibilities of the system integrator and/or operator	7
	2.4	Qualification of personnel	7
	2.5	Emergency Stop function	7
3	Funct	ion description	8
4	Techn	ical data	9
	4.1	Technical data "Control Cad"	9
	4.2	Technical data "Terminal PCB"	9
	4.3	Climatic environmental conditions operation	10
	4.4	Climatic environmental conditions transportation and storage	10
	4.5	Dimensions	11
5	Packa	iging, transportation and storage	12
	5.1	Verification of the delivery	12
	5.2	Packaging and shipment	12
	5.3	Unpacking the product	12
	5.4	Storage	13
6	Mount	ting	14
	6.1	Mounting versions	14
7	Wiring	J	15
	7.1	Block diagram	15
	7.2	Motor cable	15
8	Comm	nissioning	16
	8.1	Controls and status indicators	16
	8.2	Description of the inputs	18
	8.2.1	Terminal 1	
	8.2.2	Terminal 2	19
	8.2.3	Terminal 3	19

Table of contents

	8.2.4	Terminal 5	
	8.2.5	Terminal F	19
	8.2.6	Terminal G	
	8.2.7	Terminal H	
	8.2.8	Terminal T	20
	8.3	Description of the outputs	
	8.3.1	Terminal 4	20
	8.3.2	Terminal 6	21
	8.3.3	Terminal 7	21
	8.3.4	Terminal 8	21
	8.3.5	Terminal 9	21
	8.3.6	Terminal 10	21
	8.3.7	Terminal C	
	8.3.8	Terminal D	
	8.3.9	Terminal E	21
9	Operation		
	9.1	Normal operation (one direction of rotation)	
	9.2	Forward/reverse operation (two directions of rotation)	
10	Errors	S	
	10.1	Troubleshooting and error messages	
11	Dispo	osal	
	11.1	Disposing of the product	
12	Servio	ce and spare parts	26
	12.1	Worldwide service	
	12.2	Service	27
	12.3	Ordering spare parts	
	12.4	Spare parts	28
13	Warra	anty	28
	13.1	- Information on warranty	
		•	





# 1 Introduction

## 1.1 About this user manual

This user manual describes the product Electronic Control Card TS004E (also referred to as "product" in this document).

This user manual is a part of the product.

- You may only use the product if you have fully read and understood this user manual.
- Verify that this user manual is always accessible for any type of work performed on or with the product.
- Pass this encoder as well as all other product-related documents on to all owners of the product.
- If you feel that this user manual contains errors, inconsistencies, ambiguities or other issues, contact the manufacturer prior to using the product.

There mounting instructions are protected by copyright and may only be used as provided for by the corresponding copyright legislation. We reserve the right to modifications.

The manufacturer shall not be liable in any form whatsoever for direct or consequential damage resulting from failure to observe this user manual or from failure to comply with directives, regulations and standards and any other statutory requirements applicable at the installation site of the product.

## 1.2 Intended use

This product is a component for installation in control cabinets; it may only be used within the limits specified in this user manual and in the applicable documents. The applicable documents are also part of the product.

The machinery must not be put into service until the machinery into which the product has been incorporated has been determined and declared in conformity with the provisions of Directive 2006/42/ EU and of the EMC Directive 2014/30/EU and with all other applicable directives and regulations.

In addition, perform a risk assessment in view of the planned application, according to an approved risk assessment method, and implement the appropriate safety measures, based on the results of the risk assessment. Take into account the consequences of installing or integrating the product into a system or a plant.

WEISS devices comply with the applicable regulations of VDE. The VDE regulations must also be observed for modification or disassembly of the device. This manual contains information on EMC-compliant installation. The manufacturer of the machine or system is responsible for compliance with all applicable EMC regulations and directives.

## **1.3** Predictable incorrect application

Any use of the product beyond the explicitly indicated intended use is an impermissible, incorrect application of the product.

