

# **TECHNICAL MANUAL UNIVERSAL CONTROL UNIT MULTI CONTROL**

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<https://en.dictator.de/products/door-drives-gate-drives/control-systems/multi-control/>

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## 1. General information

The control unit Multi Control is used for the DICTAMAT DC-21 gate operator series (DICTAMAT Move sliding gate operators). It meets the requirements of EN 12453 for the safety of use of power-operated gates.

Its main advantages are:

- Self-monitoring, i.e. it switches itself off as soon as an error could trigger a dangerous situation.
- Direct connection of safety devices according to EN 13849-1, without an additional evaluation unit.
- Implementation of different stop behavior of the gate. This protects gate and drive during normal operation. In hazardous situations, the prescribed maximum overtravel in accordance with EN 12453 is maintained.
- Connection option for the mechanical braking device.
- The Multi Control allows position detection via position encoder or encoder and thus a very precise positioning of the gate.
- Graphic display on the casing cover with status and error display. A membrane keypad with touch function is located on the housing cover. The housing for the Multi Control has been designed to keep the external dimensions as small as possible. This means that the control unit can be easily installed even in small spaces. However, there is still enough space inside to accommodate additional devices or batteries if required.

## 2. Basic safety instructions

### Regarding installation

- During installation, the main switch must be turned off.
- The mains connection may only be carried out by an authorized electrician.
- During configuration, all personnel must keep out of the moving direction.
- The control unit must not be installed on moving or vibrating parts.
- The control unit must not be installed in a location where it blocks escape routes.

### Regarding cleaning & maintenance

- Before servicing, cleaning and repairing the system, the power supply must be disconnected for at least 5 minutes.
- The control unit must not be exposed to steam or moisture during cleaning. If necessary, use a cloth moistened with soapy water or cleaning alcohol.

### Regarding inspection & repair

- Repairs may only be carried out by qualified and trained technicians who have a sound knowledge of the system.
- A complete maintenance/safety check must be carried out by an authorized specialist yearly.
- Use only original spare parts for repair.
- During repair, the main switch must be turned off and securely locked in the off position, i.e. the key must be removed.

### Regarding environment & storage

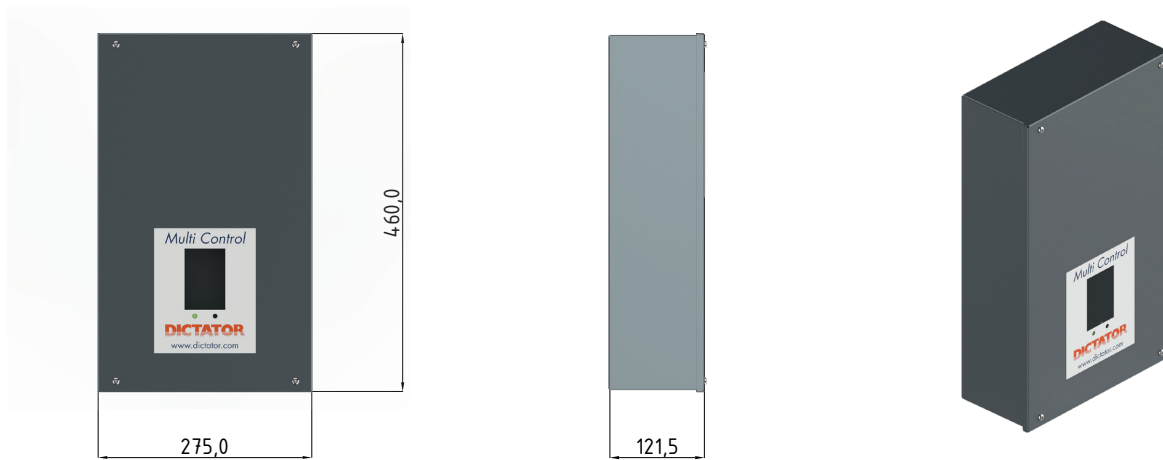
- The control unit must not be installed in a housing that meets the requirements of protection class IP 65 or higher.
- The control unit must not be installed outdoors.
- The control unit must not be installed in areas subject to risk of explosion.
- Installation and operation may only take place in rooms with less than 90 % humidity.
- Storage of the device must take place under the same conditions as during operation.

### Regarding electrical installation

The significantly higher requirements for the safety of the "machine/gate" imposed by the EN 12453 make it necessary for each system to be tested and commissioned by a specialist trained for this purpose. Therefore, all safety-relevant parameters are password protected.

- Please make absolutely sure that you use a separate shielded cable for each of the cables to the motor and to the encoder in the motor. Never lay the motor cable parallel to the encoder cable. Do not separate or damage the cable.
- Use a metal EMC cable gland when inserting all shielded connecting cables into the casing of the control unit.
- Proper grounding is mandatory when installing variable frequency operators - not only for personal safety, but also to ensure reliable operation.
- Always connect motor ground and the motor housing to a common ground point with the lowest possible impedance.
- The cables must be one-piece and unbroken over their entire length.

### 3. Dimensions casing



#### 3.1 TECHNICAL DATA

<b>Voltage</b>	90 - 264 V AC / 127 - 370 V DC
<b>Power consumption</b>	4 A / 115 V AC 2 A / 230 V AC
<b>Output voltage (secondary)</b>	24 V DC
<b>Output voltage motor</b>	24 V DC
<b>Motor rating</b>	200 W nominal, 400 W peak (100 ms)
<b>Dimensions</b>	275 × 460 × 121,5 mm
<b>IP rating</b>	IP 40
<b>Recommended fuse protection</b>	5 A thermal
<b>Operating temperature</b>	-25 °C – 50 °C

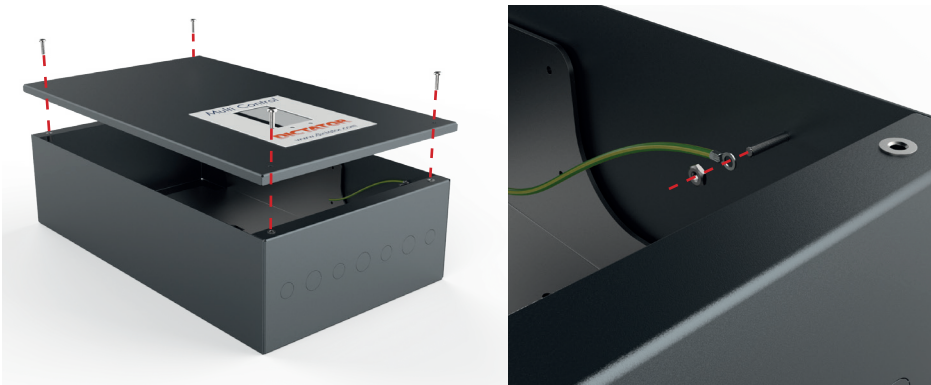
## 4. Mechanical assembly

Installing the control unit is very easy, as the entire electronics module can be removed on a carrier plate. The cover can also be removed completely, as the cable to the programming display only needs to be unplugged. This means that the empty and hence lightweight housing can be easily installed on the wall.

When selecting the installation location, it must be ensured that the distance to the motor does not exceed 30 meters. The door operator, control elements and safety devices are conveniently connected at removable, coded terminal blocks.

With the control unit Multi Control, the DICTATOR door operator DICTAMAT can be optimally adapted to the respective door. This is an essential prerequisite for the safe use of power-operated doors.

1. Loosen the 4 cover screws and carefully lift the casing cover. Disconnect the protective conductor connection on the module housing. Never pull on the cable itself! The cable to the display is enough to lift the cover and disconnect the cable at the control board.



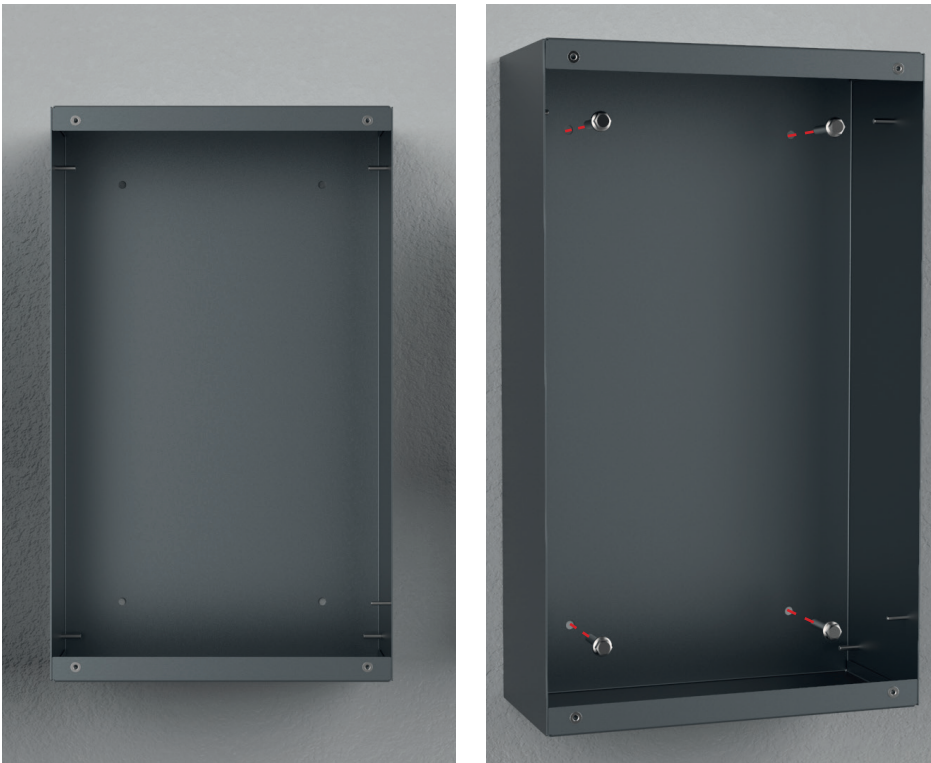
2. Loosen the two wing nuts securing the sub-rack in the housing and then lift it completely out of the housing.



