Description

Turnstile mTripod

MHTM™ FlowMotion®

MGC control unit

Doc. ID: 5817,0025EN
Version 01

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Contents

1 Notes on the document

1.1 Purpose and contents of this description

This document describes the MGC control unit from the program versions listed below.

Software number (software #) and software version (SW version) are displayed in the menu "Module info".

Designation	Software #	SW version
Gate Controller	4915.1006	1.1
Motor GW	4915.3000	1.1

Table 1: Programme versions MGC control unit

IMPORTANT!

For information on design and function, for technical data, installation and assembly, electrical connection, commissioning and cleaning and maintenance, see the separate operating instructions "Turnstile MHTM™ FlowMotion® mTripod (Doc.ID: 5817,0026)".

1.2 Symbols and illustrations used in this document

1.2.1 Warning notes and notes

Warning notes are characterised by pictograms in these operating instructions. A warning note starts with a signal word that expresses the extent of the hazard.

It is absolutely essential to observe the warning notes and to proceed with caution in order to prevent accidents as well as bodily injuries and property damage.

Warning notes

DANGER
 The signal word DANGER points to an immediately dangerous situation, which leads to death or severe injuries if it is not avoided.

WARNING
 The signal word WARNING points to a potentially dangerous situation, which can lead to death or severe injuries if it is not avoided.

CAUTION
 The signal word CAUTION points to a potentially dangerous situation, which can lead to minor injuries if it is not avoided.

NOTICE
 The signal word NOTICE points to a potentially harmful situation, which leads to property damage if it is not avoided.

Notes and recommendations

IMPORTANT!
The signal word IMPORTANT highlights useful notes and recommendations as well as information for an efficient and trouble-free operation.

1.3 Target group

1.3.1 Personnel – activities and qualifications

All work on the control unit may only be carried out by technicians and Magnetic MHTM™ FlowMotion® service experts with the following qualifications.

Designation	Qualification
Technician	› Has completed training as a plant mechanic, plant fitter, assembly mechanic, assembly fitter or has a comparable technical education. › Has completed training as an electrical safety expert. › Has additional knowledge and experience. › Knows the associated technical terms and regulations. › Can assess the work assigned to her/him, recognises possible dangers and take suitable safety measures.
Magnetic MHTM™ FlowMotion® service expert	› Meets all requirements of the technician. › Trained and authorised by Magnetic.

Table 2: Qualification of the personnel – MGC control unit

2 Digital inputs, digital outputs and relay outputs

⚠ WARNING

Improper wiring and parameterisation of the control unit!

Improper wiring and parameterisation of the control unit can lead to undesired functions and thus to injuries.

- Only MHTM™ FlowMotion® service experts or skilled technicians or electrical safety experts may wire up and parameterise the control unit.
- The electrical connection of the signal transmitters to the IN1 to IN8 inputs must fit the parameterisation.

↗ For parameterisation see Page 17, chapter 3.

2.1 Digital inputs

↗ For the definition "Left" and "Right" see Page 43, chapter 5.1.

By parameterising the inputs, you assign certain functions to the inputs. For example, if you parameterise the "Over-climb detection" function for input IN7, you must connect a sensor for the over-climb detection to this input.

If the function is marked with "|", the input is inverted (Fail Safe).

The following functions are assigned to the inputs as default settings.

Clamp	Description	Function
IN1	Digital Input 1	| Emergency open
IN2	Digital Input 2	Open from left
IN3	Digital Input 3	Open from right
IN4	Digital Input 4	Random function
IN5	Digital Input 5	Confirm warnings
IN6	Digital Input 6	Inhibit opening
IN7	Digital Input 7	Lighting off
IN8	Digital Input 8	| End switch drop arm

Table 3: Factory settings digital inputs

Clamp	Function
–	Inputs that you assign this function "–" to are being disabled.
| Emergency open	Emergency situation (Fail Safe) Connect fire service switches, emergency opening contacts, etc. to this input. This input has the highest priority. As soon as +24 V DC are applied to this input, the turnstile is in operation. For turnstiles with the "Drop arm" option, the holding magnet for the drop arm is released immediately in the event of a signal drop. The motor starts up briefly so that the drop arm can be released. For turnstiles without the "Drop arm" option, the passage is immediately enabled in both directions in the event of a signal drop. This input function is high priority to all other input functions.
Confirm warnings	Confirm warning messages A pulse at this input confirms the "Warning" output function. The output is reactivated the next time a warning occurs. The number of the warning message remains stored in the event list until the control unit is restarted.
Open from left	Opening pulse for passage from the left If the signal is present for longer than 3 seconds, Permanent open is activated. ↗ Page 30, chapter 4.2.2, parameter "Permanent open".
Open from right	Opening pulse for passage from the right If the signal is present for longer than 3 seconds, Permanent open is activated. ↗ Page 30, chapter 4.2.2, parameter "Permanent open".
Inhibit opening	Locking the turnstile Use this input to lock the turnstile in both passage directions. No opening signals are accepted anymore. Input IN1 "| Emergency open" remains superordinated. This means that the turnstile can also be opened via input IN1 when the turnstile is locked.
| Over-climb detection	Sensor connection for over-climb detection (Fail Safe) This input is used to connect a sensor such as a light barrier or a light switch for detecting attempted climbing. As soon as 0 V is applied to this input and there is no release for a passage, the function is activated and the "Climbing/ Crawling" output function is set.
| Under-crawl detection	Sensor connection for under-crawl detection (Fail Safe) This input is used to connect a sensor such as a light barrier or a light switch for detecting attempted crawling. As soon as 0 V is applied to this input and there is no release for a passage, the function is activated and the "Climbing/ Crawling" output function is set.
Random function	Activate random function, confirm hits As soon as +24 V DC are applied to this input, the random function is activated. If a hit is generated, the hit can be confirmed with a 0 V pulse via this input. ↗ Page 35, chapter 4.2.7, "Random function" menu.

Clamp	Function
Lighting off	Switching the lighting off and on As soon as +24 V DC are applied to this input, the floor lighting and the frame illumination are switched off. As soon as there is no signal at this input, the lighting is switched on.
| End switch drop arm	End switch drop arm fades (only with "Drop arm" option) (Fail Safe) This input is used internally for the feedback signal of the energized drop arm holding magnet. As soon as the feedback signal is missing, an error is generated.

Table 4: Function digital inputs

2.2 Digital outputs and relay outputs

↗ For the definition "Left" and "Right" see Page 43, chapter 5.1.

By parameterising the outputs, you assign certain functions to the outputs. For example, if you parameterise the "Buzzer/Siren (alarm)" function for output NO2, you must connect an acoustic signal transmitter to this output.

If the function is marked with "|", the output is inverted (Fail Safe).

The following functions are assigned to the outputs as default settings.

Clamp	Description	Function
DO1	Digital output 1	GED red left
DO2	Digital output 2	GED green left
DO3	Digital output 3	GED red right
DO4	Digital output 4	GED green right
NO1	Relay output 1	Random hit
NO2	Relay output 2	Buzzer/Siren (alarm)
NO3	Relay output 3	Climbing/Crawling
NO4/NC4	Relay output 4	Passage free left
NO5/NC6	Relay output 5	Passage free right
NO6/NC6	Relay output 6	Home position

Table 5: Factory settings digital outputs and relay outputs

Function	Function
–	Outputs that you assign this function "–" to are disabled.
| Error	When the control unit recognises any safety-relevant error or error, the output with this function is disabled (Fail safe). ↗ Page 50, chapter 6.3.
| Warning	When the control unit recognises any Warning, the output with this function is disabled (Fail safe). ↗ Page 50, chapter 6.3.
Gate ready	Turnstile is ready for operation This output is activated as soon and as long as the turnstile is ready for operation.
Passage pulse left	Passage pulse for rotating direction left When the end position is reached in the left passage direction, a counting pulse (300 ms) is emitted via this output. A counting pulse is also emitted in the "Permanent open" operating mode.
Passage pulse right	Passage pulse for rotating direction right When the end position is reached in the left passage direction, a counting pulse (300 ms) is emitted via this output. A counting pulse is also emitted in the "Permanent open" operating mode.