The product must never be used in the following cases, under the following conditions, and for the following purposes:

Operation of the product in potentially explosive atmospheres/hazardous areas

Introduction



## **1.4** Applicable documents

In addition to this user manual, the following documents are binding for and apply to any type of use of the product:

- Order data (including, but not limited to, design data, load data, performance data, transportation and storage instructions, information attached to the product and the package, as well as other specifications).
- Operating instructions and mounting instructions of all products belonging to the scope of delivery (for example, motor, accessories, attachment parts). This includes, among other things:

Type of manual	Туре	Manufacturer	Deli	very
			Paper format	Electronic
Mounting instruc- tions	TD0003A (TC rotary indexing table) TD0070A (TC rotary indexing table) TD0026A (TR rotary indexing ring)	WEISS GmbH	-	Х
Data sheet	ata sheet Electronic contactor (ES0480E-0000-0003-00) Electronic reversing contactor (ES0480W-0000-0003-00) Electronic reversing contactor (ES0480W-0000-0004-00)		-	Х



Safety

# 2 Safety

# 2.1 Safety messages and hazard categories

This user manual contains safety messages to alert you to potential hazards and risks. Safety messages in this user manual are highlighted with warning symbols and warning words.

The signal word describes the source of the hazard. The text contains instructions on how to avoid the hazard as well as the consequence resulting from failure to follow the instructions given in the safety message.

Depending on the severity of a hazard, the safety messages are classified according to different hazard categories.



## A DANGER

DANGER indicates an immediately hazardous situation, which, if not avoided, will result in death or serious injury.



**WARNING** 

WARNING indicates a hazardous situation, which, if not avoided, can result in death or serious injury or equipment damage.



## **A** CAUTION

CAUTION indicates a hazardous situation, which, if not avoided, can result in injury or equipment damage.

## NOTICE

NOTICE indicates a hazardous situation, which, if not avoided, can result in equipment damage.

In addition to the instructions and safety messages provided in this user manual, you must comply with all directives, standards, and safety regulations applicable at the installation site of the product.

## 2.2 Hazard symbols

The following symbols are used in this user manual:



This is the general safety alert symbol. It alerts to injury hazards or equipment damage. Comply with all safety instructions in conjunction with this symbol to help avoid possible death, injury, or equipment damage.



This symbol alerts to hazardous electrical voltage. If this symbol is used in a safety message, there is a hazard of electric shock. Safety



## 2.3 Responsibilities of the system integrator and/or operator

The system integrator (the person who incorporates the product in a machine pursuant to Directive 2006/42/EU, i.e., for example, the machine builder) and/or the operator must ensure the following:

- The application and use of the product must be limited to the specified intended use.
- In the integration of the product, all functional safety requirements must be met.
- All directives, standards, and safety regulations, including all regulations concerning workplace safety and prevention of accidents, applicable at the installation site of the product must be complied with.
- Any type of work whatsoever on and with the product may only be performed by qualified personnel.
- The product may only be operated when it is in flawless, fully functional condition.
- All safety equipment must operate as required and planned.
- The personal protective equipment for the personnel/operator must be available and must be used.
- The user manual and all applicable documents must always be accessible in their entirety to the personnel at the installation site of the product.

If the system integrator himself is not in the position to comply with any of these obligations, the system integrator must impose compliance with these obligations on the operator.

# 2.4 Qualification of personnel

Only trained personnel who have fully read and understood this user manual and all applicable documents for the product may perform work on and with the product.

This trained personnel must have sufficient technical training, knowledge, and experience, and be able to foresee and detect potential hazards that may be caused by using the product.

All trained personnel working on and with the product must be fully familiar with all directives, standards, and safety regulations that must be observed for performing such work.

## 2.5 Emergency Stop function

You must use suitable protective equipment as per EN 60204-1.

In the case of an Emergency Stop, the motor cable must be safely interrupted to disconnect the energy supply and to offer protection against an unintended restart. It is not sufficient to interrupt terminal 2 Enable (RESET/STOP) alone since these terminals require functioning wiring.