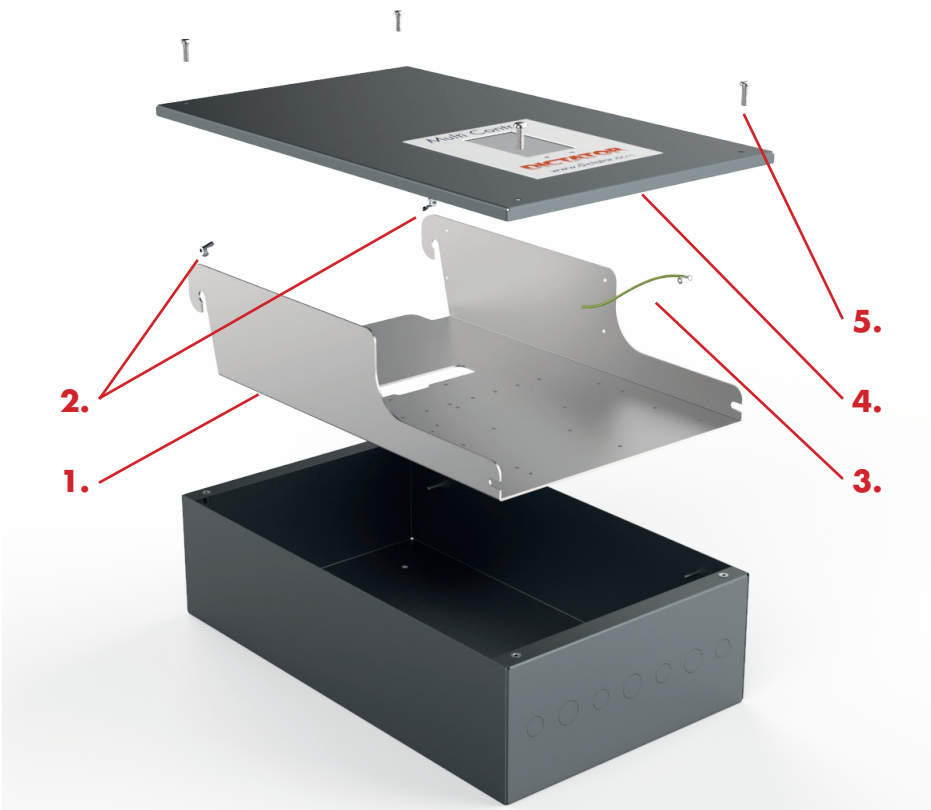
3. Make the required breakthroughs for screw fittings or choke nipples by gently knocking out the knockouts in the bottom face of the housing.



4. Attach the housing to the wall using the four pre-drilled holes.



5. Now insert the sub-rack back into the housing and fasten it to the base of the housing with the two nuts. Reconnect the protective earth connection of the module housing! Attach the display cable to the control board and screw in the 4 cover screws again.



## 5. Electrical connection



### **CAUTION! ELECTRICAL DANGER!**

Before carrying out electrical work on the operator or control unit the mains supply must be disconnected.

### 5.1 FUSE PROTECTION / MAIN SWITCH

The control unit must be fused with 5 A on the mains side. In addition, a lockable main switch should be placed in the immediate vicinity of the control unit to disconnect all poles of the mains voltage to the control unit. Plugs and cables must be able to meet the power requirements of the control unit version.

### 5.2 EXTERNAL DEVICES CONNECTION

Connect all supply lines of your external devices (door operator, operating pushbuttons, safety devices, limit switches if applicable...) to the pluggable terminal blocks. Please observe the already pre-configured inputs and outputs.

Maximum cable length: 30 m

### 5.3 FINISHING THE WIRING WORK

After completing the wiring, the protective conductor connection to the housing cover and to the display cable connection must be re-established. Before closing the cover, check again whether all protective conductor connections have been reliably restored! Now screw the housing cover back on. Make sure that the screws are only lightly tightened so as not to damage the seal.

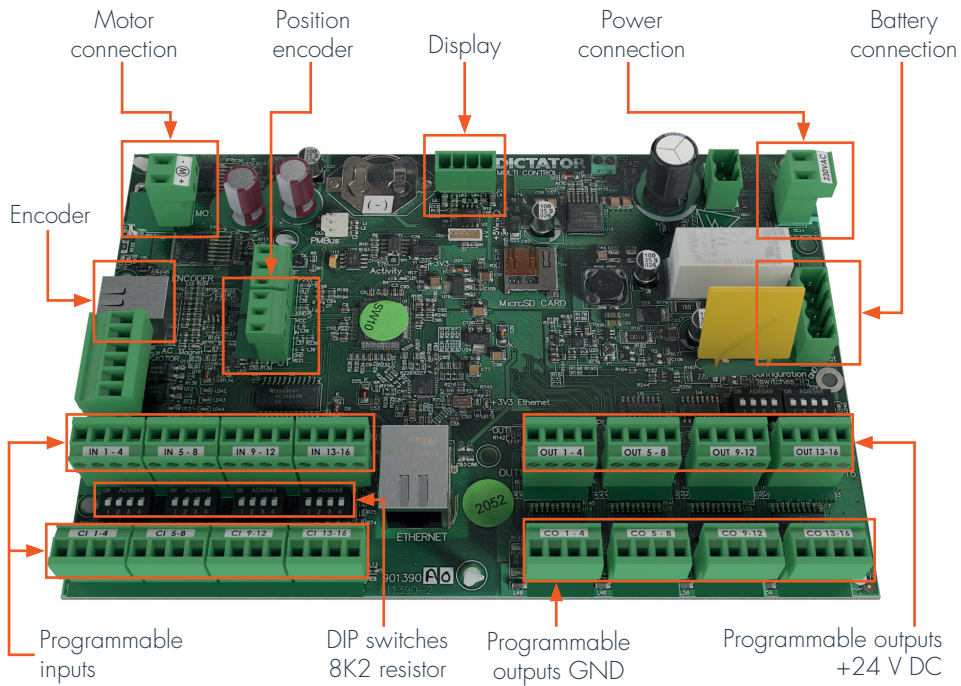
The installation of the device is now complete.

### 5.4 CABLES

Please observe the safety instructions under "Basic safety instructions" for electrical installation.

- Connection DICTAMAT Move AC drive: 4 × 1.5 mm<sup>2</sup> incl. protective conductor (shielded). Connect the shield to both the drive and the control unit. Connect drive in delta connection. Cable marking: red
- Connection drive DICTAMAT Move DC: 3 × 2.5 mm<sup>2</sup> incl. protective conductor (shielded). Connect shield to both drive and control unit. Cable marking: red
- Connection encoder DICTAMAT Move: RJ45
- Connection brake DICTAMAT Move DC: 2 × 0.5 mm<sup>2</sup>. Cable marking: blue
- Connection operating elements in control: 0,5 mm<sup>2</sup>
- Connection temperature sensor motor AC: 2 × 55 mm<sup>2</sup>. Cable marking: yellow

### 5.5 CONTROL UNIT OVERVIEW



Pre-configured inputs		Switching contact
<b>IN 1</b>	Command OPEN	NO
<b>IN 2</b>	Command CLOSE	NO
<b>IN 3</b>	Command STOP operation	NC
<b>IN 4</b>	RESET	NO

Pre-configured outputs	
<b>OUT 13</b>	Permanent voltage 24 V DC
<b>OUT 14</b>	Not configured
<b>OUT 15</b>	Not configured
<b>OUT 16</b>	Electromagnet / Brake motor

