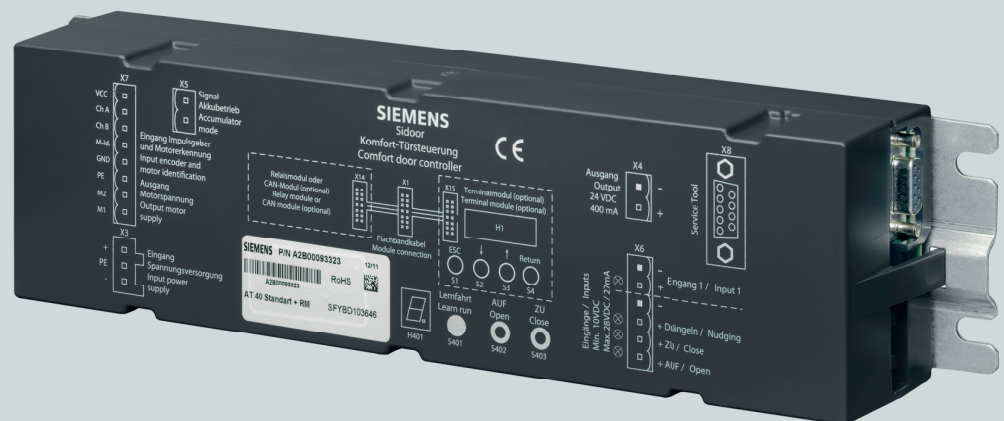


# SIDoor

ATD400V hoisting and rolling shutter drive for elevators

Operating Instructions · 07/2012



## Door Control Systems

Answers for industry.

**SIEMENS**

# SIEMENS

## Door Control Systems

### SIDOOR




## ATD400V hoisting and rolling shutter drive for elevators

### Compact Operating Instructions

#### Legal information

##### Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 <b>DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
 <b>WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
 <b>CAUTION</b>
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.
<b>CAUTION</b>
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.
<b>NOTICE</b>
indicates that an unintended result or situation can occur if the relevant information is not taken into account.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

##### Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

##### Proper use of Siemens products

Note the following:

 <b>WARNING</b>
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

# 1 Safety information

## Before commissioning, please note:

Please read through these instructions carefully. They contain essential information for the installation, use and safety of the equipment.

## Qualified personnel and equipment handling

### WARNING

#### **Risk of injury due to dangerous electrical voltages and moving mechanical parts.**

Only appropriately qualified personnel may work on or in the vicinity of the equipment. Personnel must be thoroughly familiar with all the warnings, notices, and functions of the ATD400V door controller described in the operating instructions.

In the context of the operating instructions and warning notices, a qualified person is a person who is familiar with assembling, installing, commissioning, and operating the product, and who has the relevant qualifications, such as:

- Training, instruction or authorization to switch on and off electric circuits and devices / systems in compliance with safety engineering standards.
- Training or instructions in the maintenance and use of appropriate safety equipment in compliance with safety engineering standards.
- First aid training.

The successful and safe operation of the equipment is dependent on proper transportation, storage, installation, and assembly, as well as on careful operation and maintenance. Before commissioning, all electrical connections must be inspected to ensure that all contacts are secure.

### WARNING

#### **Risk of injury due to dangerous electrical voltages and moving mechanical parts.**

Disconnect the door drive by unplugging the power plug from the power supply before you start work on the door drive.

### WARNING

#### **Risk of injury and damage to property due to excessive closing force of the door.**

Violation of the static closing force may lead to personal injuries, damage to the door drive and to mechanical components of the door.

Taking the counterweights into account, the maximum static closing force must not exceed 150N!

## Changes to the door drive are not permissible.

### CAUTION

#### **Loss of liability for defects and damage to property**

Changes to the door drive lead to the loss of liability for defects and compensation rights, and the correct function of the door drive is no longer guaranteed.

Note the following rules:

- Do not make any changes on the door drive (motor, controller, power supply).
- Do not carry out a permanent connection as this does not ensure a proper and required necessary disconnection from the mains.
- Do not remove the protective Schuko-type socket under any circumstances (e.g. by truncating).
- Disconnect the system from the power supply before you begin working on the door drive.

---

**Note**

AT system series power supplies are fitted with a molded safety plug in line with VDE. The plug forms part of the safety chain of the AT system in the form of the "emergency stop" function. Permanently connected power supplies, including those with a separate "emergency stop" switch, represent a change to the device certified according to EN 81 / 2 and are not permissible.

The Sidoor door drives are "Equipment" and not "electrical installations in the proper sense". A type of equipment is subject to other tests and guidelines than electrical equipment. Therefore - e.g. in the case of a possible insulation measurement of an electrical installation carried out with a DC voltage of 500V - the equipment (door drive) must be disconnected from the network, otherwise the built-in protective circuit of the power supply may be destroyed. A permanent connection must not be made for the reasons stated, because it cannot be ensured that the device can be properly disconnected from the mains when required.