In the case of an Emergency Stop, interrupt the following electrical cables:

- Motor cable between contactor and motor
- Terminal 2 Enable (RESET/STOP) of the product



# 3 Function description

The product is used to control and monitor the rotary indexing table types (TC) and the rotary indexing ring types (TR) with position cams. It allows for autonomous operation of the rotary indexing table/ rotary indexing ring and for control via a master controller (PLC).

The rotary indexing table/rotary indexing ring is equipped with a position cam on the driving cam and with an inductive sensor. The inductive sensor provides a signal when the output flange is in locked position. The product then stops the motor and provides a release signal to the processing station.

The motor is stopped when a delay time has elapsed which is set via the switches at the counter display. This way, the drive moves to a start position for the next cycle.

The drive must come to a standstill in the locked phase. This is monitored by the product; an error is indicated by the status indicator (*position overrun*) and/or a corresponding signal is provided to the PLC. If this error occurs, all processing stations must be immediately reset and the motor supply must be switched off since the rotary indexing table/rotary indexing ring is not in a locked position.

The product allows for motor temperature monitoring via the temperature switch. The product remains downward compatible so that it can replace older versions in the case of repairs. Technical data



# 4 Technical data

# 4.1 Technical data "Control Cad"

Characteristic	Unit	Value
Operating voltage	V	24 (± 10%)
Current input	mA	Typ. 40 (without 24 V holding brake)
Input power holding brake	A <sub>DC</sub>	1.0 2.0 (depends on type)
Digital inputs	V	Level LOW: 0 5 HIGH: 15 30 Input current: 6 mA
Digital outputs	mA	Output current: 100 (outputs: 4, 6, 7, 8, 9, 10) Output current: 2000 (outputs: C, D, E)
Electromagnetic compatibility Harmonized standard as per European directive 2014/30/EU: Harmonic current emissions Immunity Emissions	-	EN 61000-3 EN 61000-4 EN 55014-1
Dimensions	mm	Eurocard: 100 x 160

# 4.2 Technical data "Terminal PCB"

Termi- nal	Function	Level	Remark	32-pin mul- tipoint con- nector
+	+24 V	-	Supply voltage	3/4/A/B
-	GND (OV)	-	Supply voltage	1/2/A/B
1	Direction of rotation	LOW CW HIGH CCW	Input 24 V	26A
2	Enable (RESET/STOP)	LOW: -Disable -Reset Alarm HIGH: Enable	Input 24 V	19A
3	Start edge	Rising edge	Input 24 V	18A
4	Automatic	-	Output 24 V/100 mA	16B
5	Additional stop	Log. 1 active	Input 24 V	18B
6	position overrun	-	Output 24 V/100 mA	10B
7	Motor overload (movement timeout)	-	Output 24 V/100 mA	10A



Technical data

Termi- nal	Function	Level	Remark	32-pin mul- tipoint con- nector
8	General error	-	Output 24 V/100 mA	9A/B
9	Start permissible	-	Output 24 V/100 mA	8B
10	Table in Pos./ processing released	-	Output 24 V/100 mA Output 24 V/100 mA	8A
С	Motor contactor forward	-	Output 24 V/2 A	5A/B
D	Holding brake	-	-	6A/B
E	Motor contactor reverse	-	-	14A/B
F	Sensor	Log. 1 active	Input 24 V	15B
G	Release brake	Log. 1 active	Input 24 V	15A
Н	Start state-controlled	Log. 1 active	Input 24 V	17B
Т	Temperature sensor	Log. 0 active	Input 24 V	17A

# 4.3 Climatic environmental conditions operation

Characteristic	Unit	Value
Ambient temperature	°C	0 +40
Relative humidity, non-condensing	%	+5 +95

# 4.4 Climatic environmental conditions transportation and storage

Characteristic	Unit	Value
Ambient temperature	°C	-25 +55
Relative humidity, non-condensing	%	+5 +95

Technical data

# 4.5 Dimensions



Figure 1: Lengths in mm





Packaging, transportation and storage

# 5 Packaging, transportation and storage

## 5.1 Verification of the delivery

- Check the delivery for completeness and transportation damage upon reception.
- In the case of damage, reject the delivery or accept it only conditionally.
- Document the damage in the transportation documents/bill of delivery (any damage detected must be immediately reported to the forwarding agent and confirmed by the forwarding agent).
- Take photographs of the damage.
- Report the damage to WEISS GmbH.