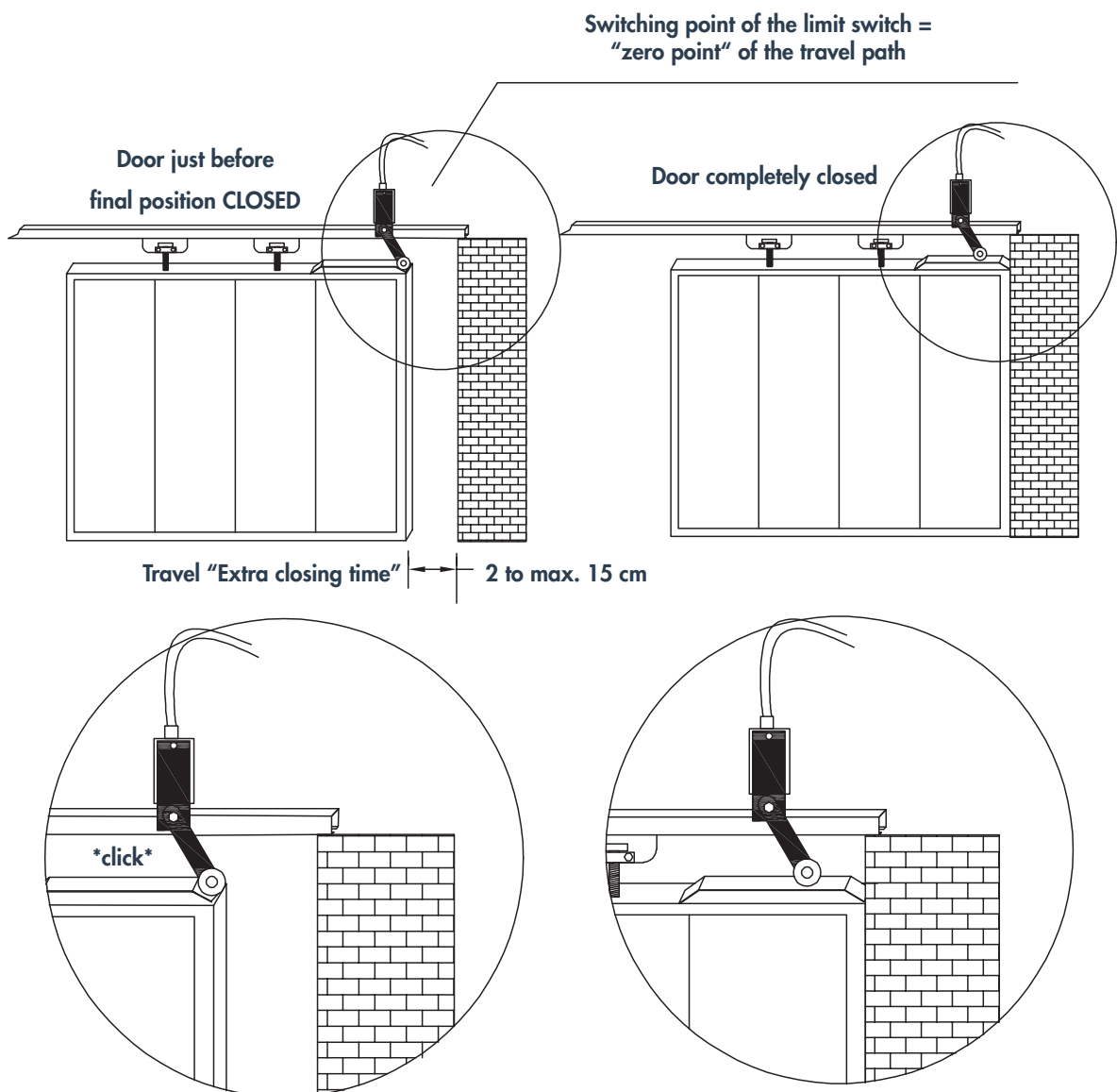


## 5.6 REFERENCE POINT

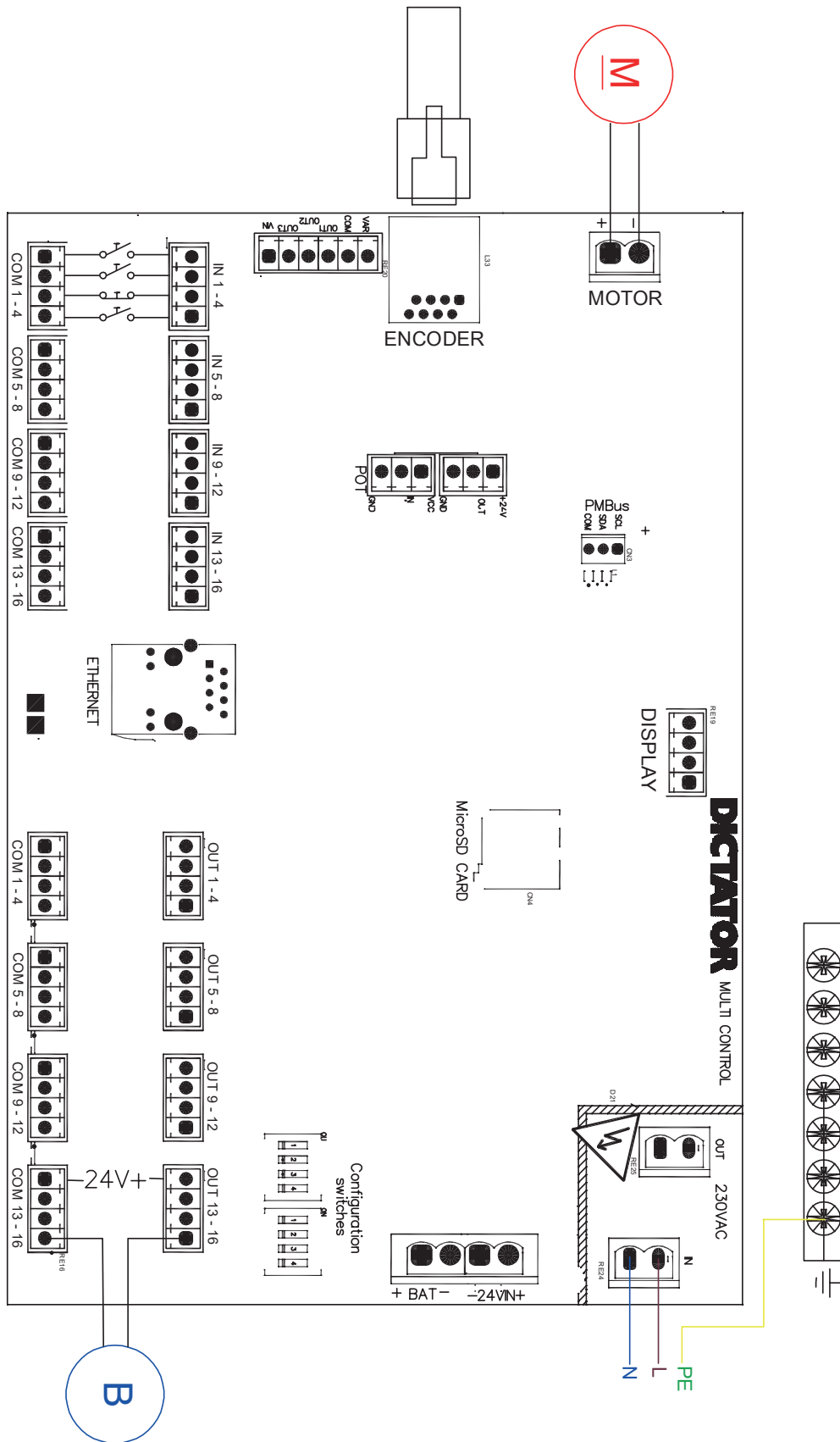
It is necessary to use a reference point when using an incremental encoder or in limit switch operation, as the control unit cannot recognize where the door is located when it is switched on. Therefore, the control unit first searches for the reference position (position value 0). This reference run is performed at slow speed until the door activates the reference position.

If the mechanical final stop in CLOSED position is used, please note that the mechanical final stop in CLOSED position must first be approached before a teach-in run or after a power failure!

If a reference switch is used, please note that the reference switch contact may only change once during the complete travel distance of the door. The reference switch in the closed position of the door should use the switching contact NC.