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## 2 Introduction

### ATD400V hoisting and rolling shutter drive

The ATD400V hoisting and rolling shutter drive for elevators is an "intelligent" door drive for the operation of vertical door systems on elevators. The maintenance-free drive unit consists of a speed-controlled DC motor with non-self-locking gearing. The power is transmitted by a toothed belt. The toothed belt passes over a deflector pulley, and can be fitted with two clutch holders. This enables it to drive both single-sided and centrally-opening doors.

The ATD400V door drive can currently be used with the following components:

Component	Version	Order No.
Control unit	Control unit for ATD400V	6FB1111-1AT10-3VE2
Motor M4	30V motor, pinion right, for doors up to 400kg	6FB1103-0AT11-3MCO
	30V motor, pinion left, for doors up to 400kg	6FB1103-0AT10-3MCO
Power supply unit	NT40 Switched-Mode Power Supply	6FB1112-0AT20-3PS0
Emergency power module	Emergency power module with connecting cable	6FB1115-0AT10-4CP0

Operation of the door drive does not require limit switches. The door width and the OPEN and CLOSED positions are determined automatically. A 7-segment display (H401) on the controller indicates the current operating states.

### Operating instructions

These operating instructions are valid for devices from firmware version 1.03.

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**Note**

The illustrations in the instructions refer to Sidoor User Software version 1.11 and ATD400V version 1.03. The illustrations for other versions may differ slightly.

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**Note**

In the interests of clarity, these Operating Instructions do not contain full details of all information for all product types and cannot take into account every possible aspect of installation, operation, or maintenance.

You can obtain further information about this product and its application in the Internet ([www.siemens.com/sidoor](http://www.siemens.com/sidoor)).

Furthermore, the contents of the operating instructions shall not become a part of or modify any prior or existing agreement, commitment, or legal relationship. All obligations on the part of Siemens arise from the relevant contract of sale, which also contains the complete and solely valid warranty conditions. Any statements contained in the operating instructions neither expand nor restrict the scope of these contractual warranty conditions.

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### Manual

Please also observe the detailed additional information contained in the "SIDOOR elevator door drive AT40" manual. The manual is available for download from the Internet (<http://support.automation.siemens.com/WWW/view/en/58531074>).

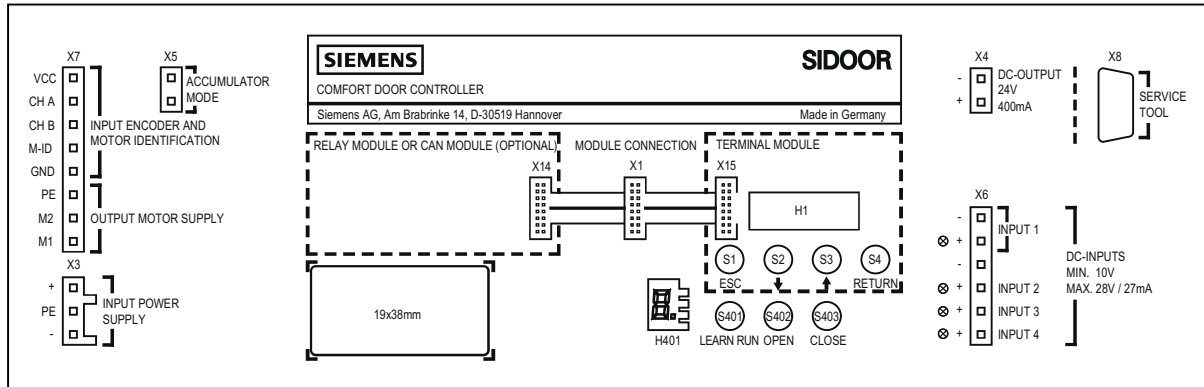
## Parameter documentation

### Note

After the optimal settings of the parameters have been determined, they should be noted in the configuration record (see Appendix Setting record (Page 37)). These records should also be kept at hand when asking questions on the Hotline.

## 3 Overview of controls

### Control elements



- X1: Flat cable connector for the add-on modules
- X3: Power supply connection
- X4: Voltage output 24V / 0.4A
- X5: Input signal emergency power module
- X6: Connector for input signals
- Input 1 (adjustable function)
  - Input 2 (Nudge)
  - Input 3 (Close)
  - Input 4 (Open)
- X7: Motor plug
- X8: Connector for Service Tool and USB adapter
- H401: 7-segment display for door status and event codes
- S401: Learn run
- S402: Service button OPEN
- S403: Service button CLOSE
- X14: Flat cable connector for relay module (optional) or CAN module (optional)
- X15: Flat cable connector for the terminal module
- H1: LCD display
- S1-S4: Operator buttons for terminal module

Figure 3-1 Overview of controls

## 4 Terminology / abbreviations

### Terms and acronyms

The following list provides you with information on the most important terms and acronyms used in the documentation.