# 5.2 Packaging and shipment



The product is delivered in an accurately fitting plastic packaging.

## 5.3 Unpacking the product

## NOTICE

## ELECTROSTATIC DISCHARGE

The product contains electrostatically sensitive devices that can be easily damaged by incorrect handling.

• Do not touch the electronic components during plugging in.

Failure to follow these instructions can result in equipment damage.

- 1. Do not remove the packaging until immediately prior to mounting.
- 2. Dispose of the packaging material in compliance with all directives, standards, and safety regulations applicable at the installation site.

Packaging, transportation and storage

## 5.4 Storage

## NOTICE

## **INCORRECT STORAGE**

 Verify compliance with all conditions specified in this user manual and all applicable documents when storing the product.

## Failure to follow these instructions can result in equipment damage.

The components of the product can be stored for a period of up to two years.

Conditions for the specified maximum storage duration:

- Storage in original packaging
- Compliance with all specified storage conditions
- Storage in suitable closed, dry, dust-free room, protected against direct sunlight
- No contact with corrosive media

If the maximum storage duration has been exceeded, you must contact the manufacturer prior to commissioning the product.



Mounting

# 6 Mounting

# 6.1 Mounting versions

## **Terminal PCB**



Terminal PCB individually

## Card holder



The card holder is provided for DIN rail mounting or screw mounting. The card holder has screw terminals on the left and right hand sides for the connection of the 24 V cables and the signal cables.

## Housings

All housings have a terminal PCB already mounted.



Front panel mounting Without door



Screw mounting Without door



Front panel mounting With door



Screw mounting With door



**DIN rail mounting** Without door



**DIN rail mounting** With door

Wiring

#### Wiring 7

#### **Block diagram** 7.1



	Electronic control card 15004E	1	reminal F
2	24 V inputs and outputs	8	Terminal D
3	3 x 400 V	9	Motor cable
4	Rotary indexing table/rotary indexing ring TC/TR	10	Emergency S

- 5 Terminal C
- 6 Electronic contactor

- **Emergency Stop**
- 11 Holding brake
- 12 Inductive sensor

#### 7.2 Motor cable

Downstream of the motor protection switch, the motor cable is switched by means of an electronic contactor (solid state relay). The contacts of the Emergency Stop contactors must be installed between the electronic contactor and the motor.

Refer to the information on the nameplate of the motor for rating the motor protection switch.

There are three versions of the electrical contactor, see chapter 1.4.

One direction of rotation (motor power 0 3 kW)	(ES0480E-0000-0003-00)
Two directions of rotation (motor power 0 0.75 kW)	(ES0480W-0000-0003-00)
Two directions of rotation (motor power > 0.75 kW)	(ES0480W-0000-0004-00)



Prior to switching on the product, verify that the motor housing is correctly connected to ground potential (PE busbar).



## A DANGER

## ELECTRIC SHOCK CAUSED BY LIVE PARTS

Control connections and power connection can carry voltage even if the motor is at a standstill. This applies to operation of the product in conjunction with an electronic contactor (solid-state relay).

 Disconnect mains voltage before connecting or disconnecting the electrical connections of the product.

Failure to follow these instructions will result in death or serious injury.

## 8.1 Controls and status indicators



## 1 Button START

The LED lights green to indicate that 24 V are available at the product. If the key switch is in position *INCHING* (manual jog mode), you can press the key *START* to trigger a cycle.

## 2 Button STOP/RESET

The LED lights red to indicate that an error is pending. If you press the button *STOP/RESET* the rotary indexing table/rotary indexing ring is immediately stopped and the error acknowl-edged. The button *STOP/RESET* is available in all operating modes.





