CONTROL MODULE **MAGTRONIC 3.0**

SG-VFC

TABLE OF CONTENTS

SOFTWARE

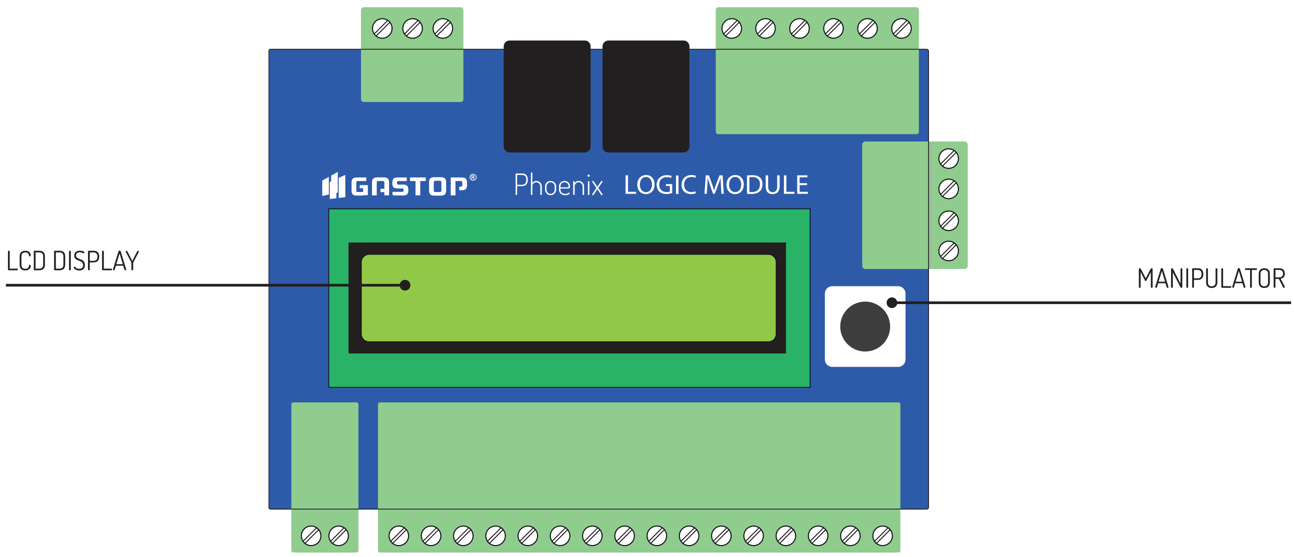
Device's control logic is controlled by the device manufacturer's Managment software - full interface. The manufacturer grants licence to using the software only in cooperation with the purchased device and in order to control it.

Changes or modifications to the software of whatever kind may be introduced by a detailed and written consent of the device manufacturer only. Making changes or modifications to the software without the manufacturer's consent are not covered by the licence regarding using the software. The manufacturer bears no responsibility for proper and safe operation of the device if changes of whatever kind have been made to the device's controlling software, without the device manufacturer's consent.

The manufacturer reserves the right to introduce changes or updates to the software. To obtain terms and manners of the software update, it is advised to contact our Sales Department. All devices are supplied with a stored standard software described in the manual herein. If a need to make changes of whatever kind to the device's software occurs, it is advised to contact the manufacturer's Sales Department. A software carrier is the device's control logic.

NAVIGATION

To navigate the controller interface, a manipulator (rotary encoder) is used. By rotating it to the left or right, we move between adjacent positions in the currently selected menu. Pressing the encoder causes (depending on the position we are on) a value change or entry into a submenu. The LCD display has two display lines. The upper line displays messages. The lower line displays menu options and an ordinal number to facilitate menu navigation.



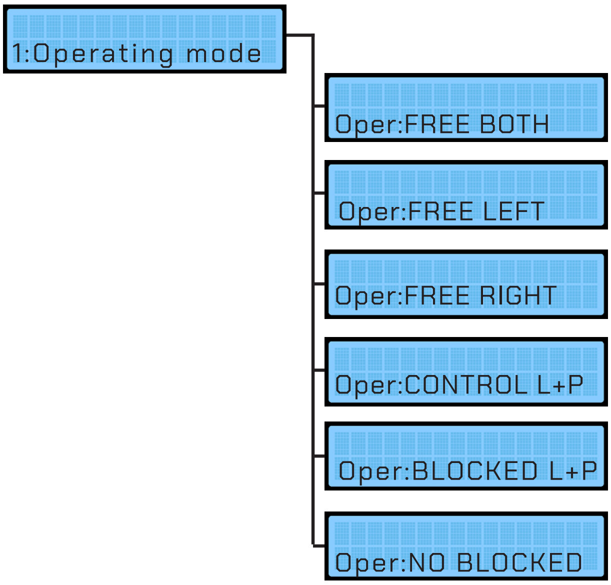
MAIN MENU

The main menu of the software contains five basic sections: **operating modes, parameters, operation, tests, calibration.**

WARNING!