Function	Function
Passage free left	Display for passage direction left free With a free passage to the left, a permanent signal is emitted via this output. You can also use this output to lock a pulse encoder, e.g. a card reader, for passage to the right if passage to the left is cleared.
Passage free right	Display for passage direction right free With a free passage to the right, a permanent signal is emitted via this output. You can also use this output to lock a pulse encoder, e.g. a card reader, for passage to the left if passage to the right is cleared.
Home position	Blocking element in Home position (Home Position) When the blocking element is in one of the end positions, a permanent signal is output.
Rotating from left	As long as the blocking element is turned from the left, a permanent signal is emitted via this output.
Rotating from right	As long as the blocking element is turned from the right, a permanent signal is emitted via this output.
Climbing/Crawling	Climbing or crawling attempt detected This output is activated as soon as a climbing or a crawling attempt is detected. If an individual release or Permanent open is present, the output is not activated. After one passage, the sensors may continue to be occupied for approx. 1.5 seconds without triggering an alarm.
Vandalism	Vandalism feedback If the blocking element is turned in the wrong direction without validation, this output is activated until the turnstile is ready for operation again.
Buzzer/Siren (alarm)	Acoustic signal transmitter An acoustic signal transmitter is connected to this output.
Random hit	Hits of the random function, signal transmitter The random function generated a hit. You can connect a signal lamp or a siren to this output, for example. The passage remains blocked until the random hit / validation is confirmed with a 0 V pulse at the "random function" input.
Service mode active	Turnstile in service mode As soon as the service mode is switched on via the service switch on the MGC control unit, this output is activated. ↗ Page 28, chapter 3.9.
GED red left	Gate End Display connection Connect the GED red left to this output.
GED green left	Gate End Display connection Connect the GED green left to this output.
GED red right	Gate End Display connection Connect the GED red right to this output.

Function	Function
GED green right	Gate End Display connection Connect the GED green right to this output.

Table 6: Function digital outputs and relay outputs

2.3 Digital power outputs of the MFM01 plug-in modules

You can equip the control unit with up to 4 optional MFM01 plug-in modules.

Power outputs 60 V / 3 A are available via the optional MFM01 plug-in modules. The function is permanently assigned via the slot number.

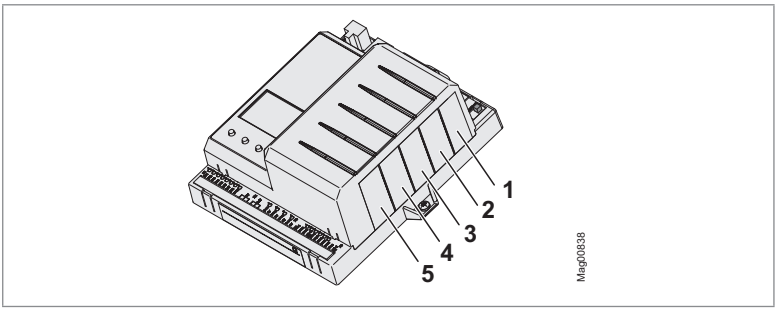


Fig. 1: Slot numbers

Slot number	Terminal plug-in module	LED plug-in module	Function
1	Locking unit / drop arm		
	1	Red	Locking magnet left
	2	Green	Locking magnet right
	3	Yellow	Drop arm
2	Passage right (frame illumination) / floor lighting		
	1	Red	Passage blocked right
	2	Green	Passage free right
	3	Yellow	Floor lighting
3	Passage left (frame illumination)		
	1	Red	Passage blocked left
	2	Green	Passage free left
	3	Yellow	Not usable
4	Drop arm / vandalism		
	1	Red	Drop arm
	2	Green	Not usable
	3	Yellow	Vandalism
5	Not usable		

Table 7: Functions for MFM01 plug-in modules

3 Parameterising control unit

3.1 Changing menu language

The default setting in the MGC control unit is the menu language "English".

Change the menu language as follows:

The operational view is displayed.

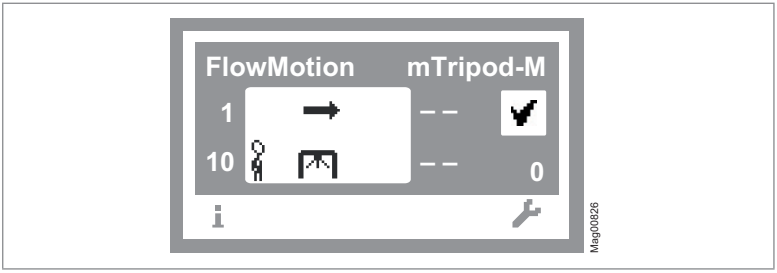


Fig. 2: Example "Operational view

1. Press right operating button "".

2. Access to parameterisation can be password-protected. If password protection was activated, you are asked to enter a password.

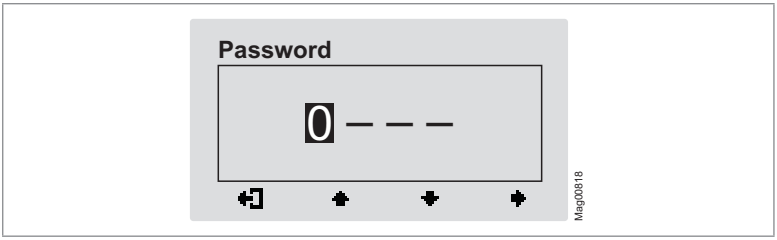


Fig. 3: View "Enter password"

3. The "Main menu" menu is displayed. The "Setup" menu has a dark background and is thus selected.

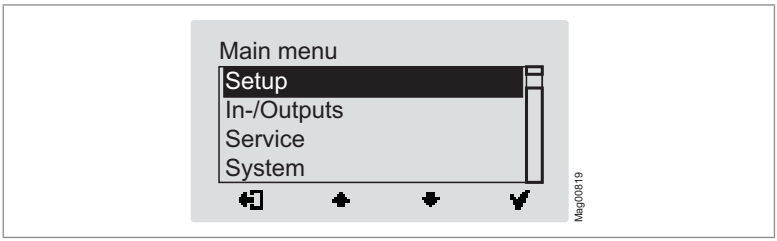


Fig. 4: View "Main menu – Setup"

4. Select the menu "System" with the two middle buttons "▲", "▼".

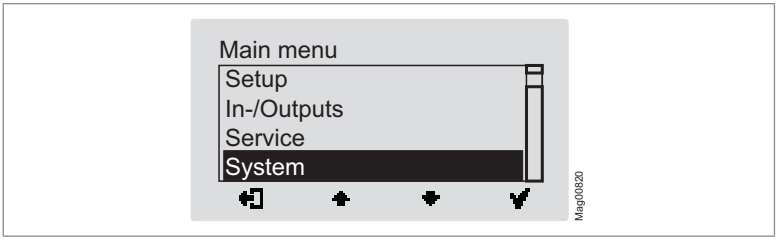


Fig. 5: View "Main menu – System"

5. Confirm selection with the right control button "✓". The following view is displayed. The menu "Language" is chosen.

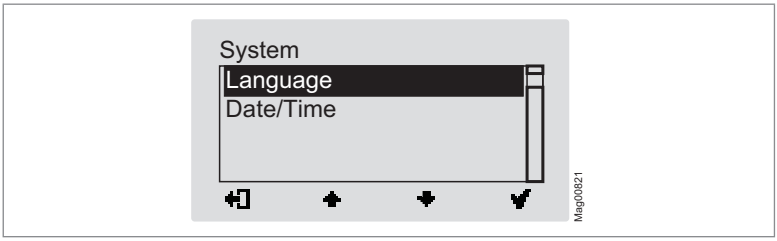


Fig. 6: View "Language"

6. Confirm selection with the right button "✓". The following view is displayed. The menu language "English" is chosen.

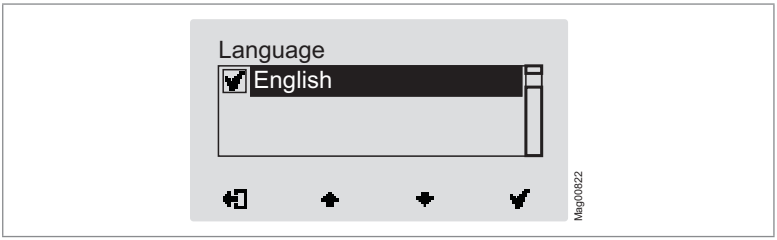


Fig. 7: View "Language – English"

7. Select the language "German" with the two middle buttons "▲", "▼". The language "German" has a dark background.

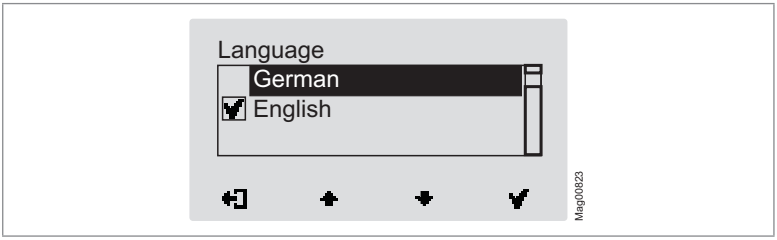


Fig. 8: View "Language – German"

8. Use the right button "✓" to select the new menu language. Your selection is marked with the symbol "☑".

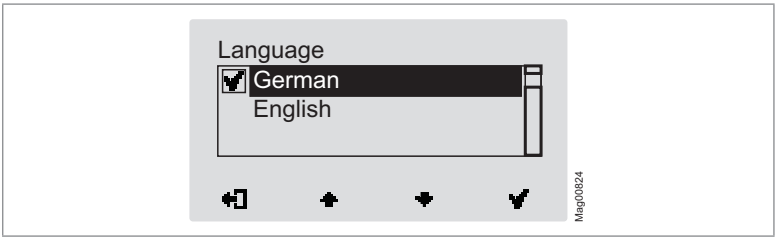


Fig. 9: View "Language – German", step 2

9. Use the left button "⏎" to leave the "Language" menu. The safety prompt "Save changes?" appears.

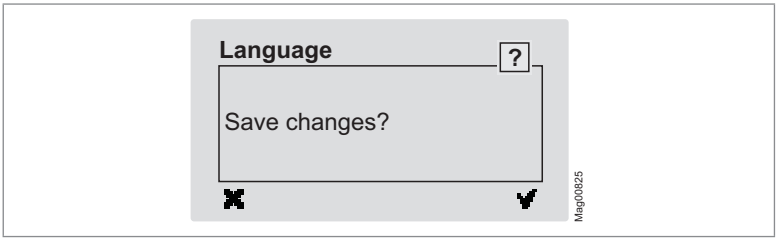


Fig. 10: View "Safety prompt – Save changes?"