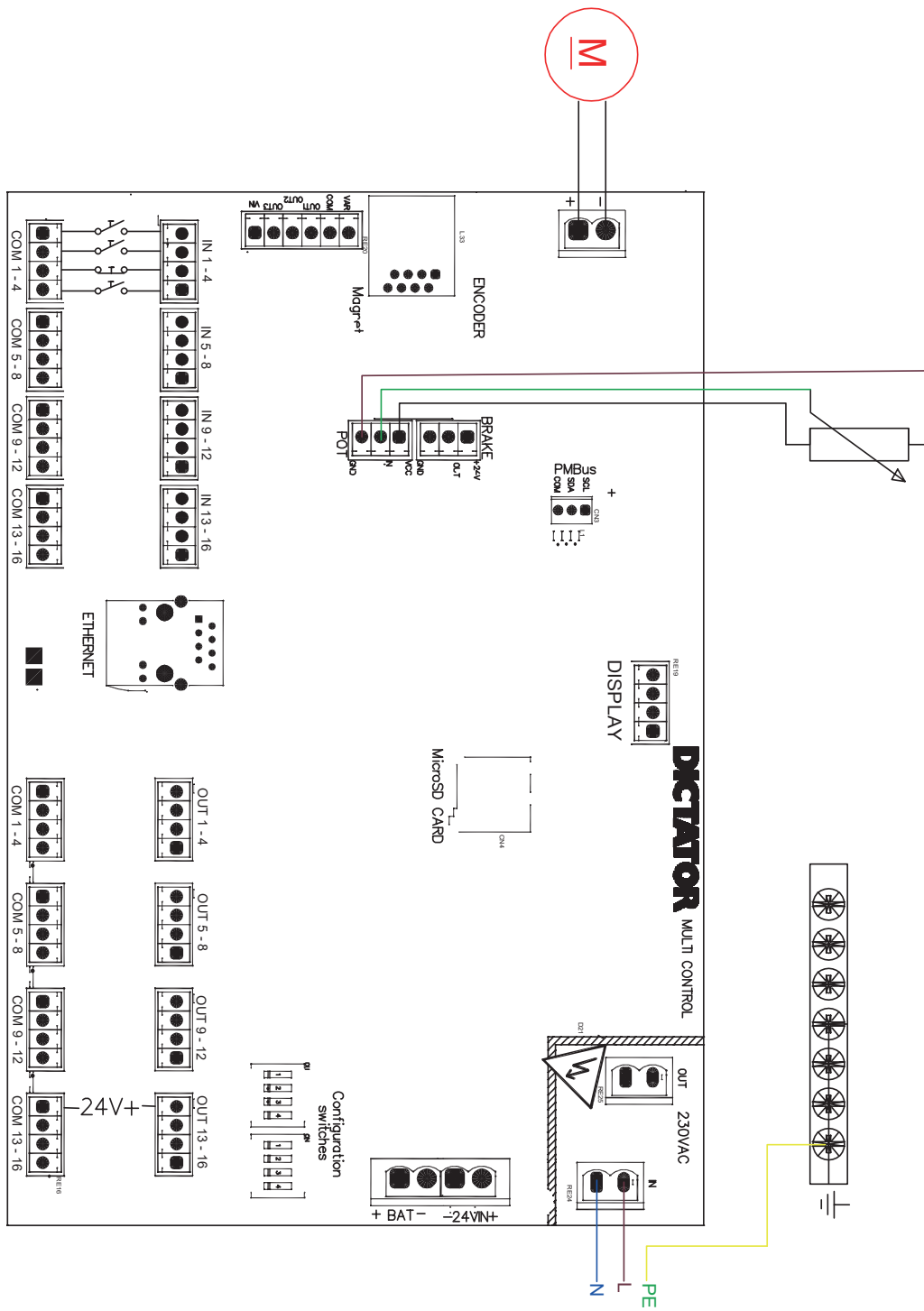


### 5.7 CONNECTION DIAGRAM DC OPERATOR WITH ENCODER

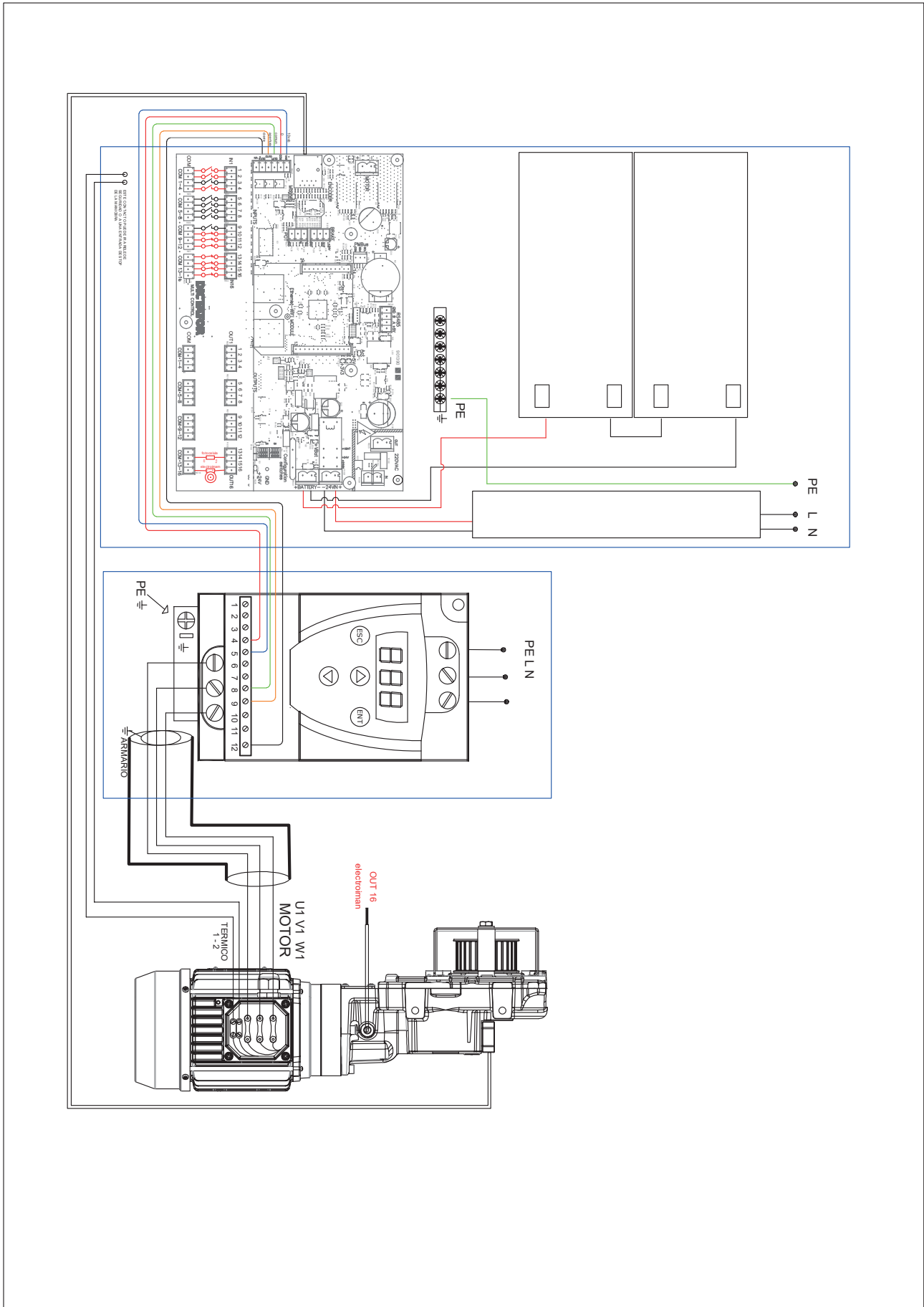


### 5.8 CONNECTION DIAGRAM DC OPERATOR WITH POSITION ENCODER

For the position encoder for DICTAMAT-21 drives, the white (yellow), green (blue) and brown (green) cables are connected according to the connection diagram. Here the white and brown cable can be interchanged to change the direction (CLOSE position: small value; OPEN position: large value) of the motor. It is important that the green (blue) cable (signal) must be always connected to the IN terminal (in the middle of the three terminals).



### 5.8 CONNECTION DIAGRAM DICTAMAT MOVE AC WITH ENCODER



## 6. Commissioning - DC motor-driven opening and closing

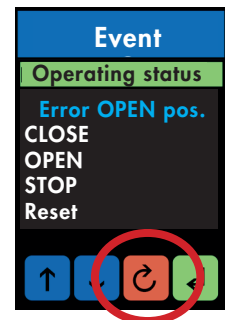
### 6.1 EXECUTE CONFIGURATIONS



#### ATTENTION

If an error message appears, please ignore it until the end of the commissioning process. Do NOT press reset! Uncontrolled movement could occur here!

Press the red arrow to return to the start screen.



1	Start screen	Tap the start screen to activate it. If no action is taken within 30 seconds, the start screen disappears again.
2	Enter code	<b>PIN ► Code 7400</b> Caution: Access to the main menu may only be performed by trained specialist personnel. Make sure that no unauthorized persons get access to the code.
<b>The following steps can be performed either via the display or via WiFi (recommended, see point 7.2 of technical manual Multi Control).</b>		
3	Configuration	Under <b>Configuration ► Positioning</b> , select the appropriate settings for the system.
4	Inputs	For <b>Input settings ► IN 5</b> (for reference switch) select limit switch CLOSED.
<b>If settings were entered via the display, the control unit must be briefly disconnected from the power supply. If settings were entered via Wi-Fi, perform the following step:</b>		
5	Restart	Perform a restart via the button in <b>Diagnostics ► Restart</b> .

### 6.2 CHECK DIRECTION OF ROTATION OF MOTOR/ENCODER

Under **Diagnostics ► Status ► Encoder position**, check the currently displayed encoder position and the actual direction of travel of the door. Using an external CLOSE button, briefly press the CLOSE button until the door moves and then release it again.

There are now 4 possibilities:

- ✓ Door moved in direction CLOSE and the encoder position number became lower (e.g. -23). The system runs as intended and nothing further needs to be done.
- ✗ Door moved in direction CLOSE and the encoder position number increased (e.g. 34). There is an error here: Motor cables must be turned on the board and the direction of rotation in the menu item **Configuration ► Direction of rotation** must be changed.
- ✗ Door moved in direction OPEN and the encoder position number became lower (e.g. -23). There is an error here: Direction of rotation in menu item **Configuration ► Direction of rotation** must be changed.
- ✗ Door moved in direction OPEN and the encoder position number has increased (e.g. 34). There is an error here: Motor cables must be turned on the circuit board.