#### Initial speed

Reduced speed in the opening and closing directions after power on until normal operation is detected.

#### Creep speed

Reduced speed in the vicinity of the OPEN position of the elevator door (creep distance).

#### Cutter speed

Reduced speed in the vicinity of the CLOSED position of the elevator door (cutter distance).

#### Creep distance

Range of door travel in the vicinity of the OPEN position.

#### Cutter distance

Range of door travel in the vicinity of the CLOSED position.

#### Firmware

ATD400V door controller software

#### FE

Functional grounding

#### LED


Light emitting diode

#### PE


Protective ground

## 5 Mechanical installation and setting

### Requirement

 <b>WARNING</b>
<b>Risk of injury due to dangerous electrical voltages and moving mechanical parts.</b> Disconnect the door drive by unplugging the power plug from the power supply before you start work on the door drive.

### Procedure


 <b>CAUTION</b>
<b>Danger of burns</b> The temperature of the housing of the switch mode power supply can rise to over 105°C in the event of a fault in the controller or a short circuit in the output line of the switch-mode power supply. Observe the following safety measures: <ul style="list-style-type: none"><li>• Only mount the power supply on surfaces with no risk of ignition, and which cannot be touched by unauthorized persons.</li><li>• Inform service personnel about the danger of burns.</li></ul>


The mechanical assembly and setting of the elevator door drive are performed in the following steps:

1. Mount the motor on the rubber-metal anti-vibration motor mounting. Then, if necessary, mount the motor on the mounting bracket.
2. Mount the deflector pulley, if necessary with a mounting bracket. Align the drive pinion and the deflector pulley as precisely as possible with each other (flush).
3. Bolt the two ends of the toothed belt to the door clutch holder. Place the closed toothed belt over the motor pinion and deflector pulley.
4. Tension the toothed belt with the aid of the tensioning device. The correct tension has been reached when the midpoint of the toothed belt can be pushed in by approximately 3cm for every meter of distance between the drive pinion and the deflector pulley.
5. Mount the controller close to the drive motor (take the length of the cable into account).
6. Mount the power supply close to the controller (take the length of the cable into account).

## 6 Electrical adjustment and commissioning

### Requirement

 <b>WARNING</b>
<b>Risk of injury from moving mechanical parts during commissioning</b> The door movements cannot always be externally controlled while the controller is being commissioned (in particular during the automatic determination of parameters). The light barrier is not active during the learn run. An authorized person must therefore be posted near the door to ensure that no one else can come near the elevator door during commissioning.

 <b>WARNING</b>
<b>Risk of injury from moving mechanical parts</b> After commissioning, the forces and energies in the entire elevator system must be checked by the service personnel with landing door and cabin door coupled to ensure that they are within their permissible limits.

---

**Note**

The motor temperature must not be below 0°C during the learn run, as otherwise the weight of the door will be incorrectly determined, and the closing and nudge speeds may lie in impermissible ranges.

---

**Procedure**

1. Push the door into the CLOSED position.
  2. Open housing lid.
  3. Plug in the X7 motor plug.
- 

**Note**

The X6 control inputs plug is not plugged in during commissioning in order to prevent uncontrolled movements.

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4. Connect the power supply to the 230 VAC mains supply. The on-site fuse must not exceed 10 A.
5. Press and hold down the red learn run button (S401).
6. Connect the power supply output to X3.
7. The learn run starts automatically, and the learn run button can be released. The 7-segment display (H401) shows "H.". During the learn run, the door is opened about 10cm, and closed once or twice at creep speed. The friction of the door system is then determined by opening and closing the door once through a range of 25cm at creep speed. The door then opens and closes through its complete range of movement at reduced speed. After the door has opened about 10cm, it passes through a short acceleration ramp to determine the weight of the door. In the CLOSED position, the door parameters and the determined door width are saved. The decimal point in the 7-segment display (H401) flashes during the save process. The 7-segment display (H401) shows "u" when saving has finished.
8. The door can now be opened with the OPEN button S402. The 7-segment display (H401) shows "o" while the door is opening.
9. Switch off the controller by pulling out the power plug or the X3 plug.
10. Connect the control signals to the X6 connector as shown in the terminal circuit diagram (see Terminal circuit diagram of control inputs (Page 36)).
11. Connect the light barrier to X6 (see Overview of controls (Page 25) or text on cover). If the light barrier input (input 1) is not used, X6 must be wired to X4 as indicated by the lines in the layout diagram. The sensor must be connected here if the DCPS function is used.
12. Plug in terminal connectors X6 and X4.
13. Switch on the controller (plug in the power plug or the X3 plug). The four LEDs alongside the plug connector X6 indicate which control signal is currently active. If there is no obstruction in the range of movement of the door, the LED for the light barrier should be lit continuously.
14. If the control signal CLOSE is present, the door moves into the CLOSED position at initial speed. If an OPEN control signal is present, the door moves into the OPEN position at initial speed.
15. Once the controller has detected the door OPEN and CLOSED end positions, the subsequent opening and closing movements proceed at normal speed once again.
16. The door travel values can be matched to the individual door for specific applications with the aid of the integrated terminal module or the Service Tool (optional). Parameters can also be changed with the aid of the Sidor User Software (optional, part of the Sidor Software Kit). Simple settings can also be made with the three buttons and the 7-segment display on the basic unit via the Electrical adjustment with the minimal editor (Page 31).