Push the left button "✘" if you do not want to save the changes. The menu language "English" remains active.

10. Confirm safety prompt with the right button "✔". The new menu language "German" is activated. The following view is displayed:

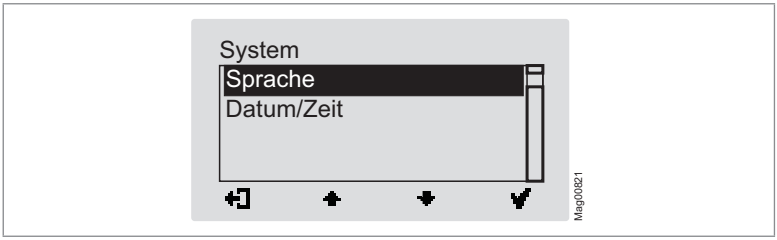


Fig. 11: View "Menu system – Menu language German" is activated

11. Press the left button «⏎» repeatedly until the operating view is displayed again. ↗ Page 17, Fig. 2.

3.2 Entering password

You need to enter a password in the following cases:

› You would like to change parameters in the control unit and the password protection was activated.

› You would like to reset the parameters to factory settings.

If a password is required, the following view is displayed:

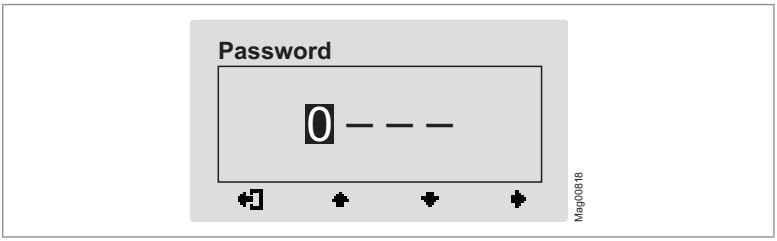


Fig. 12: View "Password"

1. Use the two middle buttons "▲", "▼" to enter the first digit of the password.
2. Use the right button "►" to select the second digit of the password. The following view is displayed:

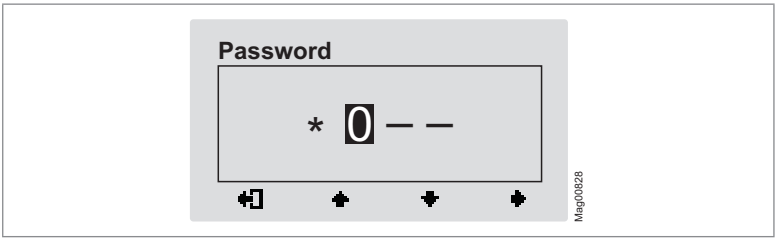


Fig. 13: View "Enter second digit of the password"

3. Use the two middle buttons "▲", "▼" to enter the second digit of the password.
4. Use the right button "►" to select the third digit of the password.
5. Use the two middle buttons "▲", "▼" to enter the third digit of the password.

6. Use the right button "" to select the fourth digit of the password. The following view is displayed:

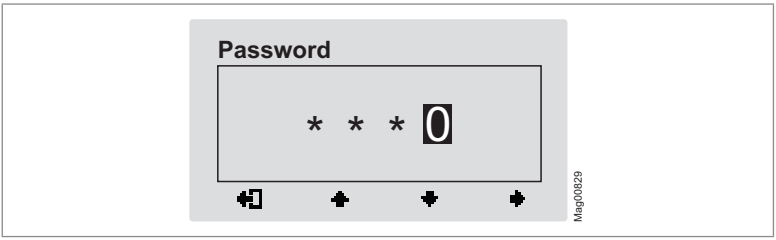


Fig. 14: View "Enter fourth digit of the password"

7. Use the two middle buttons "", "" to enter the fourth digit of the password.
8. Confirm the password with the right control button "".

3.3 Control unit elements

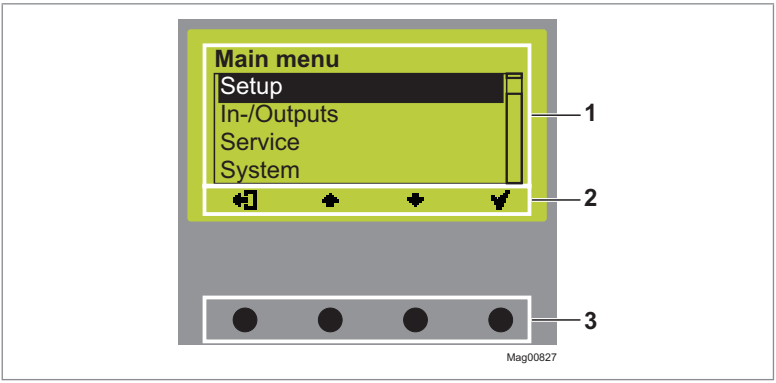


Fig. 15: Control unit elements MGC

1 Menu
2 Current function of the 4 control buttons
3 Control buttons

3.4 Displays of the control unit

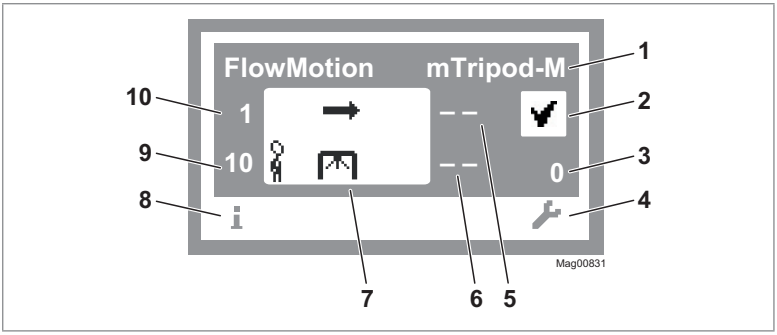


Fig. 16: Example "Operational view"

1 Type pedestrian gate here mTripod electromotive
2 Status display, here ready for operation
3 Angle of rotation, here 0
4 Current function of the right control button, here calling menu "Main menu"
5 Validations right, here locked
6 Hold-open time right, here locked
7 Operating display, here passage direction left enabled
8 Current function of the left control button, here calling menu "Information"
9 Holding-open time left, here 10
10 Validations left, here 1

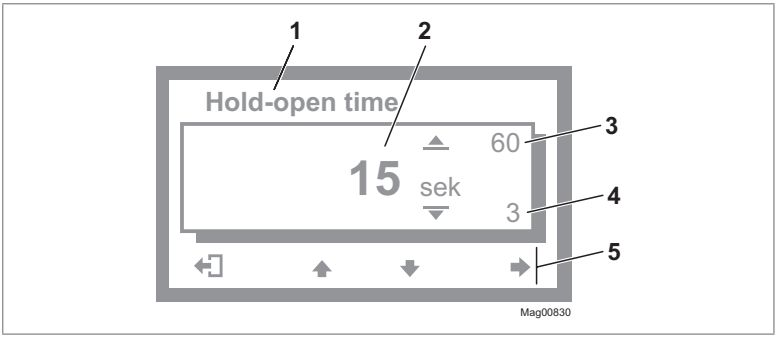


Fig. 17: Example "Screen change value"

1 Parameter
2 Current value
3 Possible upper value
4 Possible lower value
5 Current functions of the control buttons

3.5 Symbols in the display

3.5.1 Control button functions

The control unit is equipped with 4 control buttons. The function of the control buttons change depending on the current view in the display. The current functions are shown in the display.

Clamp	Description
	› Call menu "Information". › Scroll menu "Information".
	Call menu "Main menu". Make all settings in the menu "Main menu".
	Leave current menu level. The next-higher menu level is displayed.
	› Call next-lower menu level. › Select desired option or desired value. When the desired option was selected, the symbol  is displayed.
	Option was selected but not yet stored
	› Within one menu level: Move cursor (market) upwards. › For setting value: Increase figure.
	› Within one menu level: Move cursor (market) downwards. › For setting value: Decrease figure.
	Move cursor one position to the right.
	› Delete error message. › When changing settings: Cancel changing process.