## 6.3 TRAINING

### Diagnosis ► Status ► Status (for reference switch and limit stop)

Use the external CLOSE button to move to the final stop / reference switch. Attention, the operating state changes to "In operation" when the limit stop / reference switch is reached.

### Configuration ► Training

When the training travel is performed, all desired door positions are reached and saved. There is no visual feedback when the positions are saved if the positions are trained directly at the control unit.

The required commands can be given via the display. Alternatively, if these are already connected according to section 1, the corresponding operating elements on the door can also be used.

<b>Set CLOSE position</b>	Starting at the CLOSED final position, first press the command "Open or close" until the door reaches the "Door closed" final position. Then press SET pos. CLOSED
<b>Set slow CLOSE position</b>	Press the command "Open" until the door reaches the "Slow CLOSE" position. Then press "SET slow CLOSE"
<b>Set slow OPEN position</b>	Press the command "Open" until the door reaches the "slow OPEN" position. Then press "SET slow OPEN"
<b>Set OPEN position</b>	Press the command "Open" until the door has reaches the "OPEN" position. Then press "SET Pos. OPEN"
<b>Close</b>	(move command in dead man function)
<b>Open</b>	(move command in dead man function)

### Settings ► Time settings ► Extra time close (for reference switch)

Enter the number "100" here. After leaving the menu, the system is ready to run.

### 6.3.1 Additional options

#### Battery

##### Configuration ► Battery

Set to "YES"

Caution: Connect the positive and negative cables to the battery first before making this selection.

#### Training (load detection)

Please refer here to the description in the manual under section 7.5 Training.

## 7. Menu system and description

### 7.1 NAVIGATION

On the cover of the control unit there is a display with touch screen and two LED lights. Meaning of the LEDs:

#### Green LED, on the left

The LED lights up constantly when the control unit is supplied with 230 V AC mains power.


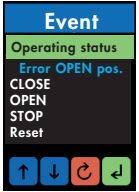

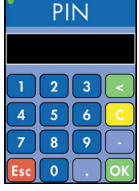
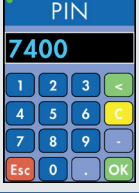
If the control unit is equipped with an optionally available integrated emergency power battery, the green LED flashes in case of power failure and resulting battery operation 24 V DC.

#### Red LED, on the right

The red LED is off during normal operation. It flashes when there is a malfunction.

When an alarm signal is present in the control unit, the red LED is permanently lit.

To extend service life, the display goes out after 1.5 minutes without operation. Only a short touch of the touchscreen is needed to activate it again.

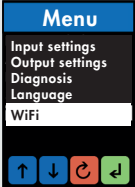
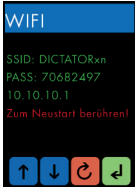

Step	Description
	<p>Green LED is lit: the system is ready for operation.                      Display is in standby mode.                      Tap touchscreen to open main menu.</p>
	<p>During the first commissioning, an error message may appear; please ignore it for the time being. Press the red RETURN key to return to the start screen.</p>
	<p>Start screen is active.                      Tap the start screen again.                      If no action is taken within 30 seconds, the start screen will turn off again.</p>
	<p>To access the main menu, enter the access code.  <b>IMPORTANT: Make sure that no unauthorized persons have access to the code. For basic settings, the code can be bypassed by pressing the OK key.</b></p>
	<p>Enter the code 7400, then press the green OK button.</p>

Description of the basic movement within the control menu	
	<p>Select the desired menu item with the blue UP and DOWN arrow keys and enter the respective sub-menu with the green ENTER key. The red RETURN key takes you back to the previous, parent menu level.</p>
	<p>Also in the sub-menus, the desired item is selected with the navigation arrows and accessed with the green ENTER key.</p>
	<p>The option to be programmed is selected and confirmed with ENTER. The selected option is thus saved and it automatically returns to the previous sub-menu. This way, all necessary parameters can be accessed in the various sub-menus to be adjusted and programmed according to the requirements of the particular system. The main menu can be exited by repeatedly pressing the red RETURN key. If no input is received within 15 minutes, the main menu will automatically close and the screen will be switched off.</p>



## 7.2 CONNECTION VIA WI-FI

The control unit has a Wi-Fi connection that allows you to access the menu from a mobile device, tablet, or laptop. If you leave your device connected to the Wi-Fi of the control unit for 15 minutes without operating it, it will automatically disconnect from the network. To connect your terminal device to the Wi-Fi network of the control unit, you must perform the following steps:

Step	Description
	<p>Go through the different menu levels until the Wi-Fi option is selected and confirm with Enter.</p>
	<p>On the screen you can see how to connect your terminal device to the control unit's Wi-Fi.                      Network: DICTATORgp                      Password: 5061278  <b>The password shown in the image is an example. This changes with each new connection.</b>                      - Search for the DICTATORxx WLAN network on your device, select it, enter the password and connect.</p>
	<p>A browser window opens automatically. This window mirrors the display of the control unit. All settings can now be made via the mobile device.</p> <p>If using a laptop, press the green CONTROL key to access the menu from your device.</p> <p>The red OTA button allows access to the update function. <b>WARNING!</b> Do not carry out this point without consulting DICTATOR!</p>

### 7.3 MENU

Main menu		Description
Configuration		Here the basic data of the system can be defined. If necessary, the training run can also be carried out here.
Functions		In this section, you can configure system-specific settings for the door.
Settings		Here you can adjust various parameters and set the times for positioning and travel behavior of the door.
Input settings		Here, the available inputs can be assigned with freely configurable functions.
Output settings		Here, the available outputs can be assigned with freely selectable functions.
Diagnosis		Here you can view information on the current status of the system, various statistics and an error log.

## 7.4 CONFIGURATION

Configuration		Factory setting	Description
Motor type	DC	DC	Operator version 24 V DC
	AC		Operator version AC with frequency inverter
Door type	Sliding	Sliding	
	Swing		
	Lifting		
Position	000000	0	For positioning with encoder, the current door position is displayed here. For all other positioning systems, a value of 0 always appears here. The value displayed for encoder operation must be positive in the entire range of the door travel (EXCEPTION: limit switch position CLOSED is actuated). If negative values are displayed, the direction of rotation of the motor must be changed in the following menu item.
Motor direction	OPEN	OPEN	Standard motor rotation direction.
	CLOSE		Motor rotation direction inverted.
Block with magnet	No	No	When door is at a standstill, the electromagnet on the operator is not energized.
	Yes		When door is at a standstill, it is blocked in any position by the magnet.
Position control	Limit switches		Position detection via various limit switches.
	Mechanical stop		Mechanical stops in the final positions.
	Encoder reference switch		Position detection by means of reference switch in CLOSE as well as encoder at the operator.
	Potentiometer		Position detection by potentiometer on the operator (especially when retrofitting existing systems).
	Encoder Mechanical Stop	Encoder Mechanical Stop	Position detection by means of mechanical end stop in CLOSED position and encoder at the operator.
Door function	Normal	Normal	Standard door for residential, commercial or industrial applications.
	Fire protection		Door with fire protection function. Only possible with reference switch CLOSED.
Closing means	Mechanical		The door is closed mechanically, for example by counterweight or spring rope pulley. Only possible with reference switch CLOSED.
	Motor	Motor	The door is closed by the operator.
Battery	No	No	Control unit without integrated back-up battery.
	Yes		Control unit with integrated back-up battery. <b>ATTENTION: If the control unit is equipped with a back-up battery, it must be programmed here, otherwise the battery will not be charged!</b>
Reset	Manual & automatic		
	Automatic		
	Manual	Manual	
Training			Teach-in of the final positions and positions of the door. If provided, the dynamic travel is also triggered here.

## 7.5 TRAINING

Training See commissioning instructions		Description
Set CLOSE position	Press "Enter" key	Save current position as door CLOSED position
Set slow CLOSE position	Press "Enter" key	Set current position as slow CLOSE position
Set slow OPEN position	Press "Enter" key	Set current position as slow OPEN position
SET OPEN position	Press "Enter" key	Save current position as door OPEN position
Move closing	Press "Enter" Dead-man function key	Command CLOSE in slow speed
Move opening	Press "Enter" Dead-man function key	Command OPEN in slow speed
Profile train (*)	Press "Enter" key	Trigger the automatic dynamic run <b>ATTENTION: A dynamic run may only be triggered if the door is outside the switching range of the CLOSED limit switch (=zero point of the travel), i.e. in at least partially open position. Please note the additional information below (*).</b>
SET pos. partial 1	Press "Enter" key	Save current position as partial opening position 1
SET pos. partial 2	Press "Enter" key	Save current position as partial opening position 2
SET pos. partial 3	Press "Enter" key	Save current position as partial opening position 3

(\*) Additional information on Profile train

If operation of the door system with additional obstacle detection by monitoring the current consumption of the operator as well as the door speed is desired, the dynamic run procedure must first be performed after completion of all adjustments that affect the door movement in order to teach in the normal door behavior. To do this, move the door towards OPEN until it is safely outside the switch range of the "zero point of travel" limit switch. Then activate the "Profile train" travel function in the Configuration menu under "Training".