# 7 Travel curve

Travel curve

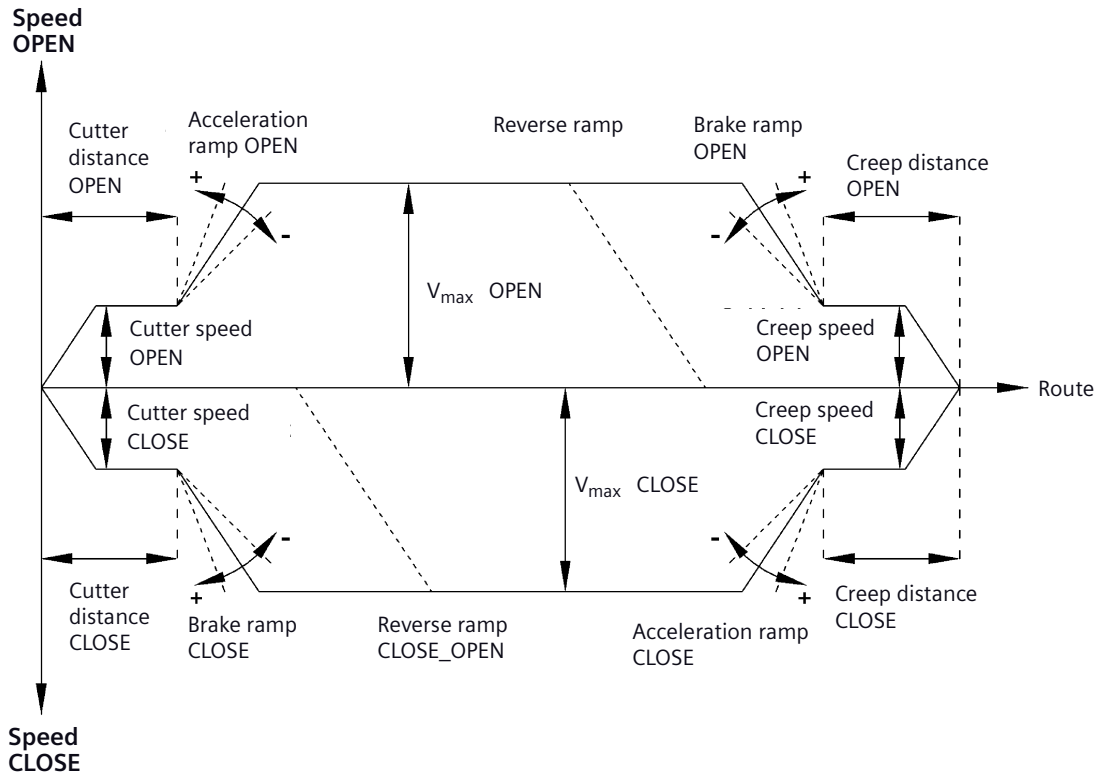



Figure 7-1 Travel curve

Reversing ramp OPEN\_CLOSE = direction of travel reverses from *OPEN* to *CLOSE*. Reversing ramp CLOSE\_OPEN = direction of travel reverses from *CLOSE* to *OPEN*.

When reversing from the opening direction to the closing direction, the door is braked with the reversing ramp OPEN\_CLOSE, and starts the closing movement with the acceleration ramp CLOSE.