## 3 Counter indicator stop delay

As soon as the locked phase is reached, the position signal is available at terminal 10, but the stop signal for the drive is not yet active. This signal is triggered with a delay so that the rotary indexing table/rotary indexing ring is stopped at the end of the locked phase. Otherwise, the time the drive requires to go through the locked phase is lost as dead time during each cycle.

The basic increments for the stop delay are 20, 40 or 80 ms. This is set by means of a switch on the PCB.



.......

.....

The factor is set at the buttons of the counter indicator *stop delay* to a value between 0 and 9 (by pressing the upper or lower button).

#### 0 = no delay

1-9 = delay factor 1-9 multiplied by 20, 40 or 80 ms

Optimum setting

- Trigger a cycle of the rotary indexing table/rotary indexing ring. If the error *position overrun* does not occur, increase the value of the digital switch by one.
- Repeat this procedure until the error *position overrun* is signaled.
- Acknowledge the error and reduce the value of the digital switch by one.





#### **4 Status indicators**

table in position	The LED lights green if the rotary indexing table/rotary indexing ring is in position, i.e. the output flange is locked
table rotating	The LED lights solid green as long as the drive rotates
return	LED lights solid yellow when the signal is active
short circuit/high temp	The LED lights solid red in case of over- load or short-circuit at one of the moni- tored outputs; flashes if the motor temper- ature is too high
motor/table overload	The LED lights solid red if the cycle (start to stop) is not terminated within a period of 9 seconds (movement timeout)
position overrun	The LED lights solid red if the drive does not come to a standstill within the locked phase

#### 5 Key switch

The key switch allows you to switch between the operating modes *BRAKE release*, *INCHING* and *AUTOMATIC*. The key can be removed in any of the positions.

- BRAKE release

If you release the brake, you can manually rotate the rotary indexing table/rotary indexing ring to the next locked phase if it is not in the locked phase. The level of the outputs *Forward*, *Reverse*, *Start permissible* and *General error* is set to LOW. A start via terminals 3 or *H* is not possible.

- INCHING (manual jog mode)
   If you press the button START the rotary indexing table/rotary indexing ring performs one cycle. The level at terminal 2
   Enable (RESET/STOP) must be HIGH. No error must be pending. An external start via terminals 3 or *H* is not possible.
- AUTOMATIC (automatic operation)
   Automatic operation of the rotary indexing table/rotary
   indexing ring. The start is only possible via terminals 3 or H.

## 8.2 Description of the inputs

## 8.2.1 Terminal 1

## **Direction of rotation**

LOW	Direction of rotation CW clockwise (right)
HIGH	Direction of rotation CCW counter clockwise (left)



The signal must be available with a rising edge of the start signal; it determines the direction of rotation (outputs C and E).

## 8.2.2 Terminal 2

#### Enable (RESET/STOP)

This input must be wired.

LOW -Disable (motor STOP) -Reset Alarm

HIGH -Enable

If the level is LOW, all movements are locked, including manual mode. The outputs C and E (motor contactor) as well as the output D (holding brake) are immediately switched off.

## 8.2.3 Terminal 3



#### Start (edge-triggered)

A LOW/HIGH edge starts a complete cycle. The start pulse must have a pulse width of at least 20 msec.

If the level remains HIGH, this does not trigger a new start.

The jumper N-2H must be at the left position. The terminal H has no effect.

## 8.2.4 Terminal 5

#### Stop

If the level is HIGH, start signals are ignored and movements are stopped.

## 8.2.5 Terminal F

#### Sensor

The sensor at the rotary indexing table/rotary indexing ring is connected to this terminal. It provides the signal that the position cam has been reached and triggers a stop of the motor.

## 8.2.6 Terminal G

#### Manual mode holding brake

A HIGH signal release the holding brake. A start of the rotary indexing table/rotary indexing ring is not possible.