- The door first moves at slow speed to the CLOSED position, then runs a complete opening and closing cycle at slow speed, and then completes another cycle at nominal speed - taking into account the programmed speed changes and ramps.

After reaching the CLOSED final position, the dynamic run is completed and the tolerance values for current consumption and speed can be set according to the manual.

\* **Please note:** A low setting of the tolerance values leads to a sensitive reaction behavior of the door in case of a possible obstacle detection. However, this also means that even minor changes to the door mechanics, e.g. due to dirt deposits in the running rail or similar, can quickly lead to false triggering.

If the door stops before reaching the CLOSED end position and the PROFILE TRAIN NOT CLOSE message is displayed, the value "Extra time CLOSED" for the additional closing time must be set higher under "Settings" > "Set times" so that final end position is reached safely. Afterwards, the dynamic run restarts again.



### ATTENTION

**After each change to settings that affect the movement of the door, a new dynamic run must be performed in order to teach in the changed behavior of the door.**

**The control unit carries out the dynamic run independently, the door moves automatically.**

## 7.6 FUNCTIONS

Functions		Factory setting	Description
Magnet in closed position	No	No	No locking of door by magnet in CLOSED.
	Yes		The electromagnet is powered in CLOSED position.
Auto close function	0 – 180	0	000: No automatic close active. 001 - 180: Setting in seconds until the start of the automatic close.
Load disconnection	No	No	Load detection disabled
	Yes		A load detection by tolerance measurement of current consumption and speed is enabled.
Electrical lock	No	No	No electric lock provided.
	Yes		Electric door locking in CLOSED position by separate, monitored deadbolt lock. When an OPEN command is given, the door is first pressed in the CLOSED direction to release the load.
STOP in alarm	No	No	In the event of an alarm, all STOP commands are ignored with the exception of STOP collision CLOSE.
	Yes		STOP commands (exception: operation stop, EMERGENCY STOP) are also executed in case of alarm.
	<b>Note: In case of alarm, all STOP commands accepted by this setting are executed only as long as the respective input is active.</b>		
STOP reverse in alarm	No	No	A STOP collision CLOSE command causes the door to stop as long as the command is pending.
	Yes		A STOP collision CLOSE command causes the door to stop and then reverse. Afterwards, the closing process continues.
Motorbrake	No	No	The operator is easy to move after the motor is switched off, the door can be moved by hand.
	Yes		The motor is short-circuited after switching off and thus becomes difficult to move. The door can only be moved by hand with considerable effort.
Partial close active	No	No	Moving to partial open only possible from CLOSE to OPEN.
	Yes		Moving to partial open possible from CLOSE to OPEN as well as from OPEN to CLOSE.

## 7.7 SETTINGS

### 7.7.1 Parameter settings

Settings – Parameter settings		Factory settings	Unit	Description
Tolerance current	1 - 100	30,00	%	Permissible increase in current consumption (from trained profile) before STOP collision is automatically triggered.
Tolerance speed	1 - 50	30,00	%	Permissible decrease in speed (from trained profile) before STOP collision is automatically triggered.
Suppress CLOSE	- 9999 - 100000	- 9999	mm	Between the position programmed here and the CLOSED position, the load detection is blanked out by tolerance measurement in both directions of movement.
Suppress OPEN	- 9999 - 100000	- 9999	mm	Between the position programmed here and the OPEN position, the load detection is blanked out by tolerance measurement in both directions of movement.
Battery low	0 - 100	30	%	When it reaches this charge state, the door will remain in open position, but only a CLOSE command will be accepted and executed. Re-opening of the door will no longer be possible after this.
Battery critical	0 - 100	20	%	When it reaches this charge state, the door closes automatically and no further commands are executed. <b>Attention: In this operational state, it is no longer possible to open the door manually!</b>
Partial opening 1	1 - 100000	150	mm	Position for partial opening 1
Partial opening 2	1 - 100000	300	mm	Position for partial opening 2
Partial opening 3	1 - 100000	401	mm	Position for partial opening 3
Full speed OPEN	30 - 100	50	%	Nominal speed during opening
Full speed CLOSE	30 - 100	50	%	Nominal speed during closing
Slow speed OPEN	20 - 100	35	%	Slow speed during opening
Slow speed CLOSE	20 - 100	35	%	Slow speed during closing
Acc. ramp OPEN	1 - 100	17		Acceleration ramp in opening direction
Acc. ramp CLOSE	1 - 100	17		Acceleration ramp in closing direction
Dec. ramp OPEN	1 - 100	26		Braking ramp in opening direction (transition from nominal to slow speed)
Dec. ramp CLOSE	1 - 100	26		Braking ramp in closing direction (transition from nominal to slow speed)
Reset	Manual	Manual		After an error or alarm, a manual RESET of the control unit is required
	Automatic			After an error or alarm, RESET is performed automatically when the CLOSED position is reached
Position OPEN	1 - 100000	600	mm	Door position completely open
Position CLOSE	- 1000 - 99000	0	mm	Door position completely closed
Pos. slow OPEN	1 - 100000	400	mm	Transition to slow speed in OPEN
Pos. slow CLOSE	1 - 100000	0	mm	Transition to slow speed in CLOSE
Tolerance pos.	1 - 1000	100	mm	Tolerance range within which a position deviation of the partial positions is ignored
Dist. slow partial	0 - 5000	300	mm	Distance to partial opening position for transition to slow speed
Dec. ramp brake	25 - 250	75		This ramp is used for all STOP commands as well as all operational stopping events
Factory command	0000 - 9999			Access to the special menu for the maintenance company

## 7.7.2 Set times

Settings → Time settings		Factory settings	Unit	Description
Auto close time	0 - 180 <sup>(1)</sup>	0	Sec.	After reaching the opening position or after a STOP, a CLOSE command is automatically triggered after the waiting time set here has elapsed.
Pre signal time	0 - 60 <sup>(1)</sup>	0	Sec.	After a move command, the waiting time set here first elapses before the door movement starts.
Garage light time	0 - 1800 <sup>(1)</sup>	0	Sec.	When an OPEN command is triggered, the garage light output is activated. This remains activated until the door reaches the CLOSED final position again, as well as afterwards for the duration of the time set here.
Wait STOP O/C	0 - 180 <sup>(1)</sup>	0	Sec.	Activation of a STOP OPEN/CLOSED input causes the door to stop immediately. After the signal drops out, the waiting time set here first elapses, then the original door movement continues.
Wait STOP OPEN	0 - 180 <sup>(1)</sup>	0	Sec.	Activation of a STOP OPEN input causes the door to stop immediately. After the signal drops out, the waiting time set here first elapses, then the original opening movement continues.
Wait STOP CLOSE	0 - 180 <sup>(1)</sup>	0	Sec.	Activation of a STOP CLOSE input causes the door to stop immediately. After the signal drops out, the waiting time set here first elapses, then the original closing movement continues.
Reverse O/C	0 - 900 <sup>(1)</sup>	0	Sec.	Activation of a STOP Rev. OPEN/CLOSED input causes the door to stop immediately. Immediately after this, a door movement against the original direction of movement starts for the time period set here. The door then stops.
Reverse OPEN	0 - 900 <sup>(1)</sup>	0	Sec.	Activation of a STOP Rev. OPEN input causes the door to stop immediately. Right after this, a door movement against the original direction of movement starts for the time period set here. The door then stops.
Reverse CLOSE	0 - 900 <sup>(1)</sup>	0	Sec.	Activation of a STOP Rev. CLOSE input causes the door to stop immediately. Right after this, a door movement against the original direction of movement starts for the time period set here. The door then stops.
Rev. collision	0 - 10 <sup>(1)</sup>	0	Sec.	Activation of a STOP collision or obstacle detection input by tolerance measurement causes the door to stop immediately. Right after this, a door movement against the original direction of movement starts for the time period set here. The door then stops.
Max. run time	0 - 1800 <sup>(1)</sup>	60	Sec.	Maximum permissible running time for a single door movement. After this time has elapsed, the door or the operator stops and a RESET is required.
Electromagnet time	0 - 10 <sup>(1)</sup>	2	Sec.	Operating time of the electromagnet for locking the door after the system stops.
Extra time open	0 - 100 <sup>(1)</sup>	0	1/10 Sec.	Extra running time in direction OPEN after reaching the pre-programmed position. Enables exact adjustment of the mechanical OPEN position. Intended for limit switch operation.
Extra time close	0 - 100 <sup>(1)</sup>	0	1/10 Sec.	Extra running time in direction CLOSE after reaching the programmed reference point "0". Intended for limit switch operation or systems with reference switch. For systems with mechanical stop, set the value to 0.
Date (YYMMDD)	YYMMDD	0		Enter date in the order year - month - day <sup>(2)</sup>
Time (HHMM)	HHMM	0		Input of time (hour - minute) in 24 hours format <sup>(2)</sup>

(1) If the value "0" is entered, the respective function is not activated.

