

# CS100

OPERATING INSTRUCTION



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## 2 Key to symbols



### **Danger of personal injury!**

The safety instructions must be observed!



### **Warning! Danger to property!**

The safety instructions must be observed!



### **Information**

Special information OR Reference to other sources of information

## 3 General safety instructions

### **Guarantee**

The function and safety of the equipment is only guaranteed if the warning and safety instructions included in these operating instructions are adhered to. The Producer is not liable for any personal injury or damage to property that occurs as a result of the warning and safety instructions being disregarded.

### **Using the equipment for its intended purpose**

The CS100 controls are designed only for controlling gates and doors with digital end position systems AWG Standard (external control) or AWG ECO (control in or at the drive).

### Target group

Only qualified and trained electricians may connect, programme and service the controls. Qualified and trained electricians meet the following requirements:

- knowledge of the general and specific safety and accident prevention regulations,
- knowledge of the relevant electrical regulations,
- trained in the use and care of appropriate safety equipment,
- capable of recognising the dangers associated with electricity.

### Instructions for installation and connection

- The controls must be disconnected from the electricity supply before carrying out electrical works.
- Local protective regulations must be complied with.
- Mains cables and control cables must be laid separately.

### Regulations and bases for testing

For connecting, programming and servicing, the following regulations must be observed (the list is not exhaustive).

#### Construction product standards

- EN 12453 (safety in use of power operated doors-requirements)
- EN 12978 (safety devices for power operated doors and gates – requirements and test methods)

#### Electromagnetic compatibility

- EN 50014-1 (Radio disturbance, household appliances)
- EN 61000-3-2 (disturbances in supply systems – harmonic currents)
- EN 61000-3-3 (Disturbances in supply systems – voltage fluctuations)
- EN 61000-6-2 (Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments)
- EN 61000-6-3 (Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments)

#### Machinery guidelines

- EN 60204-1 (Safety of machinery, electrical equipment of machines, part 1\_ general requirements)
- EN 12100-1 (Safety of machinery. Basic concepts, general principles for design. Basic terminology, methodology)

#### Low voltage

- EN 60335-1 (Household and similar electrical appliances-safety)
- EN 60335-2-103 (Particular requirements for drives for gates, doors and windows)

#### Professional association (D)

- BGR 232 (Directive for Power-driven Windows, Doors and Gates)

## GB 4 Overview of products

The following package options are available for the CS100 controls:

- CS 100 controls integrated at the drives
- CS 100 control with CS Mini housing
- CS 100 control with CS Standard housing

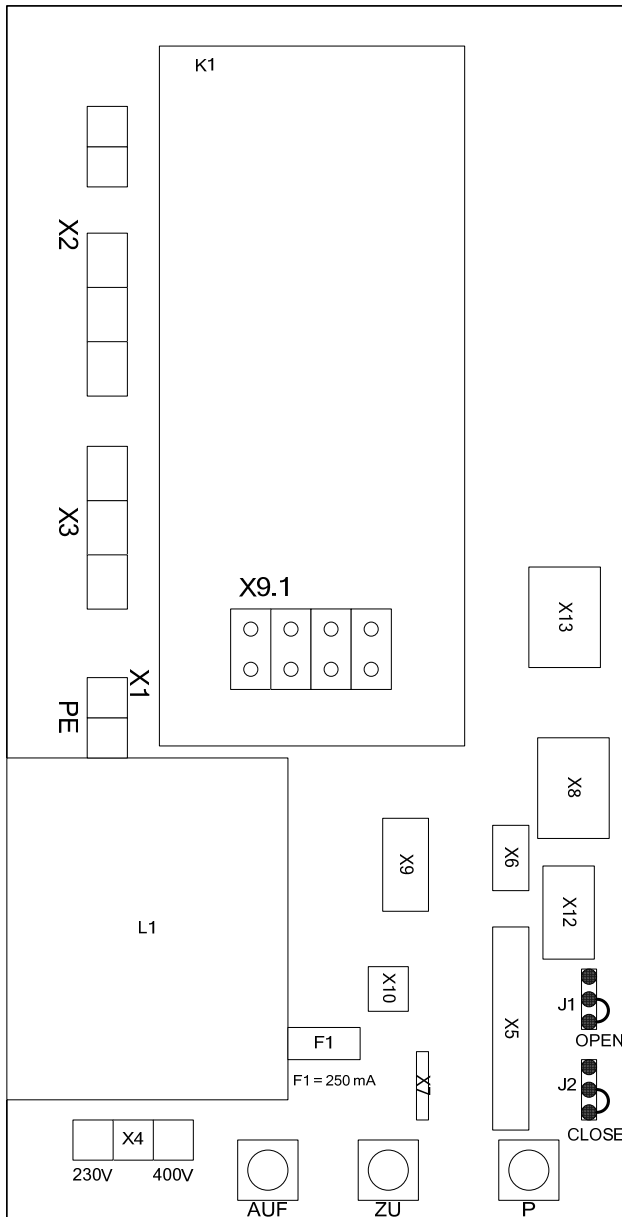
All the above options can be fitted with plug-in radio receiver.