 <b>WARNING</b>
<p><b>Risk of injury from moving mechanical parts</b></p> <p>After commissioning, the forces and energies in the entire elevator system must be checked by the service personnel with landing door and cabin door coupled and adjusted if they exceed their limit values. The following guidelines must be observed:</p> <ul style="list-style-type: none"> <li>• The speed limit curve is the characteristic curve which defines the maximum permissible door speed <math>V_{max}</math> as a function of the total door panel weight. According to EN 81, the maximum kinetic energy of the door in the closing direction must not exceed 10 joules.</li> <li>• If the reversing device is switched off, the maximum kinetic energy must not exceed 4 joules.</li> <li>• Gearing up or down is not allowed on the toothed belt because this would change the kinetic energies or static forces on the door. The door width would then no longer be valid.</li> </ul>

## 8 ATD400V firmware version 1.03 profile

### Motor M4

Parameter	Unit	M4 profile 1	M4 profile 2 *	M4 profile 3	M4 profile 4	M4 profile 5	M4 profile 6
Creep distance OPEN	mm	30	30	30	30	30	30
Cutter distance OPEN	mm	30	30	30	30	30	30
Creep distance CLOSE	mm	30	30	30	30	30	30
Cutter distance CLOSE	mm	30	30	30	30	30	30
Maximum speed OPEN	mm/s	300	400	650	400	400	400
Creep speed OPEN	mm/s	40	40	40	40	40	40
Cutter speed OPEN	mm/s	30	30	30	30	30	30
Initial speed OPEN	mm/s	90	90	90	90	90	90
Maximum speed CLOSE	mm/s	200	300	300	300	300	300
Creep speed CLOSE	mm/s	60	60	60	60	60	60
Cutter speed CLOSE	mm/s	30	30	30	30	30	30
Initial speed CLOSE	mm/s	90	90	90	90	90	90
Nudge speed CLOSE	mm/s	130	130	130	130	130	130
Acceleration ramp OPEN	mm/s <sup>2</sup>	1000	1100	1400	1100	1100	1100
Braking ramp OPEN	mm/s <sup>2</sup>	500	600	850	600	600	600
Reversing ramp OPEN/CLOSE	mm/s <sup>2</sup>	750	850	850	850	850	850
Acceleration ramp CLOSE	mm/s <sup>2</sup>	700	800	1100	800	800	800
Braking ramp CLOSE	mm/s <sup>2</sup>	800	900	1000	900	900	900
Reversing ramp CLOSE/OPEN	mm/s <sup>2</sup>	1400	1400	1400	1400	1400	1400
Continuous torque (power) OPEN	A	1.5	1.5	1.5	1.5	1.5	1.5
Continuous torque (power) CLOSE	A	1.5	1.5	1.5	1.5	1.5	1.5
Cutter press-on torque	A	3.0	3.0	3.0	3.0	3.0	3.0
Opening force static	N	300	300	300	300	300	300
Closing force static	N	150	150	150	150	150	150
Cutter force static CLOSE	N	150	150	150	150	150	150
Nudge force static CLOSE	N	150	150	150	150	150	150

\* default profile

## 9 Electrical adjustment with the minimal editor

### Minimal editor

The minimal editor is a tool for changing the parameters of an ATD400V controller if the terminal module, Service Tool or Sidor User Software are not available. In this case, the learn run button (S401) and the two service buttons (S402, S403) are assigned second functions. The LED display (H401) is used to visualize messages.

### Procedure

Activating the minimal editor requires a specific button pressing procedure, which can only be done after a mains reset. The detailed operation is as follows:

1. The OPEN and CLOSE buttons must be pressed simultaneously when the program starts (supply voltage switched on). An 8 appears in the display for approx. 5 seconds as confirmation.
2. As soon as the display stops, the user must release both buttons (time window approx. 3 seconds), and not touch them until the time window has ended.
3. A 'C' is now shown in the display to confirm successful activation of the minimal editor.

The minimal editor allows two settings: the selection of a fixed profile or the joint setting of the closing forces. A value is set with the service buttons (S402, S403). The data are accepted by pressing the learn run button (S401) for more than two seconds. Successful saving is confirmed by a dot in the LED display. Briefly pressing the learn run button merely switches to the other parameters without changing the respective value.

The display of a value alternates between a numerical value and an identifying code letter ('A' for forces in the closing direction or 'C' for the selection of a profile). Values between 1 and 6 can be used to set the profile (1 for profile no. 1 and 6 for profile no. 6). The closing forces are set in the form of a counterweight, whereby 1kg is simply taken as 10N. The input can range from 0 to 8, where 0 stands for "no counterweight" and 8 for an "8kg counterweight". The input of the counterweight changes the closing force, as it is subtracted from the maximum value of 150N. The setting 8 therefore reduces the closing force to 70N ( $150N - 80N = 70N$ ). The minimal editor is exited by switching the power supply voltage off and on again.