(2) After entering these values, the display changes back to "0". The display of the current date and time (in 24-hour format) takes place in normal operation exclusively in the Status menu.

## 7.8 ASSIGN INPUTS

Inputs	Description
IN 01 - 04	Input terminals numbers 01 to 04
IN 05 - 08	Input terminals numbers 05 to 08
IN 09 - 12	Input terminals numbers 09 to 12
IN 13 - 16	Input terminals numbers 13 to 16
INVERT	Inverts the function of the component connected to the respective terminals from NO to NC or from NC to NO

The input terminals are arranged on the bottom left of the circuit board in two rows of 16 terminals each, with four terminals each grouped in a terminal block.

The terminals in the upper row provide +24 V DC power supply, and the lower row of terminals contains the associated GND terminals.

All inputs can be used independently for either NO or NC function. In the menu for configuring the inputs, the function of the connected components can be swapped if required via the menu item "Inversion", so that an NO function becomes an NC function and vice versa.

All inputs can also be used for the connection of safety devices with resistor 8k2. There are associated DIP switches on all inputs for this purpose.

ON = standard position       OFF = switch position for  
 The 8k2 function is not activated       activated 8k2 function



### ATTENTION

After setting the switch to OFF, you must invert the corresponding input in the Inputs menu.

If the test function of the input device is to be connected, terminals 1 to 8 must be used.



## 7.9 AVAILABLE INPUT FUNCTIONS

Available input functions		Description
IN 01 to 16	Unassigned	No input function assigned
IN 01 to 16	OPEN command	NO contact - an impulse triggers an operation command to the OPEN position.
IN 01 to 16	CLOSE command	NO contact - An impulse triggers an operation command to the CLOSED position.
IN 01 to 16	Limit switch OPEN	NC contact - limit switch in OPEN position
IN 01 to 16	Limit switch CLOSED	NC contact - limit switch in position CLOSED <b>Note: The CLOSED limit switch is always required even for systems with encoder operation - See instructions for commissioning.</b>
IN 01 to 16	Limit switch slow OPEN	NC contact - switch for changing to slow speed when opening. The switch must remain actuated over the entire slow speed travel.
IN 01 to 16	Limit switch slow CLOSE	NC contact - switch for changing to slow speed during closing. The switch must remain actuated over the entire slow speed travel.
IN 01 to 16	Limit switch partial opening 1	NC contact - limit switch for partial opening position 1
IN 01 to 16	Limit switch partial opening 2	NC contact - limit switch for partial opening position 2
IN 01 to 16	Limit switch partial opening 3	NC contact - limit switch for partial opening position 3
IN 01 to 16	STOP open/close	When the input is activated, the door stops, taking into account the stop ramp set in the <b>Parameter setting</b> menu. Works both in CLOSE and OPEN direction. Intended for contactless safety devices.
IN 01 to 16	STOP open	When the input is activated, the door stops, taking into account the stop ramp set in the <b>Parameter settings</b> menu. Works only in the OPEN direction. Intended for contactless safety devices.
IN 01 to 16	STOP close	When this input is activated, the door stops, taking into account the stop ramp set in the <b>Parameter settings</b> menu. Works only in the CLOSE direction. Intended for contactless safety devices.
IN 01 to 16	STOP reverse open/close	When this input is activated, the door stops, taking into account the stop ramp set in the <b>Parameter settings</b> menu. Immediately after that, the door starts to move against the original direction of movement for the Reverse Open/Close set in the <b>Time settings</b> menu. The door then stops. Works both in the CLOSE and OPEN direction.
IN 01 to 16	STOP reverse open	When the input is activated, the door stops taking into account the stop ramp set in the <b>Parameter settings</b> menu. Immediately after that, the door moves against the original direction of movement for the Reverse OPEN set in the <b>Time settings</b> menu. The door then stops. Only works in the OPEN direction.
IN 01 to 16	STOP reverse close	When the input is activated, the door stops taking into account the stop ramp set in the <b>Parameter settings</b> menu. Immediately after that, the door starts to move against the original direction of movement for the Reverse CLOSE set in the <b>Time settings</b> menu. The door then stops. Only works in the CLOSE direction.
IN 01 to 16	Alarm	Activation of the Alarm input triggers automatic closing of the door. Signals at inputs for operation commands (open, partial open, operation stop, etc.) are ignored. Even after the alarm signal drops, the control unit remains in alarm state until the CLOSED position is reached, then in out-of-service mode until a RESET is performed. In this operating state, manual opening of the door is not possible. This function requires a limit switch in CLOSED.
IN 01 to 16	Operational STOP	Stop command for gentle stopping of the door. Works both in CLOSE and OPEN direction. Intended e.g. for normal stop button, for stopping the door in the absence of a hazardous situation.
IN 01 to 16	Emergency STOP	Stop command for stopping the door as quickly as possible in hazardous situations. Works both in CLOSE and OPEN direction. Intended e.g. for mushroom-head pushbuttons
IN 01 to 16	Stop collision CLOSE	Stop command for stopping the door as quickly as possible. If a time is set in the <b>Time settings</b> menu under Rev time collision, a reversing movement of the door occurs directly afterwards to clear the obstacle. Only works in the CLOSE travel direction. Intended e.g. for use with contact strips.

Available input functions		Description
IN 01 to 16	Stop collision OPEN	Stop command for stopping the door as quickly as possible. If a time is set in the <b>Time settings</b> menu under Rev time collision, a reversing movement of the door occurs directly afterwards to clear the obstacle. Only works in the OPEN travel direction. Intended e.g. for use with contact strips.
IN 01 to 16	Deadman OPEN	NO contact - A continuous impulse (deadman function) moves door towards OPEN.
IN 01 to 16	Deadman CLOSE	NO contact - A continuous impulse (deadman function) moves door towards CLOSED.
IN 01 to 16	Change OPEN/ slow/CLOSE/slow	NO Contact - Successive pulses generate a sequence of commands: OPEN - STOP - CLOSE - STOP - OPEN - etc.
IN 01 to 16	Change OPEN/ CLOSE	NO Contact - Successive pulses generate a sequence of commands: OPEN - CLOSE - OPEN - CLOSE - etc.
IN 01 to 16	Change OPEN/ STOP	NO Contact - Successive pulses generate a sequence of commands: OPEN - STOP - OPEN - STOP - etc.
IN 01 to 16	Change CLOSE/ STOP	NO Contact - Successive pulses generate a sequence of commands: CLOSE - STOP - CLOSE - STOP - etc.
IN 01 to 16	Partial opening 1	NO contact - an impulse triggers a move command to partial opening position 1.
IN 01 to 16	Partial opening 2	NO contact - an impulse triggers a move command to partial opening position 2.
IN 01 to 16	Partial opening 3	NO contact - an impulse triggers a move command to partial opening position 3.
IN 01 to 16	RESET	NO contact - an impulse triggers a reset of the control unit after an alarm or malfunction recovery.
IN 01 to 16	Unlocked	NC contact - feedback from the door lock about the unlocked state of the door.

## 7.10 ASSIGN OUTPUTS

Outputs		Description
OUT 01 - 04		Output terminals numbers 01 to 04
OUT 05 - 08		Output terminals numbers 05 to 08
OUT 09 - 12		Output terminals numbers 09 to 12
OUT 13 - 16		Output terminals numbers 13 to 16
INVERT		Inverts the operation of the output

The output terminals are arranged on the bottom right of the circuit board in two rows of 16 terminals each, with four terminals each combined in a terminal block.

The terminals of the upper row provide + 24 V DC power supply when the output is activated, and the associated GND terminals are arranged in the lower row of terminals.

The function of all outputs can be reversed (inverted) independently of each other via the INVERSION menu item, so that the output provides + 24 V DC voltage when the output is not activated, and no voltage is applied when the output is activated.

If the status of the component connected to the output is to be monitored, the outputs OUT 01 to OUT 08 must be used.

