

# Operating Instructions

Control card TS002

Control card TS003

Control card TS004

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# 1. Safety instructions

## 1.1 Safety and application instructions

Validity:

These instructions apply to control cards in the model series:





TS 002 E

TS 003 E

TS 004 E

### Symbols:

Warnings are emphasised by a safety symbol and are shown as follows depending on the degree of risk:

 <b>Danger!</b>	<b>Imminent danger. Fatal injury, death or substantial material damage can be caused if the appropriate safety measures are not taken!</b>
 <b>Warning!</b>	<b>Minor injuries may occur if the appropriate safety measures are not taken.</b>
 <b>Warning!</b>	<b>Electrical hazard Warning against hazardous voltage</b>
 <b>i</b>	<b>Useful information</b>

### Importance of the operating instructions:

This manual contains important information for working safely with the control card. It contains safety instructions which must be observed as well as information necessary for trouble-free operation. The operating instructions must be kept with the device. It must be ensured that all persons who work at the device have access to the operating instructions at all times.

In addition to the operating instructions for the control card, the operating instructions for the indexing table and the operating regulations subject to the labour protection laws must also be provided.

The operating instructions must be kept in a safe place for further use and must be passed on to every subsequent owner, user and end customer.

The indexing table with the control card may only be started up when the whole machine and control system, in particular the safety system, correspond to the machinery directive 98/37/EC.

### Target group:

The operating instructions are aimed at persons who are involved in the planning, installation, starting-up, and maintenance of the system and who have the qualifications and know-how appropriate for this work. Qualified personnel are persons who have the necessary qualifications and who are familiar with the execution of the work cited above and the operation of the system. All work in other areas such as transport, storage and disposal must be carried out by persons with the appropriate training.

**General:**


Prior to installation and starting up, please carefully read and observe all safety instructions, technical documentation and connection data accordingly. National accident prevention regulations and all internal company regulations must be observed.

Never install or operate damaged products.

The device must be installed in accordance with these regulations.

The control card must be protected against impermissible use. It contains components which are electrostatically sensitive and which can easily be damaged by incorrect handling. Electrical components may not be damaged mechanically or destroyed (possible health risk).

 <b>Danger!</b>	<b>In the case of inappropriate usage, incorrect installation or operation, there is a risk of serious personal injury or material damage.</b>
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 <b>Warning!</b>	<b>Depending on the type, some of the components (e.g. motor) may have hot surfaces during operation. Operating temperatures &gt; 60 °C (&gt; 140 °F) can occur. Skin contact will cause burns.</b>
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WEISS devices conform to the relevant VDE regulations. The VDE regulations must also be observed in the case of modification or extension of the devices.

This documentation contains instructions for an installation in accordance with the EMC regulations. Compliance with the limit values stipulated by EMC legislation is the responsibility of the manufacturer of the system or machine.

Unauthorised alterations and the use of spare parts and additional devices which are not recommended by the manufacturer can cause personal injury or damage to the mechanism and the control system.


Before switching on the control card you must ensure that the motor housing is correctly earthed (PE rail).

 <b>Warning!</b>	<b>Control and power connections may be carrying voltage even if the motor is standing still. Never connect or disconnect the electrical connections of the device when it is live.</b>
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**EMERGENCY STOP:**

Suitable protective devices in accordance with EN 60204 Part 1 must be used.

 <p><b>Danger!</b></p>	<p><b>Adequate protective devices, e.g. covers, protective grids, light curtains or step sensors must be installed for operation in order to protect the operating personnel from injury by the rotary indexing table.</b></p>
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In the case of an EMERGENCY STOP the motor line must be reliably interrupted in order to stop the supply of energy and to ensure protection against unintentional re-starting. Interruption of the terminal "2" ( $\overline{\text{RESET}}$ ) alone is not sufficient, as these terminals require a functioning circuit.