The following options are available for the housing.

- housing with OPEN-STOP-CLOSE – button input unit
- housing with CS-button
- housing with key switch ON/OFF
- housing with main switch
- housing with emergency off switch

The operating instruction describes the connection possibilities and programming procedures for the different models:

- CS 100 controls with CSI – push button station
- CS 100 controls with CS – push button station



**Key:**

X1: terminal block PE  
 X2: terminal block motor  
 X3: terminal block mains connection  
 X4: terminal block mains connection switch

X5/X6: terminal block plug in card

X7: sockets for radio receiver  
 X8: terminal block AWG Standard  
 X9: sockets for CS – cover buttons  
 X9.1: terminal block for external pushbutton  
 X10: terminal block for 2nd shutdown option  
 X12: socket for CSI pushbutton  
 X13: terminal block emergency off switch

J1: Jumper selection operating mode OPEN  
 J2: Jumper selection operating mode CLOSE

K1: reversing contactor  
 L1: transformer  
 F1: 250mA - fuse



### Warning!

To guarantee that the equipment functions properly, the following points must be ensured:

- The gate or door is installed and open rational.
- The command and safety devices are installed and ready for operation.
- The control housing with the CS 100 control is installed.
- Alle Motoranschlüsse sind steuerungs- und motorseitig festgezogen.



### Information:

For the installation of the gate/door, the drive motor and the command and safety devices, the relevant manufacturer's instructions are to be adhered to.

### Mains connection



### Danger!

To guarantee that the controls function properly, the following points must be ensured:

- The mains voltage must correspond to the voltage stated on the type plate.
- For a permanent connection, an all-pole main switch must be used.
- For a three-phase current, a clockwise rotating filed is required.
- For a three-phase connection, only 3-way automatic circuit breakers (10A) may be used.

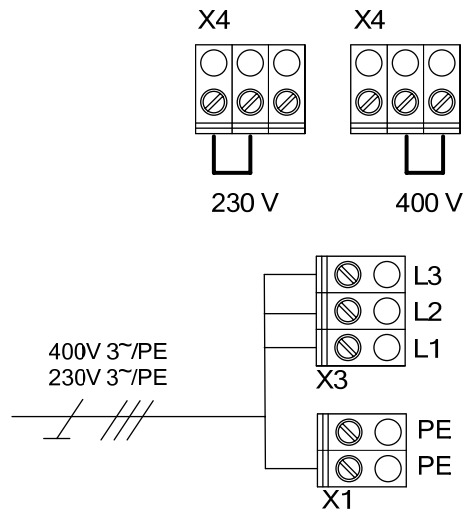


### Warning!

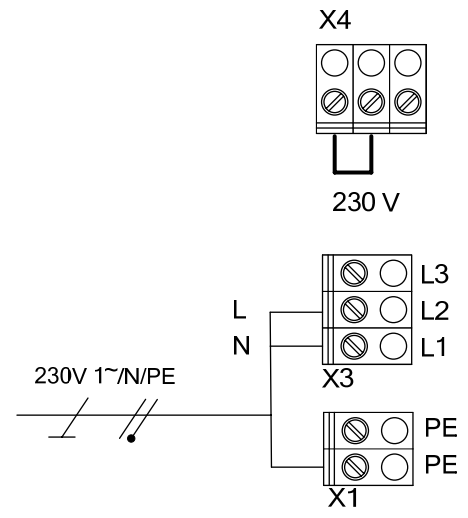
Before switching on the controls for the first time, a check must be carried out after completing the wiring to ensure that all the motor connections at the motor and at the controls are securely fixed. All control voltage inputs are galvanically isolated from the supply. For all components to be connected to the controls, at least one additional isolation with a rated voltage of > 230V is recommended.