 <b>WARNING</b>
--

<b>Risk of injury from moving mechanical parts</b>
--

It is absolutely essential that you perform a new learn run (start by clicking the S401 button) on the heaviest elevator door in the entire system with landing door and cabin door coupled if you have adopted a new profile.
--

 <b>WARNING</b>
--

<b>Risk of injury from moving mechanical parts</b>
--

Selecting a profile overwrites the input of the counterweight. The input of the counterweight changes the closing force, as it is subtracted from the maximum value of 150N. The value for the counterweight (parameter 'A') must therefore always be set last.
---

## 10 Relay contacts (optional)

### Purpose of the relay contacts:

The relay contacts of the optional relay module can be used to report the following door states to the higher-level elevator controller:

- X11 (Pin1 and Pin3 closed) → The door has reached the "CLOSED" position
- X12 (Pin1 and Pin3 closed) → Door reverses because of a blockage, interruption of the light barrier or an opening command.
- X13 (Pin1 and Pin3 closed) → The door has reached the "OPEN" position

### Safety information to observe when connecting the relay contacts

<b>! WARNING</b>
<b>Danger of injury during transport of people or goods</b>
The door controller is not a safety mechanism! The safe transport of people or goods can no longer be ensured in the event of misappropriation of the relay contacts. Do not use the relay contacts for the elevator safety circuit.

<b>! DANGER</b>
<b>Risk of injury from dangerous electrical voltages.</b>
When the housing cover is opened, only a safety extra-low voltage of less than 42V may be present. The protective cover provided must be used when a higher voltage (max. 230 VAC) is connected to the relay module. Observe the following guidelines:
<ul style="list-style-type: none"><li>• The cables connected must be suitable for the voltage used and have appropriate (double or reinforced) insulation. Cables with an external diameter of 6 to 7mm are recommended.</li><li>• Inside the cover, the single-insulation must be removed from the single cores at least 5mm from the cable entry openings, and the cores connected as short as possible to the terminal connectors. The cables must be secured inside the plastic cover against being pulled out. A cable tie, which has been pulled tightly around the cable, prevents the cable from being pulled through the oval opening in the relay cover. The cable tie must be applied in such a way that a minimum of 5mm of the outer cable jacket lies inside the protective cover. Components of the controller and connecting cable, such as the motor plug and its wires, may only come in contact with the additional (or reinforced) insulation of the current-carrying wires.</li><li>• Networks with different voltages (e.g. 24V and 230V) must not be connected to the relay module. Additional strain relief is provided by cable ties at the fixing points provided in the housing.</li></ul>

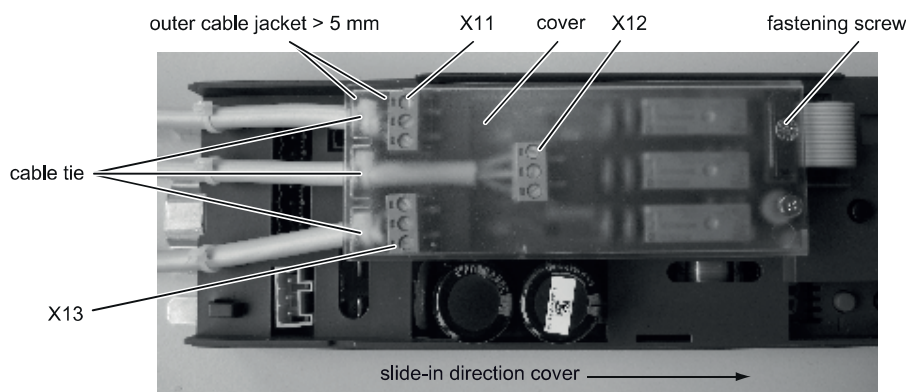






Figure 10-1 Protective cover for relay module




# 11 Parameter setting with terminal module or hand-held terminal

## Tools for setting the parameters

The (integrated) terminal module, Service Tool (optional), or the Sidor User Software (optional, part of the Sidor Software Kit) can be used equally well to diagnose and set parameters. The Service Tool and the USB adapter can be connected to X8 on the controller with the associated cable. The tool keys and buttons have identical inscriptions and functions.

	Return key – jumps to the next menu below
	Escape key – jumps back to the menu above
	Menu selection key – increases a parameter value
	Menu selection key – decreases a parameter value

## Changing parameters

Parameters can be changed in the "MAIN MENU QUICK ADJUSTMENT → Parameter Setting" and in the "MAIN MENU TOTAL ADJUSTMENT → Parameter Profile". The desired parameter is selected with the  or the  key, and activated for the setting with the Return key  (parameter value flashes). The parameter value can then be increased or reduced by pressing the corresponding key (see above). The value is accepted by pressing the Return key again.

A changed parameter is always accepted in the "CLOSED" door position.