Table 8: Control button functions

3.5.2 Further symbols

Clamp	Description
	Wrong password entered. Access denied.
	Reset values to factory settings. To do this, you must enter the password "0000".
	The next validation is blocked by the random function.
	There is information. Check the "Information" menu. To do this, press the left operating button.
	There is a warning. Check the "Information" menu. To do this, press the left operating button.
	There is an error. Check the "Information" menu. To do this, press the left operating button.
	The passage direction from left is enabled.
	The passage is enabled in both directions.

Table 9: Further symbols

3.6 Setting display contrast

The display contrast of the control unit is adjustable after activation while the logo is still displayed. The logo is displayed for 3 seconds.

If you push one of the middle buttons "", "", the display time of the logo extends by 2 seconds per push. You can thus extend the time to set the display contrast.

› Increase contrast, display grows darker: press button "".

› Reduce contrast, display grows lighter: press button "".

The set display contrast is saved automatically.

3.7 Protecting parameterisation from access

You can apply the access to the main menu with password protection. ↗ Page 37, chapter 4.3.1.

3.8 Parameterise value

Example: Change hold-open time

The operational view is displayed. ↗ Page 23, Fig. 16.

1. Press the right button "".
   √ The "Main menu" menu is displayed.
2. Select the menu "Setup" with the two middle buttons "", "".
3. Confirm the selection with the right button "".
4. The "Hold-open time" parameter has a dark background and is thus selected. If necessary, use the two middle buttons "", "" to select the "Hold-open time" parameter.
5. Press the right button "".
   √ The current hold-open time value is displayed. The cursor flashes on the first digit.
6. Use the middle buttons "", "" to set the desired digit.
7. Use the right button "" to move the cursor to the right.
   √ The cursor flashes on the second digit.
8. Use the middle buttons , to set the desired digit.
9. Press the right button "".
10. Use the left button "" to leave the "Hold-open Time" parameter.
    √ The safety prompt "Save changes?" appears.

11. If the changes are to be saved, press the right button "✓". The new hold-open time is activated.
    If the changes are not to be saved, press the left button "✗". The previous hold-open time remains active.
    √ The "Setup" menu is displayed.
12. Press the left button "⏎" repeatedly until the operating view is displayed again.

3.9 Switching the "Service" mode on and off

In service mode, all opening signals are ignored.

Switch on mode "Service"

Switch the "Service" switch for the "Service" mode. The LED lights red. The display backlighting flashes.

Switch off mode "Service"

After the service work, the switch "Service" must be switched. The LED must light green.

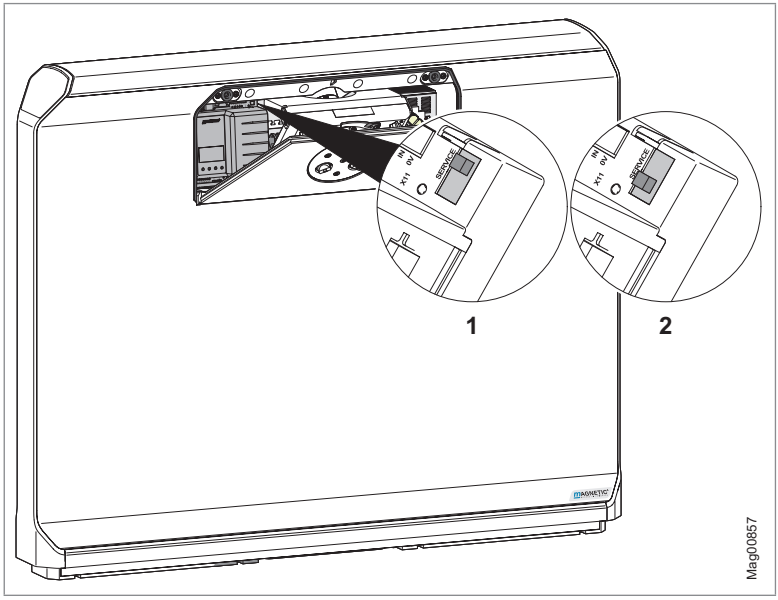


Fig. 18: Service switch

1 Mode "Service" on

2 Mode "Service" off

Button function

In the "Service" mode, you can control the turnstile with the two middle control buttons.

› Middle left button "": Open from right.

› Middle right button "": Open from left.

4 Description of menus and parameters

4.1 Menu "Information"

Call and navigate

The operational view is displayed. ↗ Page 23, Fig. 16.

1. Press left button "i".
2. Use the left button "i" to scroll within the menu.
3. The "Information" menu can be left as follows:
   - › Press the left button "i" repeatedly until the operating view is displayed again or
   - › press the right button "⏎".

Operating View > Information	
Parameter	**Description**
Error, warning or event messages	Display of the error, warning or event messages that occurred since the last voltage reset, including date and time. Use the "▲" and "▼" buttons to navigate through the messages. If no messages are present, the menu is not displayed.
Inputs	Displays the current settings for the digital inputs IN1 to IN8.
Outputs	Displays the current settings for the digital outputs DO1 to DO4 and the relay outputs NO1 to NO3 and NO/NC4 to NO/NC6.
Module info	Display of the software numbers (software #) and software versions (SW version) of the control unit and plugged-in plug-in modules.

Table 10: Menu "Information"

4.2 Menu "Setup"

4.2.1 Hold-open time

Operational view > Main menu > Setup > Hold-open time	
Parameter	**Description**
Hold-open time	Set the hold-open time. The hold-open time is started by an opening impulse by a control device, such as a card reader. A passage should take place within the set hold-open time. If there is no passage during the hold-open time, the direction is blocked. With the setting 0 s, the direction remains open until a passage takes place. **Setting range** › 0 to 60 s **Factory setting** › 7 s

Table 11: Hold-open time

4.2.2 Permanent open

Operational view > Main menu > Setup > Permanent open	
Parameter	**Description**
Permanent open	You use this parameter to specify whether and after what time the permanent open is activated for a permanent signal at the "Open from left" or "Open from right" input. **Example option "After 3 s"** If the signal is present at the "Open from left" or "Open from right" input for 3 seconds, the system switches to the "Permanent open" operating mode. As soon as the signal is no longer present at the input, the direction is immediately blocked. **Options** › Disabled › After 3 s › After 10 s **Factory setting** › After 3 s

Table 12: Permanent open

4.2.3 Interlock

Operational view > Main menu > Setup > Interlock	
Parameter	**Description**
Interlock	Activate and deactivate the "Interlock" function. If the interlock has been activated, further rotation of the blocking element is blocked for 1 second after each pass. This ensures that the blocking element remains safely in the Home position. If many people pass the turnstile (high throughput), the option "Inactive [ ]" may be useful. **Options** › Inactive [ ] › Activated [X] **Factory setting** › Inactive [ ]

Table 13: Interlock

4.2.4 Safety/Security

Operational view > Main menu > Setup > Safety/Security	
Parameter	**Description**
Security mode	Adjust the security mode for breakthrough attempts. **Options** › Without locking unit The passage is blocked with the set motor force. The locking unit is not activated. ↗ "Holding force" parameter. › With locking unit The direction-specific locking output is activated when vandalism is detected. The motor holding force is reduced. The lock is released again when the Home position is reached. **Factory setting** › Without locking unit
Holding force	Set the maximum holding force for locking in the Home position. For certain applications, such as ski lift accesses, it may make sense to reduce the holding force. A lower holding force can reduce the risk of injury after validation errors. **Setting range** › 40 % to 100 % **Factory setting** › 100 %

Table 14: Safety/Security

4.2.5 Vend count

Operational view > Main menu > Setup > Vend count	
Parameter	**Description**
Counter left	Displays the current counter for validations in the "Left" direction.
Counter right	Displays the current counter for validations in the "Right" direction.
Max. impulse count	Set the value for the maximum number of pulses. The pulses are counted up to the set value. **Setting range** › 0 to 10 **Factory setting** › 3
Max. imp. w/o passage (Max. impulse without passage)	Set the value for the maximum number of pulses without passages. This value is used to check the connected validation device, e.g. card reader. If the counter value is above the set value, a warning message is issued. **Setting range** › 5 to 100 **Factory setting** › 5

Table 15: Vend count

4.2.6 Signalling

Operational view > Main menu > Setup > Signalling	
Parameter	**Description**
Buzzer/Siren	Activate events for which an acoustic signal is to be triggered. Connect the acoustic signal to the "Buzzer/Siren (alarm)" output. An acoustic signal is possible for the following events: › Vandalism › Validation pulse › Error › Random hit › Passage › Climbing/Crawling **Options** › Inactive [ ] › Activated [X] **Factory setting** › Vandalism [X]
Signal move	Activate and disable the "Signal move" function. If the function has been activated and a validation is available, the validation is signalled by a short rotation movement of the blocking element in the passage direction. Permanent opens are not signalled. If signalling is active, the passage must take place in the signalled rotating direction, even if the opposite direction is in "Permanent open" mode. If signalling and validation are active, vend count for the opposite direction is deactivated. Pulses in the same direction are accepted. **Options** › Inactive [ ] › Activated [X] **Factory setting** › Inactive [ ]

Operational view > Main menu > Setup > Signalling	
Parameter	**Description**
GED mode left	Set the behaviour of the optional GEDs. **Options** › Off: The display is dark. › Red: The display is permanently red. › Green: The display is permanently green. › Standby red: The display is red when locked. When released, the display turns green. The display is red during a passage in the opposite direction. › Standby off: The display is off when locked. When released, the display turns green. The display is red during a passage in the opposite direction. › Standby green: The display is green when locked. When released, the display flashes green. The flashing frequency is increased at the end of the hold-open time. The display is red during a passage in the opposite direction. **Factory setting** › Standby red
GED mode right	↗ "GED mode left" parameter.