## 8.2.7 Terminal H

## Start state-controlled

A LOW/HIGH edge starts a cycle. As opposed to input 3 the level at this input must be HIGH during the entire movement. If the level changes to LOW, the rotary indexing table/rotary indexing ring immediately stops (in an intermediate position). No error is signaled. If the level remains LOW, there is no new start; a level change from LOW to HIG is required.



The jumper *N-2H* must be at the right hand position. Terminal 3 has no effect.

## 8.2.8 Terminal T



## Temperature monitoring

The temperature switch (normally closed contact) of motors with temperature monitoring can be connected to this terminal. The normally closed contact is connected between terminal T and GND (OV).

If the line is interrupted, this causes an error. The jumper must be removed if this function is to be used.

By default, this function is disabled (jumper removed) for reasons of downward compatibility.

## 8.3 Description of the outputs

## 8.3.1 Terminal 4

## Automatic

The level at this output is HIGH if the key switch at the front is in position AUTOMATIC .



## 8.3.2 Terminal 6

#### **Error: Position overtraveled**

The level at this output is HIGH if the rotary indexing table/rotary indexing ring has overtraveled the locked position.

## 8.3.3 Terminal 7

#### Error: Motor overload (movement timeout)

The level at this output is HIGH if the rotary indexing table/rotary indexing ring has not reached the inductive sensor approximately 10 seconds after the start signal.

## 8.3.4 Terminal 8

## **General error**

This output indicates that an error is pending. This also includes the errors at outputs 6 and 7. Acknowledge the error with a LOW signal at the input 2.

## 8.3.5 Terminal 9

#### Start permissible

The level is set to HIGH as soon as a new start is permissible.

## 8.3.6 Terminal 10

#### Rotary indexing table/rotary indexing ring in position

This output signals that the rotary indexing table/rotary indexing ring is in a valid position. The rotary indexing table/rotary indexing ring is equipped with a position cam. The inductive sensor detects this position cam and the signal is available at this output.

If the level at this output is HIGH, processing may start because the output flange no longer moves. The motor of the rotary indexing table/rotary indexing ring continues to run for the duration of the adjusted stop delay in order to reach the optimum start position for the next cycle.

If the level of this output signal changes to LOW, processing must be immediately stopped because the output flange has left its position.

## 8.3.7 Terminal C

## Motor contactor CW (forward)

Output 24 V/2 A for motor contactor and/or coupling coil with holding brake/coupling combination.

## 8.3.8 Terminal D

## Brake

Output 24 V/2 A for direct connection of the motor holding brake.

## 8.3.9 Terminal E

## Motor contactor CCW (reverse)

Output 24 V/2 A for motor contactor direction of rotation left.



Operation

# 9 Operation

# 9.1 Normal operation (one direction of rotation)



Operation



# 9.2 Forward/reverse operation (two directions of rotation)





Errors

# 10 Errors

# 10.1 Troubleshooting and error messages

## Troubleshooting

In the case of an error, the red LED lights solid in the button *STOP/RESET*. The outputs 6, 7, 8 signal the error.

The error message can be reset with the button STOP/RESET or with a LOW signal at terminal 2.

Issue	Output 6	Output 7	Output 8	Description
Position overrun	HIGH	LOW	HIGH	<ul><li>The rotary indexing table/rotary indexing ring overtravels the limit position.</li><li>Causes:</li><li>Stop delay time too long</li></ul>
				<ul> <li>Holding brake is worn → Adjust the holding brake→ see mounting instructions TD0003A, TD0070A, TD0026A, <u>see chapter 1.4</u></li> </ul>
Motor over- load (movement timeout)	LOW	HIGH	HIGH	<ul> <li>Position cam on output flange does not reach the inductive sensor within 10 seconds (timeout).</li> <li>Output flange with mechanical friction</li> </ul>
				<ul> <li>Emergency Stop contactors have disconnected motor cables</li> </ul>
				<ul> <li>Emergency Stop contactors with contact issues</li> </ul>
				<ul> <li>Star/delta bridge in motor not correct</li> </ul>
				<ul> <li>Holding brake not fully opened (verify correct 24 V supply)</li> </ul>
				<ul> <li>No signal from sensor (terminal F)</li> </ul>
Short circuit	LOW	LOW	HIGH	<ul> <li>Overload at 24 V outputs (output current &gt; 100 mA / &gt; 2 A)</li> </ul>
				<ul> <li>Signal voltage peaks of &gt; 30 V</li> </ul>
				<ul> <li>Supply voltage &gt; 30 V</li> </ul>
Overtempera-	LOW	LOW	HIGH	Motor too hot
ture				<ul> <li>Temperature switch triggers</li> </ul>