In the case of an EMERGENCY STOP, interrupt the following lines:

- Motor line between the contactor and the motor
- Terminal "2" ( $\overline{\text{RESET}}$ /STOP) on the control card

**Designated use:**

This device is designed for industrial and commercial systems and conforms to the valid standards and regulations. All of the instructions regarding technical data and the permissible conditions at the place of installation must be observed. This device is a component for installation in machines. Start-up (start of designated operation) is not permitted until it has been established that the machine is in conformance with the EMC directive 89/336/EEC and the end product is in conformance with the machinery directive 89/37/EC.

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## 2. Controlling with the electronic control card TS004 E

We provide this electronic control card for use in controlling our cam indexing tables (TC, TR and TS). This card monitors the operation of the indexing table and also allows you to optimize the indexing time. The card provides for manual operation as well as independent control by your main PLC.

The indexing table is equipped with a control cam on the drive curve and a sensor. The sensor signals as soon as the table is in the locked position. The control card will then stop the motor and signal to the main PLC.

The motor is stopped after a delay time which is set at the turn switch. This allows the drive to proceed to an ideal starting position for the next cycle.

The drive must come to a standstill within the locking phase. This is monitored by the control card and in the event of an error, reported as a fault ("Position overrun"). If this fault occurs, all processing stations must be immediately reset and the motor voltage supply shut down, as the indexing table is not in the locked position (risk of crash).

The TS002 has been constantly upgraded. As of version TS003 the brake is controlled on a time-optimised basis and it was possible to substantially reduce wear on the brake. As of version TS004 the motor temperature is monitored by a temperature switch.

The control card remains downwards compatible, therefore in the event of replacement an earlier version can be exchanged with the new TS004.

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### 3. Technical data

#### 3.1 General Specifications

<b>Operating voltage</b>	24V DC +/- 10%
<b>Power consumption</b>	typ. 40mA (without 24 V brake)
<b>Power consumption brake</b>	1.0 to 2.0 DC (depending on type)
<b>Digital inputs</b>	Level: LOW: 0V to 5V HIGH: 15V to 30V Input current: 6mA
<b>Digital outputs</b>	Output current: 100 mA (outputs: 4, 6, 7, 8, 9, 10) Output current: 2.0 A (outputs: C, D, E)
<b>EMV</b>	according to EC directive 89/336/EEC Applicable harmonised standards: EN 61 000-3 (harmonic current emissions) EN 61 000-4 (disturbance immunity) EN 55014-1 (interference emission)
<b>Permitted temperature ranges</b>	Storage: -25 °C to 55 °C (-13 °F to 135 °F) Operation: 0 °C to 40 °C (-32 °F to 104 °F)
<b>Humidity</b>	5 to 95%, without condensation
<b>Dimensions</b>	Eurocard: 100 x 160mm



### 3.2 Terminal connection

Terminal	Function	Level	Comment	Multipoint plug, 32-pin
+	+24V		Supply voltage	3/4/A/B
-	GND (OV)		Supply voltage	1/2/A/B
1	Rotation direction	LOW → CW HIGH → CCW	Input 24V	26A
2	Enable (RESET/Stop)	LOW: - Disable - Reset Alarm HIGH: ENABLE	Input 24V	19A
3	Start "edge"	⏏ rising edge	Input 24V	18A
4	Automatic		Output 24V/100mA	16B
5	additional stop	Log. "1" activ	Input 24V	18B
6	Alarm: Position overrun		Output 24V/100mA	10B
7	Alarm: Drive time timeout Motor overload		Output 24V/100mA	10A
8	Sum of alarms		Output 24V/100mA	9A/B
9	Start permitted		Output 24V/100mA	8B
10	Table in position		Output 24V/100mA Output 24V/100mA	8A
C	Motor contactor "Forward"		Output 24V/2A	5A/B
D	Brake		Output 24V/2A	6A/B
E	Motor contactor "Backward"		Output 24V/2A	14A/B
F	Limit switch	Log. "1" activ	Input 24V	15B
G	Release brake	Log. "1" activ	Input 24V	15A
H	Start "level"	Log. "1" activ	Input 24V	17B
T	Temperature sensor	Log. "0" activ	Input 24V	17A