Table 16: Signalling

4.2.7 Random function

The MGC control unit is equipped with the "random function" option. This function allows random bag and identity control of persons.

If a hit was generated by the random function and the next validation is blocked by the random function, the following symbol appears on the display of the control unit: "  ".

For the random function you can choose between "Counting" or "Random" modes. You activate the random function via a permanent signal (+24 V DC) at the "Random function" input. If the random function has generated a hit, the turnstile is not opened despite a valid opening impulse. A signal is emitted at the output with the "Random hit" function. You can connect a signal lamp or a siren to this output.

The passage remains blocked until the random hit / validation is confirmed with a 0 V pulse at the "Random function" input.

Operational view > Main menu > Setup > Random function	
Parameter	**Description**
Mode	Set the function of the random function. **Options** › Disabled: The random function is not in operation. › Counting: If the number of passages since activation has reached the set value for the "Hit range" parameter, a hit is reported and the passage is blocked. For example, if you set the value "100" for the "Hit range" parameter, a hit is generated every 100th passage. The hit is confirmed via the "Random function" input function. After acknowledgement, the random function counter restarts. › Random: You can set the random probability using the "Hit range" and "Count of hits" parameters. By activating the random function, the set "Count of hits" is randomly generated, which must lie within the set "Hit range". For example, if you set the value "100" for the "Hit range" parameter and "10" for the "Count of hits" parameter, hits are generated randomly for 10 people out of 100. **Factory setting** › Disabled

Operational view > Main menu > Setup > Random function	
Parameter	**Description**
Hit range	The function depends on the selected mode. For the "Counting" mode, use this parameter to set the value at which a hit is to be generated. For the "Random" mode, set the number range in which the random hits must lie. For example, if you set the value to "100", the random hits must be in the range 1 to 100. IMPORTANT! The value for the "Count of hits" parameter can be a maximum of 40% of the value for the "Hit range" parameter. If the value set for the "Count of hits" parameter is too high, the "Count of hits" parameter is automatically adjusted. **Setting range** › 10 to 10000 **Factory setting** › 1000
Count of hits	Set the number of hits to be generated in the set “Count of hits”. IMPORTANT! The value for the "Count of hits" parameter can be a maximum of 40% of the value for the "Hit range" parameter. If the value set for the "Hit range" parameter is too high, the "Hit range" parameter is automatically adjusted. **Setting range** › 1 to 1000 **Factory setting** › 10
Delete validation	Use the "Delete validation" parameter to specify whether the validation is to be deleted automatically in the event of a random hit. **Options** › Activated [X] Select this option if you want the check to take place before the passage. The user leaves the area via a separate passage. › Inactive [ ] Select this option if you want the passage to take place when the hit is confirmed. In this case, the check is carried out after the passage. **Factory setting** › Inactive [ ]

Operational view > Main menu > Setup > Random function	
Parameter	**Description**
Direction	Select the passage direction for which the random hits are to be generated. **Options** › Both: Random hits occur in both passage directions. With this option, validations are not deleted. › Left: Random hits occur only for the "left" passage direction. › Right: Random hits occur only in the "right" passage direction. **Factory setting** › Both

Table 17: Random function

4.3 Menu "In-/Outputs"

4.3.1 Inputs

↗ Page 10, chapter 2.1.

4.3.2 Outputs

↗ Page 13, chapter 2.2.

4.4 Menu "Service"

4.4.1 Gate HW

Operational view > Main menu > Setup > Gate HW	
Parameter	**Description**
Homing offset	Mechanical tolerances can result in the blocking arm not being exactly in the middle position after homing. You can use this parameter to compensate for the deviation. Negative values correct the deviation to the left. Positive values correct the deviation to the right. The setting is only accepted after homing. To determine the suitable setting value, display the angle of rotation on the operating display ↗ Page 23, Fig. 16. Manually press the blocking arm to the desired zero position. Enter the displayed rotation angle for the "Homing offset" parameter. **Setting range** › –7° to +7° **Factory setting** › 0°
Align home position	If the correction of the centre position of the blocking arm via the “Homing offset” parameter is uncomfortable , you can manually align the centre position of the blocking arm via the “Align home position” parameter. You start the process via the “Activated [X]” option. First, the drive executes a homing. At the same time the message “Please wait” appears on the display. As soon as the message disappears, the motor is de-energised and you can turn the blocking arm to the centre position. The new position is adopted after 10 seconds. The “Homing offset” parameter is adjusted. **Options** › Inactive [ ] › Activated [X] **Factory setting** › Inactive [ ]
Drop arm	For turnstiles with "Drop arm" option, select the "Activated [X]" option. For turnstiles without "Drop arm" option, select the "Inactive [X]" option. **Options** › Inactive [ ] › Activated [X] **Factory setting** › Inactive [ ]

Table 18: Gate HW

4.4.2 “Further parameters

Operating view > Main menu > Service	
Parameter	**Description**
Cycles	Display of complete passage procedures.
Lifetime	Display operating hours counter. The operating hours counter records the time, during which the pedestrian gate is supplied with electrical power.
System time	Displays the internal date and the internal clock.
Main menu password	Activate and deactivate password protection for the main menu To activate a change of the settings, either call the operating view or switch the voltage supply on or off. **Options** › Inactive: You can change the main menu without entering a password. › Enabled: You can change the main menu only after entering a password. The password is identical with the one for the menu "Service". **Factory setting** › Inactive

Table 19: Service – further parameters

4.5 Menu "System"

Operational view > Main menu > System	
Parameter	**Description**
Language	Select menu language **Options** › English › German **Factory setting** › English
Date/Time	Correct date and time of the control unit MGC.

Table 20: System

4.6 Menu "Passage counter"

Operational view > Main menu > Passage counter	
Parameter	**Description**
From left	Display of the number of passages completed from the left. If necessary, the value can be changed. **Setting range** › 0 to 30000
From right	Display of the number of passages completed from the right. If necessary, the value can be changed. **Setting range** › 0 to 30000.

Table 21: Passage counter

4.7 Menu "Information"

Operational view > Main menu > Information	
Parameter	**Description**
Serial No.	Displays the serial number of the control unit
Hardware Version	Displays the present hardware version
Software #	Displays the present software number
SW Version	Displays the present software version
Temperature	Displays the current temperature in the control unit
Logic voltage	Display of the logic voltage, from hardware version E
X20-EN	Display of the analogue voltage 0–10 V at the terminal "X20-EN", from hardware version E onwards
PSU-FB	Feedback signal of the mains unit (for future expansions), from hardware version E onwards

Table 22: Information

4.8 Menu “Motor GW" (Gateway)

Operational view > Main menu > Motor GW	
Parameter	**Description**
Motor temperature	Display of the current motor temperature.
Motor-SW	Display of the present motor software.
Information	Displays information on the module "Motor GW". Serial number (serial no.), hardware version, software # and software version of the module "Motor GW" are displayed here.

Table 23: Motor GW

4.9 Menu "Factory settings"

IMPORTANT!

The parameters of the control unit are stored in the three memory areas "Default settings", "Factory settings" and "User settings".

The default settings are identical to the factory settings in these operating instructions. The default settings are firmly store din the firmware and cannot be changed.

The factory setting can be assigned factory- or product-specific settings.

The user settings are the operating parameters.

Options in the menu "Factory settings"

The menu "Factory settings" offers the following options:

- Restore factory settings: The stored parameters in the memory area "Factory settings" are adopted as operating settings.
- User settings as factory settings: The current parameter settings are stored as factory settings. These factory settings can be used to receive project-specific settings.
- Default settings as factory settings: The factory settings are overwritten by the default settings.

If you would like to assume the default settings as operating settings and the factory settings were overwritten first, you need to use the option "Default settings as factory settings" and then the option "Restore factory settings".