## 7.11 AVAILABLE OUTPUT FUNCTIONS

Available output functions		Description
OUT 01 to 16	Unassigned	No output function assigned.
OUT 01 to 16	Permanent 24 V	Output is continuously supplied with 24 V.
OUT 01 to 16	In motion	Any move command is executed.
OUT 01 to 16	Warning motion	The output is active both during the expiration of a warning time specified in the "Time settings" menu and during the door movement performed after the expiration of this time.
OUT 01 to 16	Door opens	Door executes a command to move in the OPEN direction.
OUT 01 to 16	Door closes	Door executes a command to move in the CLOSE direction.
OUT 01 to 16	Door in OPEN position	The door is in the final position OPEN.
OUT 01 to 16	Door in CLOSED position	The door is in the final position CLOSED.
OUT 01 to 16	Partial opening 1	The door is in partial opening position 1
OUT 01 to 16	Partial opening 2	The door is in partial opening position 2
OUT 01 to 16	Partial opening 3	The door is in partial opening position 3
OUT 01 to 16	Electromagnet	Output for connecting the electromagnet present on the door operator.
OUT 01 to 16	Out of operation	Output is active in case of malfunction or alarm. In the event of an operating error, the red LED on the controller display flashes; in the event of an alarm, it is permanently lit.
OUT 01 to 16	Power outage	No voltage is present at the 230 V AC power supply input.
OUT 01 to 16	Alarm	Output is active when an alarm signal is present or until a reset occurs.
OUT 01 to 16	Red light	The output is active when the door is in the CLOSED final position.
OUT 01 to 16	Yellow light	The output is active during each door movement, and also during the expiration of a warning time specified in the "Time settings" menu.
OUT 01 to 16	Green light	The output is active when the door is in the OPEN final position.
OUT 01 to 16	Test	This configuration enables the use of safety devices with test function. The output with the respective number is assigned to the input with the same number as a test output.
OUT 01 to 16	Electrical lock	If <b>electrical lock</b> has been activated in the "Functions" menu, this output is active when the door is locked.
OUT 01 to 16	Unlock	If <b>Electrical lock</b> is activated in the <b>Functions</b> menu, this output is used to unlock the door. For this purpose, the output is activated for 5 seconds. Within these five seconds, the door must be completely unlocked and the corresponding feedback must be present at the Unlocked input. After an error no automatic reset is possible. If the electrical lock is locked using current (24 V) and is open without current, this output must be inverted.
OUT 01 to 16	Garage light	This output is controlled in the <b>Time settings</b> menu via the programming of the <b>garage light</b> function.
OUT 01 to 16	Low Battery	As soon as the charge level set in the menu <b>Parameter settings</b> for <b>battery low</b> is reached, this output is active

## 7.12 DIAGNOSIS

Diagnosis		Description
Information		Overview of the hardware and software status of the control unit
Status		Overview of the current operating status of the door and control unit In this menu, door movements can also be triggered via virtual operating buttons
Statistics		Overview of various statistical data on the system
Service log		Overview of the last errors that occurred on the system
Language		Setting the language for the menu displays (cannot be selected via WiFi)
Brightness		Setting the brightness for the display screen
Display info		Current software version of the display (cannot be selected via WiFi)
Restart		Internal restart of the control unit. Reference run must be performed. WiFi connection remains established.

## 7.13 INFORMATION

Information		Description
Hardware		Information about the version of the hardware
Software		Information about the version of the software
MAC address		The unique hardware (MAC, Ethernet) address of the control unit
CRC current		Current CRC value of the cyclic redundancy check
CRC boot		CRC value of the cyclic redundancy check when the operating system is started

## 7.14 STATUS

Status		Description
Status	In service	The system is in normal operation
	Error	The system is out of operation For detailed information, go to the Diagnosis menu and read the error memory
Move in dir. CLOSE		Virtual pushbutton for a CLOSE command
Move in dir. OPEN		Virtual pushbutton for an OPEN command
STOP		Virtual pushbutton for a STOP command
Reset		Virtual button for direct execution of a RESET command for the control unit
Door position <sup>(1)</sup>	0 – 8	Display of the current door position in relation to the programmed position values according to the following table <sup>(1)</sup>
Position encoder	mm or 1/1000	Display of the current position of the door in encoder mode or potentiometer
Door status <sup>(2)</sup>	C123O COH CO	In three groups (of 5, 3 and 2 digits) a short overview of the current operating status of the door is displayed according to the descriptions in table <sup>(2)</sup>
Date Time	YYMMDD HH:MM	Display of the current date and time (24-hour format)
Next maintenance	YYMMDD	Display of the date programmed by the maintenance company for the next required maintenance of the system
Battery status	0 – 100 %	If the control unit is equipped with an integrated emergency battery, the current battery charge status is displayed here

(1) Display of the door position in relation to the stored values as follows:

<b>Current door location</b>	In CLOSED position	Between CLOSED position & partial opening 1	In partial opening position 1	Between partial opening 1 & partial opening 2	In partial opening position 2
Display	0	1	2	3	4
<b>Current door location</b>	Between partial opening 2 & partial opening 3	In partial opening position 3	Between partial opening 3 & OPEN position	In OPEN position	
Display	5	6	7	8	

(2) Description for displaying the door status - meaning of the individual digits that are displayed. Active values are displayed in upper case, inactive values in lower case.

	Pos.	Symbol	Description
<b>Position</b>	1	C	Door in door position CLOSED
	2	1	Door in door position Partially OPEN 1
	3	2	Door in door position Partially OPEN 2
	4	3	Door in door position Partially OPEN 3
	5	O	Door in door position OPEN
<b>Stop</b>	6	C	Door stopped while moving in CLOSED
	7	O	Door stopped while moving in OPEN
	8	H	EMERGENCY STOP command applied
	9	S	STOP command applied
<b>Movement</b>	10	C	Door moving in CLOSE direction
	11	O	Door in movement in OPEN direction

## 7.15 STATISTICS

Statistic	Unit	Description
Movements	Times	Counter of all operation commands, both in OPEN and CLOSE
Run time	Seconds	Operating time of the door operator in motion
STOP close	Times	Number of STOP commands in direction CLOSE (incl. stop in OPEN/CLOSED)
STOP open	Times	Number of STOP commands in OPEN direction (incl. stop in OPEN/CLOSED)
STOP safety	Times	Number of STOP collision commands triggered by safety devices
Tolerance STOP close	Times	Number of EMERGENCY STOP commands triggered by load detection in CLOSE direction
Tolerance STOP open	Times	Number of EMERGENCY-STOP commands triggered by load detection in driving OPEN direction
Alarm	Times	Number of ALARM signals triggered
Reboots	Times	Number of restarts of the control unit operating system
Power failures	Times	Number of disconnections of the control unit from the 230 V AC power supply
Run minutes	Minutes	Total time during which the control unit was in operation
Battery minutes	Minutes	Time during which the control unit was powered by the battery (in case the control unit is equipped with an integrated emergency battery)

## 8. Protocol / malfunction

Protocol	
Message:	Error:
Runtime error	Door does not reach the end position within the set time. Check door mechanics, increase speeds or increase "max. run time".
Partial opening 1 vs 2	Slow speeds of the partial openings collide with each other. Shorten distance "slow partial open" or increase distance between the 3 partial open positions.
Position missing	Ignore during commissioning. During normal operation, the gate must be moved to its reference position.

Malfunction	
Status:	Error:
No position change during position encoder operation	Check connection of potentiometer.



## 9. Documentation

### DATA OF THE SYSTEM

Serial number control unit: .....  
 Operator used: .....  
 Order number: .....

Installation company: .....  
 Installation date: .....  
 Signature: .....

Notes: .....  
 .....  
 .....  
 .....  
 .....  
 .....

### 9.1 SETTINGS

Configuration	Factory setting	Your value
Motor type	DC	
Door type	Sliding	
Motor direction	OPEN	
Block with magnet	No	
Position control	Mechanical stop encoder	
Door function	Normal	
Closing means	Motor	
Battery	No	
Reset	Manual	

Functions	Factory setting	Your value
Magnet in closed pos.	No	
Auto close function	0	
Tolerance control	No	
Electrical lock	No	
STOP in alarm	No	
Stop rev. in alarm	No	
Motor brake	No	
Partial close activ	No	

Parameter settings	Factory setting	Your value
Tolerance current	30,00 %	
Tolerance speed	30,00 %	
Suppress CLOSE	9999 mm	
Suppress OPEN	9999 mm	
Battery low	30 %	
Battery critical	20 %	
Partial opening 1	150 mm	
Partial opening 2	300 mm	
Partial opening 3	401 mm	
Full speed OPEN	50 %	
Full speed CLOSE	50 %	
Slow speed OPEN	35 %	
Slow speed CLOSE	35 %	

Parameter settings	Factory setting	Your value
Acc. ramp OPEN	17	
Acc. ramp CLOSE	17	
Dec. ramp OPEN	26	
Dec. ramp CLOSE	26	
Reset	Manual	
Position OPEN	600 mm	
Position CLOSE	0 mm	
Pos. slow OPEN	400 mm	
Pos. slow CLOSE	0 mm	
Tolerance pos.	100 mm	
Dist. slow partial	300 mm	
Dec. ramp brake	75	

Set times	Factory settings	Your value
Auto close time	0	
Pre signal time	0	
Garage light time	0	
Wait STOP O/C	0	
Wait STOP OPEN	0	
Wait STOP CLOSE	0	
Reverse O/C	0	
Reverse OPEN	0	
Reverse CLOSE	0	
Rev. collision	0	
Max. run time	60	
Electromagnet time	2	
Extra time open	0	
Extra time close	0	

Inputs	Factory setting	Your value
IN 01	OPEN command	
IN 02	CLOSE command	
IN 03	Operation STOP	
IN 04	RESET	
IN 05		
IN 06		
IN 07		
IN 08		
IN 09		
IN 10		
IN 11		
IN 12		
IN 13		
IN 14		
IN 15		
IN 16		

Outputs	Factory setting	Your value
OUT 01		
OUT 02		
OUT 03		
OUT 04		
OUT 05		
OUT 06		
OUT 07		
OUT 08		
OUT 09		
OUT 10		
OUT 11		
OUT 12		
OUT 13	Constant 24 V	
OUT 14		
OUT 15		
OUT 16	Electromagnet	