**5.2 Installation of main cable**

**3-phase drive**



**1-phase drive**

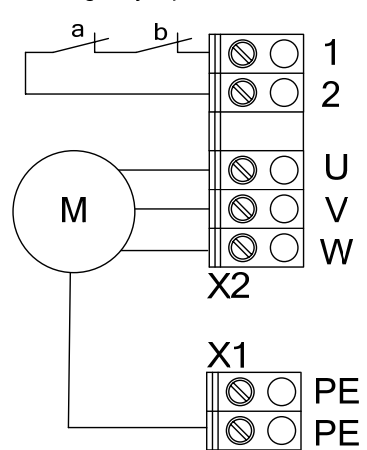


A wrong connection of the bridge X4 may destroy the control!

**5.3 Connection of the drive**

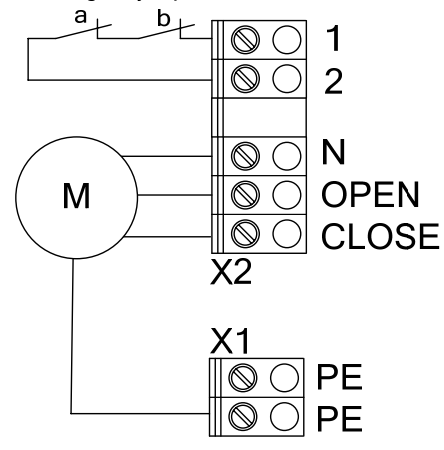
**3-phase drive**

a = Thermal Motor  
b = Emergency Operation



**1-phase drive**

a = Thermal Motor  
b = Emergency Operation



**Change of sense of rotation:** after connecting the drive, the sense of rotation must be checked with the key buttons OPEN and CLOSED. If the moving direction does not correspond to the direction of the arrow indicated on the pressed button, so the screw terminals of the connections U and V must be exchanged.

A special drive mounting must be programmed with the control. (8)



**Drive – safety switch:** By application of the electronic limit switch AWG Standard, a drive-safety switch have to become connected with the AWG plug, by that a bridge must be plugged in at the X2:1/2.

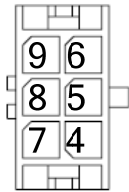
## GB 5.4 Connectin of limit switch



The kind of the used limit switches depends on the assembly of the control. With an assembling of the CS100 control in or directly at the drive, the limit switch AWG ECO is used. The limit switch AWG standard is necessary, if the control is assembled in an external housing.

### a) electronic limit switch AWG STANDARD - CS 100 external

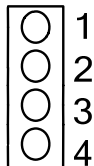
X12



- 4 SK input
- 5 RS 485 B
- 6 GND
- 7 RS 485 A
- 8 SK output
- 9 +12V DC

### b) electronic limit switch AWG ECO - CS 100 in or at the drive

X15

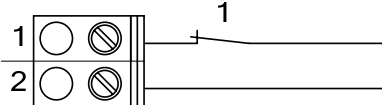


- 1 5 VDC
- 2 signal1
- 3 signal 2
- 4 GND

## 5.5 Connection of direct safety switches

### Emergency stop

X13



1: emergency stop  
or emergency shut-down or safety circuit  
gate

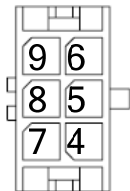


Safety elements that directly ingervene in the control process have to be connected to the terminal X 13.  
If no emergency stop is attached, then the entrance must be bridged.