Option "Restore factory settings"

The operational view is displayed. ↗ Page 23, Fig. 16.

1. Press the right button "".
   √ The "Main menu" menu is displayed.
2. Select the menu "Factory settings" with the two middle buttons "", "".
3. Confirm selection with the right button "".
4. Enter password "0 0 0 0".
5. Confirm password with the right button "".
   √ The message "Reset to factory settings" appears.
6. Press the right button "".
   √ The safety prompt "Save changes?" appears.
   › If the changes are to be saved, press the right button "". The current settings are reset to factory settings. A restart is performed.
   › If the changes are not to be saved, press the left button "".
7. Press the left button "" repeatedly until the operational view is displayed again.

Via service password for all options

The operational view is displayed. ↗ Page 23, Fig. 16.

1. Press the right button "".
   √ The "Main menu" menu is displayed.
2. Select the menu "Factory settings" with the two middle buttons , .
3. Confirm selection with the right control button .
4. Enter "Service Password"
5. Confirm password with the right control button .
   √ The message "Reset to factory settings" appears.
6. Select the desired option with the two middle buttons "", "".
7. Confirm selection with the right control button .
   √ The safety prompt "Save changes?" appears.

› If the changes are to be saved, press the right button . The current settings are reset to factory settings. A restart is performed.

› If the changes are not to be saved, press the left button .

8. Press the left button repeatedly until the operational view is displayed again.

5 Function description

5.1 Definition of "left" and "right"

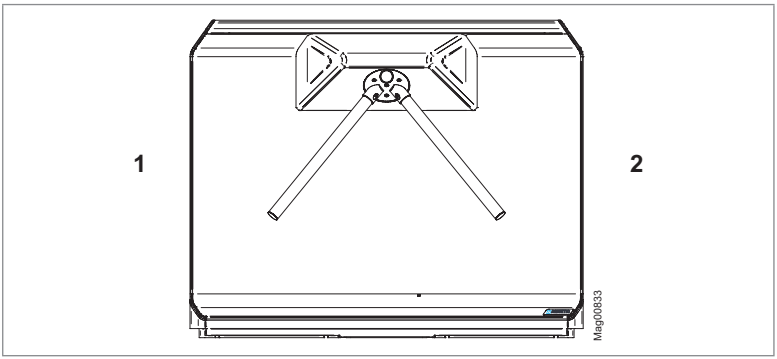
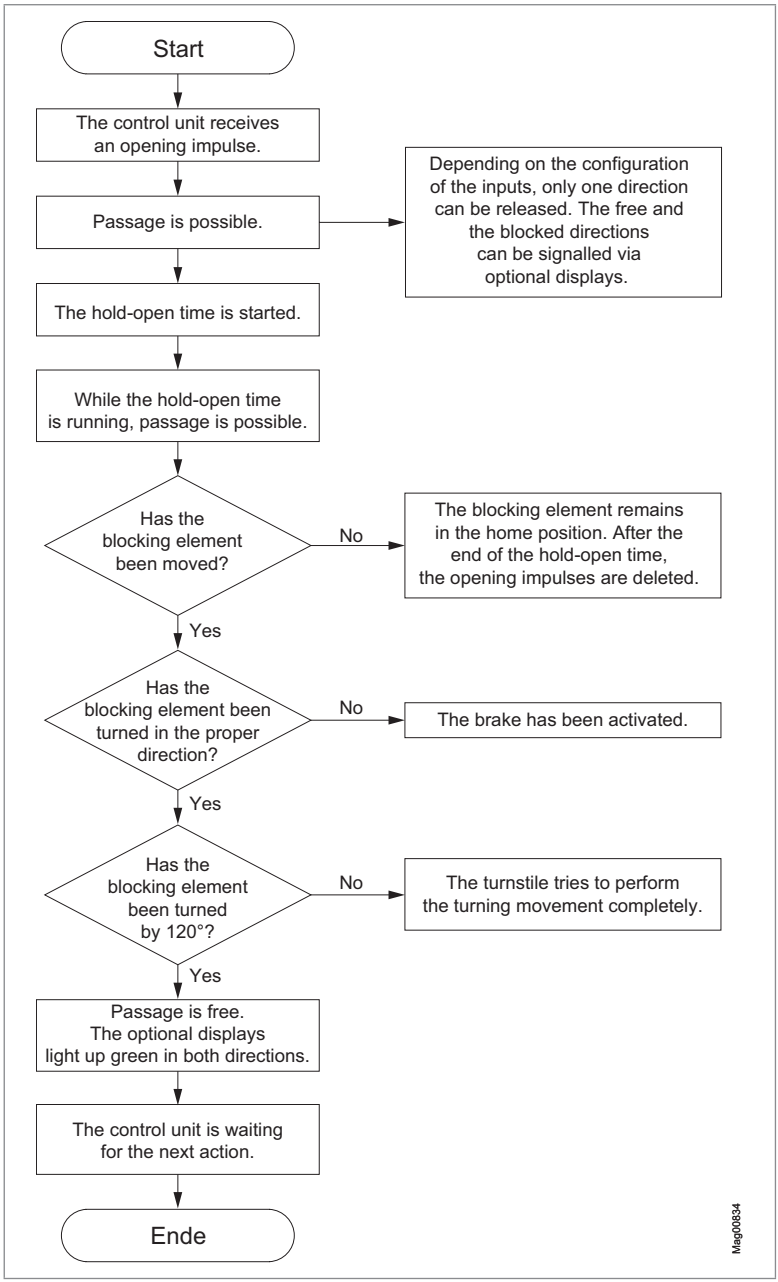


Fig. 19: Definition of "left" and "right"

1 Left

2 Right

5.2 Function sequence



5.3 Start-up and regular movement sequence

Power-off state

The motor is not energized in the power-off state. The lock is released and the capstan with the three blocking arms can be turned freely. For turnstiles with "Drop arm" option, the top blocking arm is unlocked and turns downwards to allow free passage.

Homing ("Home Position" recalibration)

After switching on, the turnstile automatically performs a homing run (homing). The homing sensor is searched for with a maximum movement of 120° counter-clockwise.

Start-up routine for turnstiles without "Drop arm" option

Turnstiles without "Drop arm" option are immediately ready for operation after the homing.

Start-up routine for turnstiles with "Drop arm" option

For turnstiles with "Drop arm" option, all disengaged blocking arms are engaged fully automatically with one turn after the homing.

Regular movement sequence 120°

After receipt of the release impulse in one direction, the turnstile is released in the passage direction, but the motor will keep the blocking element in the end position with a low torque. The control expects that the user deflects the blocking element by at least 10° in the passage direction. Then the motor is applied with regular current and will move to the next end position (120°).

Regular movement sequence 120° with "Signal move" signalling

↗ Page 33, chapter 4.2.6, parameter "Signal move".

After receiving a validation pulse in one direction, the turnstile is released in the passage direction. The motor makes a short movement of 3° in the passage direction to signal the release. The control expects that the user deflects the blocking element by at least 7° in the passage direction. Then the motor is applied with regular current and will move to the next end position (120°).

5.4 Operation modes

5.4.1 Impulse operation in both directions without vend count

The two inputs "Open from left" and "Open from right" are used to clear passage in the corresponding direction for one passage each. The impulse must be present between 0.2 and 1 sec.

When one of the two inputs was activated by a requesting impulse, the hold-open time starts to run off. Within this hold-open time, passage must be commenced. After the hold-open time has expired, the passage is blocked again in this direction.

When the blocking element is moved by more than approx. 60° in the cleared direction, the hold-open time is deleted immediately. Then it is no longer possible to return the blocking element in the other direction. The passage must be completed in the cleared direction.

In this operating mode, a request for a passage in the opposite direction is ignored while the turnstile is still cleared in the other direction. Only when the blocking element is back in one of the end positions and the hold-open time has expired can a new opening pulse be processed.

The "Passage free left" and "Passage free right" outputs are used to control displays to signal the free and the blocked passage direction. Additionally, these outputs enable mutual locking of the request generators, such as card readers. The request generator must be equipped with a lock input for this. The request impulses from both directions must not occur at the same time or within approx 0.1 s.

5.4.2 Impulse operation in both directions with vend count

This operating mode works similarly to impulse operation without vend count. The impulse must be present between 0.2 and 1 sec.

In this operating mode, pulses for both passage directions can be stored and processed one after the other.

If request pulses were stored for both directions, both directions are cleared at first. The hold-open time starts running for both directions immediately.

The processing of the stored pulses is independent of the sequence in which the pulses were received. This means that if there are pulses for both passage directions, passage in both directions is possible. When a passage has been completed, the control unit verifies again for which directions pulses are still stored. If pulses are still stored, the hold-open time starts running again.

If the "Signal move" function is activated via the "Signalling" menu, only pulses in the direction in which the first pulse was given are counted. Pulses in the opposite direction are ignored. ↗ Page 33, chapter 4.2.6 Parameter "Signal move".