\* If a different motor version is used, commissioning must be repeated as described in these Operating Instructions.

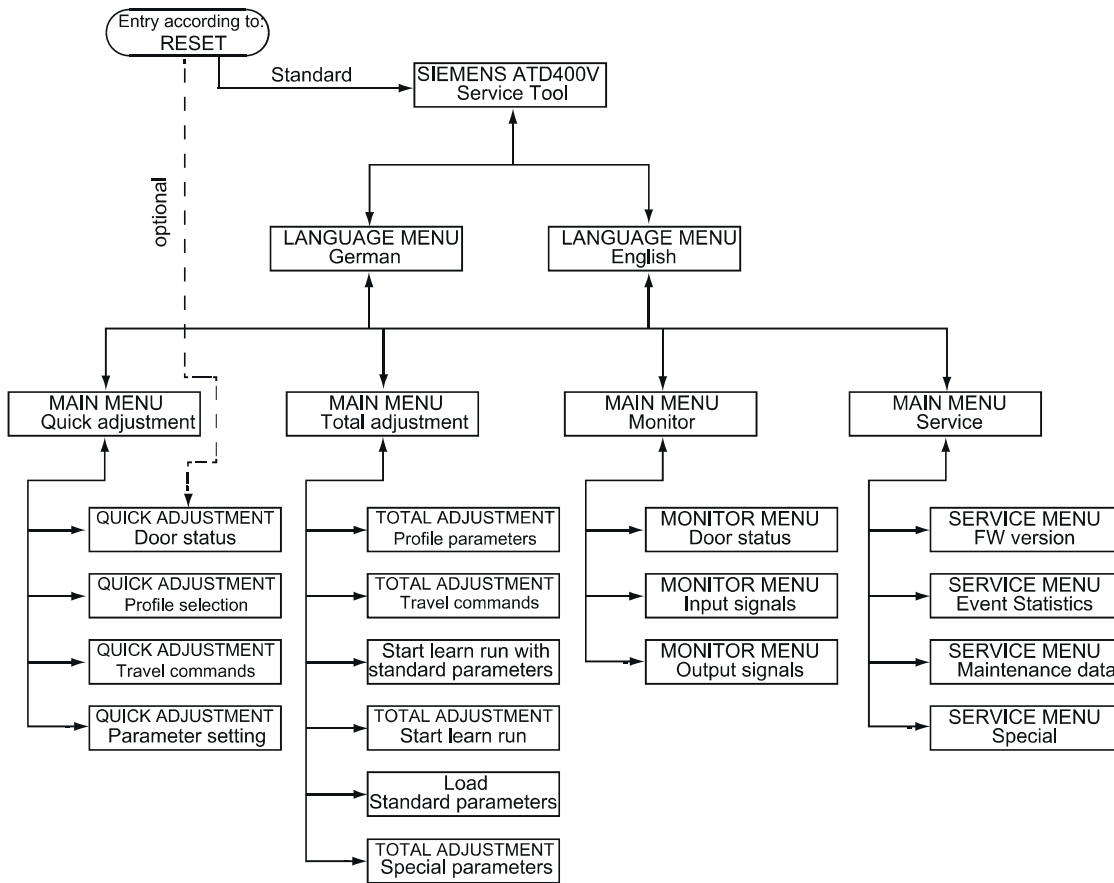


Figure 11-1 Menu Service Tool

## 12 Operating state display

### Operating states of the H401 7-segment display

The 7-segment display H401 indicates the following operating states:

Display	Meaning
0	Light barrier signal present (light barrier interrupted)
1	RAM, EEPROM or CPU error (system error)
2	Braking chopper defective
3	Error in the second shutdown route
4	Increased hold-open time with longer motor switch-on time
5	Motor undefined*
6	Motor blocked in direction of closure
7	Error in pulse generator
8	Minimal editor is started (press the service buttons OPEN and CLOSE simultaneously at power on).
9	Motor overcurrent
A	Minimal editor (force setting) active
b	Reserve
c	Blockage while opening
C	Minimal editor (profile setting) is active
d	Door remains stationary during initialization run (no OPEN or CLOSE signal, or door has reached end position)
E	Motor overvoltage
F	Motor undervoltage
h	Reserve
H	Parameter determination (learn run)
n	Output stage defective
L	Current measurement error
o	Function OK
P	Parameter error (error during learn run)
r	CAN error
u	Door closed
U	Maximum door weight exceeded
_	Controller has no parameters and is waiting for learn run

\* If a different motor version is used, commissioning must be repeated as described in these Operating Instructions.