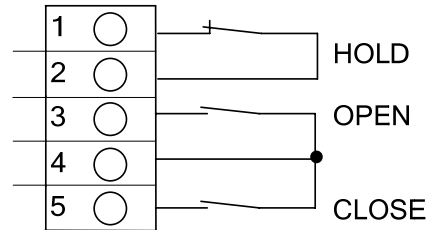
**CSI – push button station**

X12



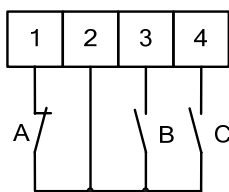
**CS – push button station**

X9



**Push button station – external button**

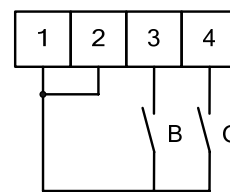
X9.1



A = STOP - button  
B = OPEN - button  
C = CLOSE - button

**External key-operated switch**

X9.1

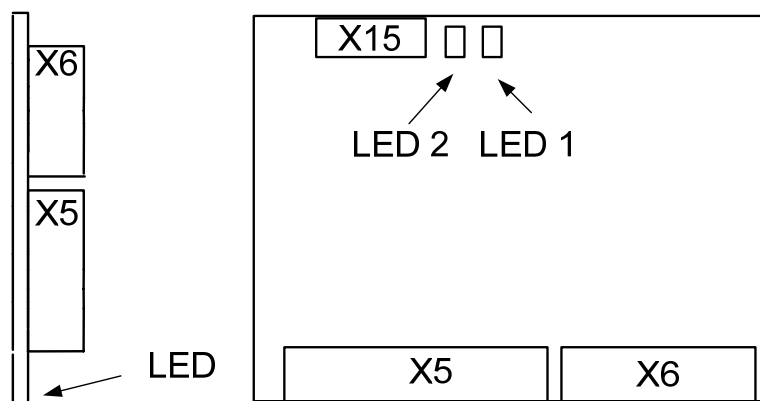


If no stop is attached to X9.1, then the entrance must be bridged.



The area of danger must be visible since the dead-man operation mode runs with key buttons.

5.7 cartridge



An operation without the plug-in module is not possible.

**GB 6 Adjusting the end positions****6.1 Setting the end positions using the installations switches on the circuit board CS100**

- a) Change the mode of operation to ADJUSTING by pressing the (P) button for approx. 5 seconds. The red LED begins to flash slowly.
- b) Setting the end position OPEN
  - Drive the door into the desired OPEN end position by pressing the (AUF/ZU) buttons.
  - Save the end position OPEN by pressing simultaneously the (P) button and the (AUF) button. The red LED begins to flash fast for 1 second.
- c) Setting the end position CLOSE
  - Drive the door into the desired CLOSE end position by pressing the (AUF/ZU) buttons.
  - Save the end position CLOSE by pressing simultaneously the (P) button and the (ZU) button. The red LED begins to flash fast for 1 second.
- d) The adjusting mode is left automatically. The red LED extinguishes.

**6.2 Setting the end positions using push button station CSI**

- a) Change the mode of operation to ADJUSTING by pressing following buttons:
  - STOP button for approx. 5 seconds, the red LED begins to flash fast
  - Release the STOPP button, the red LED turns on for 2 seconds
  - During this time: press the STOP button for approx. 5 seconds, the red LED begins to flash slowly, release the STOP button
- b) Setting the end position OPEN
  - Drive the door into the desired OPEN end position by pressing the (OPEN/CLOSE) buttons.
  - Save the end position OPEN by pressing simultaneously the (Stop) button and the (OPEN) button. The red LED begins to flash fast for 1 second.
- c) Setting the end position CLOSE
  - Drive the door into the desired CLOSE end position by pressing the (OPEN/CLOSE) buttons.
  - Save the end position CLOSE by pressing simultaneously the (Stop) button and the (CLOSE) button. The red LED begins to flash fast for 1 second.
- d) The adjusting mode is left automatically. The red LED extinguishes.

**6.3 Remarks**

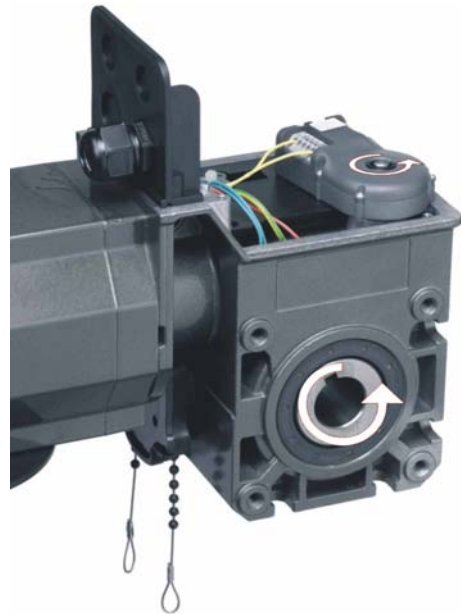
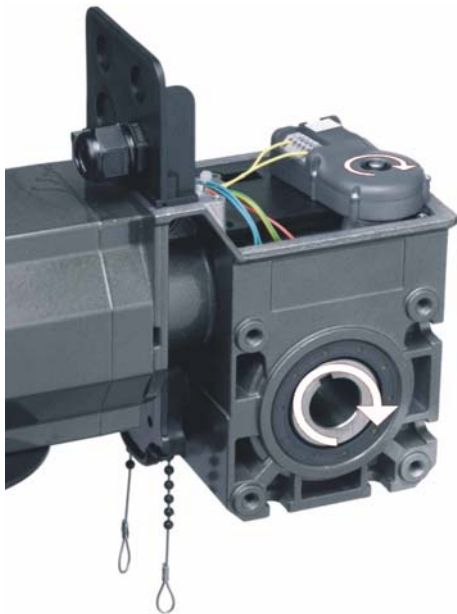
The adjusting mode is left after approximately 10 seconds, if no button is pressed.