5.4.3 Permanent open in both directions

If a permanent signal is present at the two "Open from left" and "Open from right", the control unit switches to the "Permanent open" operating mode for both directions. This means that the passage is enabled in both directions and no opening pulse must be given.

After removal of the permanent signal, the corresponding direction is locked at once without completion of the hold-open time. The end position lock is not activated in permanent clearance operation.

If a permanent clearance signal is applied during impulse operation, the stored opening pulses for this passage direction are deleted.

5.4.4 Impulse operation in one direction, permanent open in the other direction

When a permanent signal is only present on one of the two inputs "Open from left" and "Open from right", passage is cleared in the corresponding direction. Impulse operation remains active in the other direction.

When the other direction is cleared in impulse operation, the passage direction is locked at once in permanent clearance operation. Only when the hold-open time has elapsed will the passage direction be cleared again in permanent clearance operation.

If a permanent clearance signal is applied during impulse operation, the stored opening pulses for this passage direction are deleted.

5.5 Special cases within the motion sequence

Stopping in mid-movement

If the blocking element is stopped in mid-movement, e.g. from the user not moving on, the motor will continue to move at low torque.

Turning back during the movement

If an attempt is made to turn back the blocking element during the passage, the reaction depends on the angle of rotation. It can be turned back up to an angle of 35°. If the angle is greater than 35°, the position is held with maximum torque until the user no longer presses back. After a short pause, the movement continues.

Turning contrary to the released direction

If a user turns the blocking element from standstill in the wrong direction when the release is granted, an immediate attempt is made to hold the position with maximum torque until the user no longer presses back or the overload protection becomes effective.

Vandalism attempt

If a user tries to get through the turnstile without authorization, the system immediately tries to hold the position with maximum torque until the user no longer presses back. If the maximum holding torque is exceeded, the overload protection becomes effective after a few seconds. From an angle of 70° on, no active attempt is made to reach the original rest position.

Emergency

If the "| Emergency open" input is interrupted during operation, the turnstile switches to the "Permanent open" operating mode. The capstan with the three blocking arms can be turned freely. The motor remains energized to prevent excessive acceleration by the user.

For turnstiles with "Drop arm" option, the top blocking arm is unlocked and turns downwards to allow free passage. As soon as power is restored at the "| Emergency open" input of the control unit, the turnstile is put back into operation.

5.6 Random function

↗ Page 35, chapter 4.2.7.

6 Troubleshooting

6.1 Safety in troubleshooting

Qualification of personnel

› Technician

› Magnetic MHTM™ FlowMotion® service expert

↗ See Page 9, chapter 1.3.1.

Personal protective equipment

Wear the following personal protective equipment:

› Work clothes

› Protective gloves

› Safety shoes.

⚠ WARNING	
	**Inappropriate troubleshooting!** Inappropriate troubleshooting can cause severe injuries. › Observe possible movements of the blocking element. Defective control may lead to inadvertent movement of the blocking element. › In case of damaged components, take the pedestrian gate out of operation. › Use only original spare parts. › After completion of troubleshooting, ensure that all covers are correctly mounted.

This chapter describes possible causes of malfunctions and trouble shooting tasks.

Contact your dealer or customer service if you are unable to rectify the malfunctions due to the following descriptions.

6.2 Malfunctions turnstile

Malfunction: Display is difficult or impossible to read.

Possible cause	Corrective action	Removal by
Display contact set too light or dark.	Correct display contact. ↗ Page 26, chapter 3.6.	Technician

Malfunction: Blocking element does not rotate.

Possible cause	Corrective action	Removal by
Power supply is not connected	› Switch on power supply. › Check power supply.	Technician
Error present. The corresponding error message is displayed.	Depending on error message, check components, wiring, etc.	MHTM™ FlowMotion® service expert
Power supply is present. Control unit display does not light up.	Control unit defective. Replace the control unit.	MHTM™ FlowMotion® service expert
Locking signal present.	Remove locking signal.	MHTM™ FlowMotion® service expert

6.3 Event, Warning and Error messages in the display

The control unit differentiates between events, warnings and errors. The corresponding message is displayed.

Event messages "INFO"

Event messages inform about events. The pedestrian gate continues to operate normally. Event messages do not influence the outputs of the control unit.

Warning messages "WARNING"

Faults that could be reset by the control unit are displayed as warnings. Operation of the pedestrian gate is not or only briefly impaired.

If the function "Warning" has been chosen for an output, this output is deactivated at pending warnings (fail safe).

Error messages "ERROR"

Faults that cannot be reset by the control unit are displayed as errors. The pedestrian gate is put out of service.

If the function "Error" has been chosen for an output, this output is deactivated at pending errors (fail safe).

The fault must be rectified and a reset carried out by a MHTM™ FlowMotion® service expert so that the pedestrian gate can be put back into operation.

↗ For the required qualification of the MHTM™ FlowMotion® service expert see Page 9, chapter 1.3.1.

IMPORTANT!

With some messages, the control unit tries to reset the cause of the message. If the attempt was successful, the message is displayed as WARNING. If the attempt failed, the message is displayed as ERROR.

6.3.1 Event, Warning and Error messages – logic control (control unit)

Number	Designation	Possible cause	Corrective action
3120 ERROR	Mains power failure	Short-term mains failure has been recognised.	Check supply voltage and mains quality.
5530 ERROR	EEPROM checksum error	Checksum of parameters not correct	› Reset parameters to factory settings. ↗ Page 41, chapter 4.9. › If required, contact Service.
6000 ERROR	Module software update error	A firmware update was not performed correctly.	› Restart the control unit › If the error continues to be present, perform the update again via the service module.
6102 ERROR	Software error system bus	Within the control, an error is pending in communication.	› Check SW versions of all plug-in modules. If necessary, update via the service module. › If all FW versions are up to date, contact service.

Number	Designation	Possible cause	Corrective action
6105 ERROR	Error on homing	The pedestrian gate could not execute a homing.	› Check motor communication. › Check mechanics. › Check the homing sensor › Perform reset ↗ Page 55, chapter 6.4.
8130 WARNING	Heartbeat error	Communication to a plug-in module was interrupted.	› Check whether all plugged in modules are listed in the main menu. › Perform reset ↗ Page 55, chapter 6.4. › If required, contact Service.
FF06 WARNING	Vandalism	An unauthorized passage was detected.	› Check locking. › Confirm warning via input.
FF20 WARNING	Emergency open active	0 V or no signal is present at the "Emergency open" input.	› Check input signal. › If not used, disable the input function.
FF21 WARNING	Max. impulse without passage	The set maximum number of pulses without passage has been reached.	› Check card reader / validation device, e.g. card reader. › Check the "Max imp. w/o passage" parameter. ↗ Page 32, chapter 4.2.5.
FF24 ERROR	Drop arm feedback	The feedback of the micro switch of the holding magnet for the drop arm is missing.	› Check wiring. › Check the function of the magnet. › Disable input function.

Table 24: Event, Warning and Error messages – logic control (control unit)

6.3.2 Event, Warning and Error messages – Motor GW

Number	Designation	Possible cause	Corrective action
2220 WARNING	Over current	Overcurrent was detected Warning may occur in connection with an impact.	› If no impact has occurred, check the wiring. › If required, contact Service.
3211 WARNING	Over voltage	Overvoltage has been detected Warning may occur in connection with an impact.	› If no impact has occurred, check the wiring. › If required, contact Service.
3221 WARNING	Under voltage	Under voltage has been recognised The message may appear if the blocking element is held and pressed for a longer period of time while the holding torque is active.	› Check the holding time by pressing on the blocking element while the passage is blocked. If the holding time is shorter than 1s, replace the mains unit. › Disconnect additional loads from the MGC control unit.
4210 WARNING	Over temperature	A high temperature was detected.	› Check the motor temperature via the "Motor GW" menu. The temperature must be below 100 °C. › If required, contact Service.
4220 WARNING	Derating error	The power consumption of the motor is reduced to prevent a further rise in temperature.	› Remove inadmissible attachments. › If required, contact Service.
7510 ERROR	Motor communication error	Communication between motor and control disturbed or interrupted	› Check wiring. › If required, contact Service.
FF36 WARNING	Motor reset Homing is performed automatically.	A short overload or drop of the voltage supply of the motor controller has triggered a motor reset.	› Replace the mains unit, if necessary.
FF37 ERROR	Motor update failure	An error occurred while updating the motor software	› Perform reset › If required, contact Service.

Number	Designation	Possible cause	Corrective action
FF3A INFO	Motor update performed	This message is for information only.	–

Table 25: Event, Warning and Error messages – Motor GW

6.3.3 Event, Warning and Error messages – all Modules

Number	Designation	Possible cause	Corrective action
6010 WARNING	Watchdog reset	SW error	If required, contact Service.
8110 WARNING	CAN overrun	Warning	If required, contact Service.
8120 WARNING	CAN HW fault	Warning	› Check the DIP switch next to the service interface (ON position). › If necessary, remove devices at the service interface.