# 13 Terminal circuit diagram of control inputs

## Terminal circuit diagram of control inputs

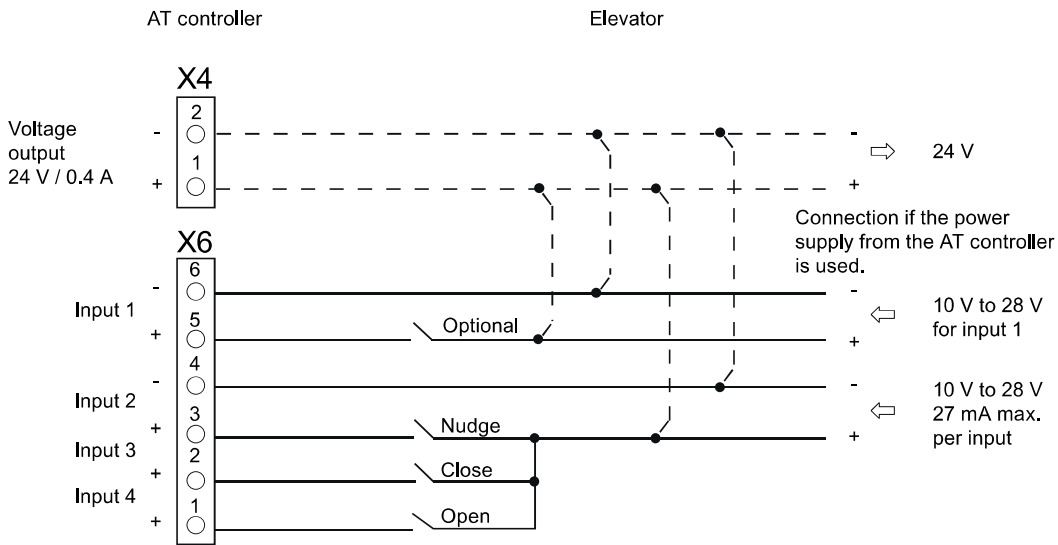


Figure 13-1 Terminal circuit diagram of control inputs

Nudge = simultaneous activation of the CLOSE and Nudge commands (effective only in the closing direction).

**Note**

The X4 24V voltage output must not be connected to an external voltage potential, such as a higher-level elevator controller, for example.

The X4 connector 2 (minus 24V) can be connected to the PE.



## 14 Setting record

### Setting record

Parameter	Unit	Motor M4 (30V / 4A, up to 400kg door weight)		Motor ...		Value set by fitter
		Adjustment range	Factory setting	Adjustment range	Factory setting	
Creep distance OPEN	mm	0 ... 100	30			mm
Cutter distance OPEN	mm	0 ... 100	30			mm
Creep distance CLOSE	mm	0 ... 100	30			mm
Cutter distance CLOSE	mm	0 ... 100	30			mm
Maximum speed OPEN	mm/s	100 ... 750	400			mm/s
Creep speed OPEN	mm/s	30 ... 90	40			mm/s
Cutter speed OPEN	mm/s	30 ... 90	30			mm/s
Initial speed OPEN	mm/s	30 ... 90	90			mm/s
Maximum speed CLOSE	mm/s	100 ... 300	300			mm/s
Creep speed CLOSE	mm/s	30 ... 90	60			mm/s
Cutter speed CLOSE	mm/s	30 ... 90	30			mm/s
Initial speed CLOSE	mm/s	30 ... 90	90			mm/s
Nudge speed CLOSE	mm/s	50 ... 250	130			mm/s
Acceleration ramp OPEN	mm/s <sup>2</sup>	300 ... 1400	1100			mm/s <sup>2</sup>
Braking ramp OPEN	mm/s <sup>2</sup>	300 ... 1400	600			mm/s <sup>2</sup>
Reversing ramp OPEN/CLOSE	mm/s <sup>2</sup>	300 ... 1400	850			mm/s <sup>2</sup>
Acceleration ramp CLOSE	mm/s <sup>2</sup>	300 ... 1400	800			mm/s <sup>2</sup>
Braking ramp CLOSE	mm/s <sup>2</sup>	300 ... 1400	900			mm/s <sup>2</sup>
Reversing ramp CLOSE/OPEN	mm/s <sup>2</sup>	300 ... 1400	140			mm/s <sup>2</sup>
Continuous torque (power) OPEN	A	0 ... 2.5	1.5			A
Continuous torque (power) CLOSE	A	0 ... 2.5	1.5			A
Cutter press-on torque	A	0 ... 5	3.0			A
Opening force static	N	70 ... 360	300			N
Closing force static	N	70 ... 230	150			N
Cutter force static CLOSE	N	70 ... 230	150			N
Nudge force static CLOSE	N	70 ... 230	150			N

Parameters should always be adjusted during normal operation with the door in the CLOSED position, because the controller then accepts the values immediately.



## Service & Support

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