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## 4. Description of inputs and outputs

### 4.1 Inputs

#### Terminal 1: Rotation direction

LOW → Direction of rotation CW (right)

HIGH → Direction of rotation CCW (left)

The signal must appear on the rising/leading edge of cam and the direction of rotation must be determined (Output "C" or "E").

#### Terminal 2: Enable ( $\overline{\text{RESET/Stop}}$ )

It is absolutely necessary to wire this input.

LOW - Disable (Motor STOP)

- Reset Alarm

HIGH Enable

At LOW all drive movements are locked (including manual mode).

Outputs "C" and "E" (motor contactor) and output "D" (brake) are switched off immediately.



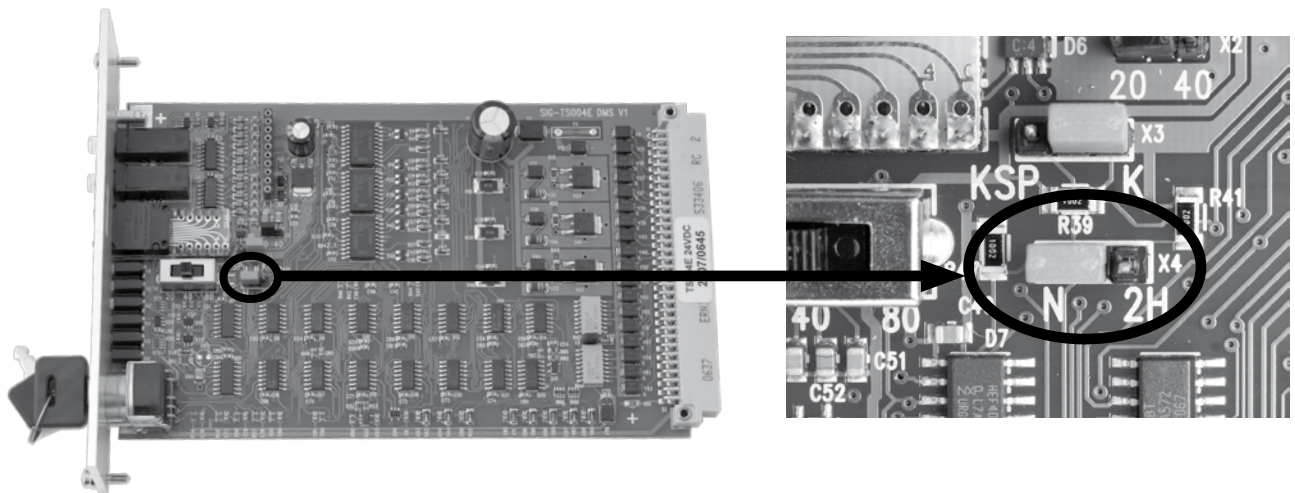
**Danger!**

**Input "Terminal 2" on the control card alone does not fulfil the requirements for the specification of EMERGENCY STOP and door circuits as it requires a functioning wiring. In order to achieve the full EMERGENCY STOP functionality, "Terminal 2" and the motor line must be interrupted.**

#### Terminal 3: Start (edge triggered)

A LOW/HIGH edge starts a complete cycle. The start impulse must have a minimum width of 20 msec. A permanent signal will not trigger a new start.

The jumper "N-2H" must be inserted on the left. The terminal "H" has no effect.



#### Terminal 5: Stop

A HIGH level causes suppression of the start signal and an interruption of the drive movement.

#### Terminal "F": Sensor

The connection of the sensor to the rotary indexing table. It signals when the cam has been reached and triggers a motor STOP.