Table 26: Event, Warning and Error messages – all modules

6.4 Perform reset

Control unit reset is performed as follows:

› Switch of power supply and switch it on again after 10 seconds.

or

› Press the two middle control buttons on the display of the control unit for 5 seconds.

NOTICE	
	**Fast restart!** Switching the pedestrian gate on again too fast can lead to damage to the device! › Wait for at least 10 seconds after switching off the pedestrian gate before you switch the mains power on again.

7 Menu setup

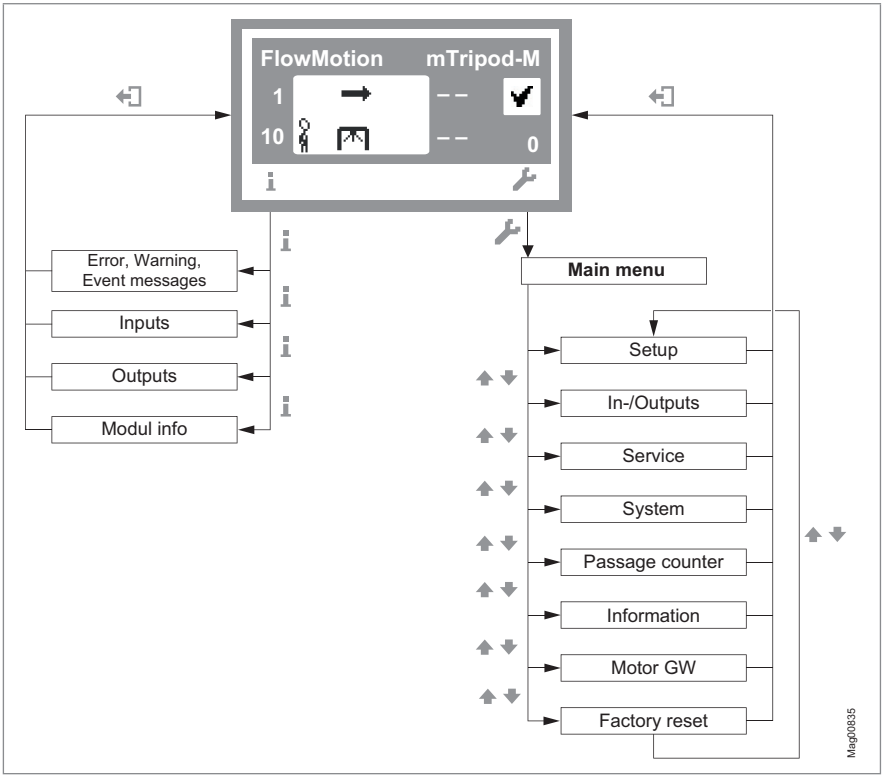


Fig. 20: Menu "Information" and "Main menu"

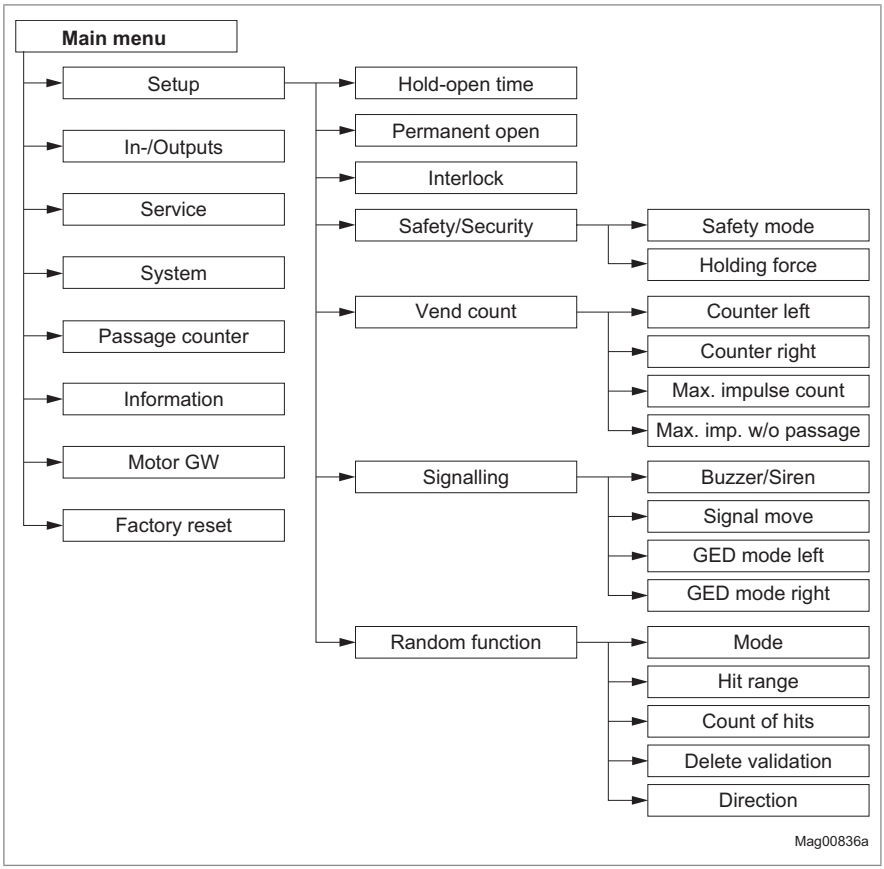


Fig. 21: Menu "Setup"

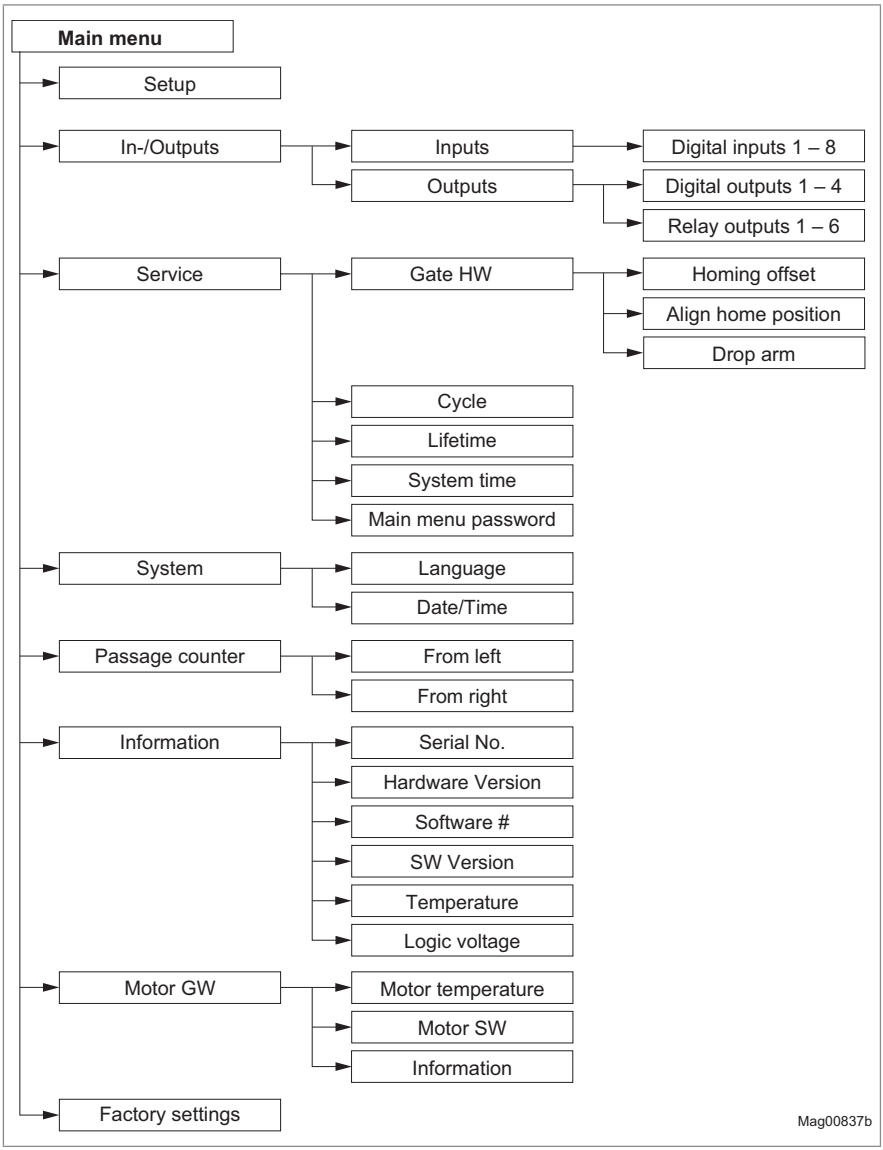


Fig. 22: Menu "Inputs/Outputs", "Service", "System", "Passage counter", "Information", "Motor GW" and "Factory settings"

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