- Within the first adjusting both end positions must be programmed. Otherwise no normal operation is possible.
- If only one end position should be corrected, the adjusting menu could be ended by pushing the Stop button, after correcting the end position.
- If an error *end positions* or error *rotary field* should be present, then this must be put back by switching the voltage supply off, in order to make an adjustment possible.

The CS100 control with AWG must be adapted to the roll direction of the drive.

Standard mounting: standard roll direction

Special mounting: reverse roll direction



- a) Switch off the main supply and restart
- b) Change to operating mode ADJUSTMENT
  - Push P button for approx. 5 seconds, the red LED flashes slowly
- c) Change roll direction
  - Push OPEN and CLOSE button for approx. 5 seconds
  - Red LED flashes fast, release the button
  - Adjustment to the roll direction has been carried out

*Attention:*



If the roll direction is switched to reverse roll direction, the drive needs an anti-clockwise rotating field. 2 phases of the mains connection must be changed.

## GB 8 Gate-cycle counter

The announcement of the cycle can be released over the circuit board buttons. The red LED flashes the respective count out.

- The gate is in the end position OPEN
- Operate circuit board button OPEN
- The cycle flashes E \_\_ Z \_\_ H \_\_ T \_\_ ZT \_\_ HT  
(a zero is realized by two short lightnings)
- The change between the digits is indicated by flashing from the green LED

Example: 10408 cycles (\* long flash / \* short flash)

green LED							*	*		*	*	*
red LED	*	*	*	*	*	*	*	**	*	*	*	*
Value							8	0	4	0	1	0

## 9. Error messages and rectification

LED 1, green (cartridge or push button station CSI)

Error	LED signal	Meaning
System does not respond	out	No voltage supply – check the voltage supply of the drive and the control

LED 2 , red (cartridge or push button station CSI)

Error	LED signal	Meaning
Error STOP	LED flashes once	Safety circuit must be closed, then a run is possible
Error RS485	LED flashes twice	Installation stops, communications fault between the end position switch and the control, acknowledge the error with stop, renewed approach possible with keystroke
Error end position	LED flashes three times	Installation stops and no run is possible, switch control zero potential, accomplish the adjustment of the end positions again
Error rotary field	LED flashes four times	Installation stops and no run is possible, switch rotation field, switch control zero potential
Error power	LED flashes five times	Installation stops, acknowledge the error with stop, renewed approach possible with keystroke
Error run time	LED flashes six times	Installation stops, acknowledge the error with stop, renewed approach possible with keystroke



After recovery of the cause of malfunction the control must be once zero potential switched.

Dimensions of housing Mini	167 x 85 x 190
Power supply via L1, L2, L3, PE	230 V or 400 V, 50 / 60 Hz
Consumption of the controls alone	Max. 120 mA
Power input	max. 2200 W / 3,2 A
Duty cycle	60% for a maximum running time of 120 s
Fuse protection	10A K type
Control voltage	24 V DC, max. 250 mA; protected by selfresetting
Control inputs	24V DC, all input connections must be potential-free; minimum signal duration for input control command >100ms
Safety circuit / emergency off	all input connections must be potentialfree; if the safety circuit is interrupted, no further electrically powered movement of the drive is possible
Weight	approx. 1,8 kg
Temperature range	-10 °C ... +45 °C
Air humidity	Up to 80% not condensing
Mounting position	any
Type of protection	IP 65 internal and external

**Manufacturer:**

Hereby we declare that the products cited below:

**CS100 Door Controls**

By virtue of their conceptual development and design, as well as their manufacture as we have brought them onto market, conform to the relevant basic health and safety regulations of the following EU guidelines and standards:

**EU – Construction Products Directive 89/106/EU**

DIN EN 13241-1  
DIN EN 12453  
DIN EN 12445  
DIN EN 12978

**EU – Electromagnetic Compatibility Directive 2004/108/EU**

EN 55014-1  
EN 61000-3-2  
EN 61000-3-3  
EN 61000-6-2  
EN 61000-6-3

**EU – Machinery Directive 2006/42/EU**

EN 60204-1  
EN ISO 12100-1

**EU – Low voltage Directive 2006/95/EU**

EN 60335-1  
EN 60335-2-103

**BGR 232 – Directive for Power-driven Windows, Doors and Gates**

Place, Date:

Manufacturer's signature:

Position of signatory:

Manager