## Error message

Disposal



# 11 Disposal

# 11.1 Disposing of the product

Dispose of the product in compliance with all applicable directives, standards, and safety regulations.

#### Environmental protection

Dispose of lubricants, greases, residue of cleaning agents and other non-recyclable materials according to the applicable directives, standards, and safety regulations.



Service and spare parts

# 12 Service and spare parts

## 12.1 Worldwide service

GERMANY

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## 12.2 Service

If you need the assistance of our service departments, please provide the following information:

- Serial number of the product (see label on frame connector)
- Description of the problem
- Time of occurrence and circumstances of the problem
- Suspected cause

You can reach our service department from Monday to Friday 08:00 a.m to 05:00 p.m. via the

## Service number +49-6281-5208-5999

## or at **service@weiss-gmbh.de**

A voice message system is available if you call outside of the hours specified.

# 12.3 Ordering spare parts



# UNSUITABLE SPARE PARTS AND ACCESSORIES

• Only use spare parts and accessories which are approved by the manufacturer.

**WARNING** 

Failure to follow these instructions can result in death, serious injury, and equipment damage.

Please provide the following information when ordering spare parts:

- Serial number of the product (see label on frame connector)
- Part number of the spare part according to spare parts list
- Quantity of spare parts required

Please direct your spare parts order to:

WEISS GmbH

Siemensstraße 17

74722 Buchen

Telephone: +49-6281-5208-5999

Telefax: +49-6281-5208-99

service@weiss-gmbh.de

www.weiss-international.com

Visit our website for information on our offices and representations.



Service and spare parts

# 12.4 Spare parts

Part number	Designation	Description	Quantity
EK0004D-1000-0000-00	Electronic control card TS004E	Control card with German label	1
EK0004E-1000-0000-00	Electronic control card TS004E	Control card with English label	1
EK0004F-1000-0000-00	Electronic control card TS004E	Control card with French label	1
EK0004I-1000-0000-00	Electronic control card TS004E	Control card with Italian label	1
EK0004S-1000-0000-00	Electronic control card TS004E	Control card with Spanish label	1
EK0004N-1000-0000-00	Electronic control card TS004E	Control card with Dutch label	1
EK0004T-1000-0000-00	Electronic control card TS004E	Control card with Czech label	1
EH0004K-0000-0002-00	Terminal PCB	-	1
EH0004L-0000-0000-00	Card holder	-	1
EG0004R-0000-0001-00	Housings	Screw mounting	1
EG0004F-0000-0001-00	Housings	Front panel mounting	1
EG0004H-0000-0001-00	Housings	for DIN rail	1
EG0004R-0000-0002-00	Housing with door	Screw mounting	1
EG0004F-0000-0002-00	Housing with door	Front panel mounting	1
EG0004H-0000-0002-00	Housing with door	for DIN rail	1
ES0480E-0000-0003-00	Electronic contactor	600 V - 20 A	1
ES0480W-0000-0003-00	Electronic reversing con- tactor	480 V - 2.2 KW (for motors up to 0.75 KW)	1
ES0480W-0000-0004-00	Electronic reversing con- tactor	480 V - 5.5 KW (for motors from 0.75 KW)	1

# 13 Warranty

# **13.1** Information on warranty

See our website for our General Terms and Conditions at www.weiss-international.com or your purchase order.



## **INSPIRING PEOPLE GREAT SOLUTIONS**

## WEISS GmbH

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