The options marked with a red frame are available **only for authorized service personnel.**
They should not be modified without prior consulting the manufacturer.

DEVICE OPERATING MODES (AUTHORISED SERVICE ONLY)



The software allows the device to be switched into various operating modes.

The selected operating mode is displayed on the LCD in the first row.

FREE BOTH - Operating modes in which both directions of passage are not blocked and do not require control from, for example, a reader/controller. This mode is used when there is a need to control pedestrian traffic in the passage.

FREE LEFT - An operating mode in which the right direction of passage is controlled by, for example, a reader/controller, while the left direction is not blocked and does not require control from a reader/controller, known as free exit/entry.

FREE RIGHT - An operating mode in which the left direction of passage is controlled by, for example, a reader/controller, while the right direction is not blocked and does not require control from a reader/controller, known as free exit/entry.

CONTROL L+P - An operating mode in which both directions of passage are blocked, and their unlocking is controlled by, for example, a reader, controller, or ticket validator.

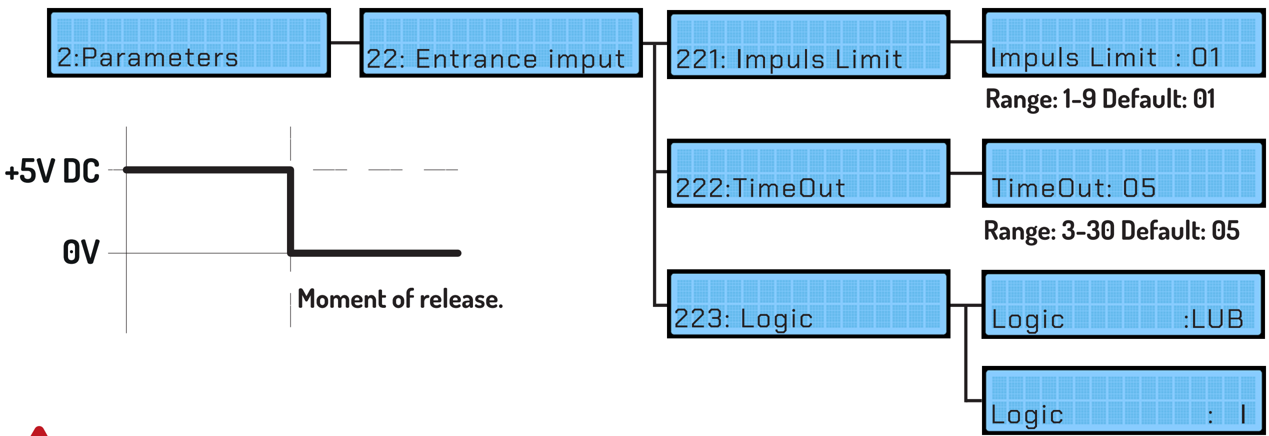
BLOCKED L+P - An operating mode in which both directions of passage are blocked and cannot be controlled by, for example, a reader/controller. This mode is used when there is a need to completely block the passage, such as by the facility's security.

NO BLOCKED - An operating mode in which the gate arm locks are disabled and not functioning, allowing them to be manually tilted/rotated (applicable only to SG gates). This mode is used to clear the passage for technical purposes.

INPUT PULSE SETTINGS (SIGNALS FROM READERS/CONTROLLERS)

The software enables:

1. Setting the number of pulses remembered from external devices, such as a card reader/coin acceptor/access controller/control panel/operator button. This function is used in locations where it is necessary to allow a group of people to enter a protected area without individual entry authorizations.
2. Specifying the time after which the device automatically locks if, after receiving a signal from an external device, the person does not pass through the passage section of the device.
3. Setting the logic of input pulses for each direction of pedestrian movement in the device. There are two signal input controls **(SIGNAL IN1, SIGNAL IN2, SIGNAL OUT1, SIGNAL OUT2)** whose logic can be set in two states (OR - the gate will unlock if a signal is sent to one of the IN or OUT inputs, AND - the gate will unlock if a signal is sent to both IN or both OUT inputs. This functionality allows the connection of an additional control device, such as a sanitizer, temperature measurement, scale, etc.).

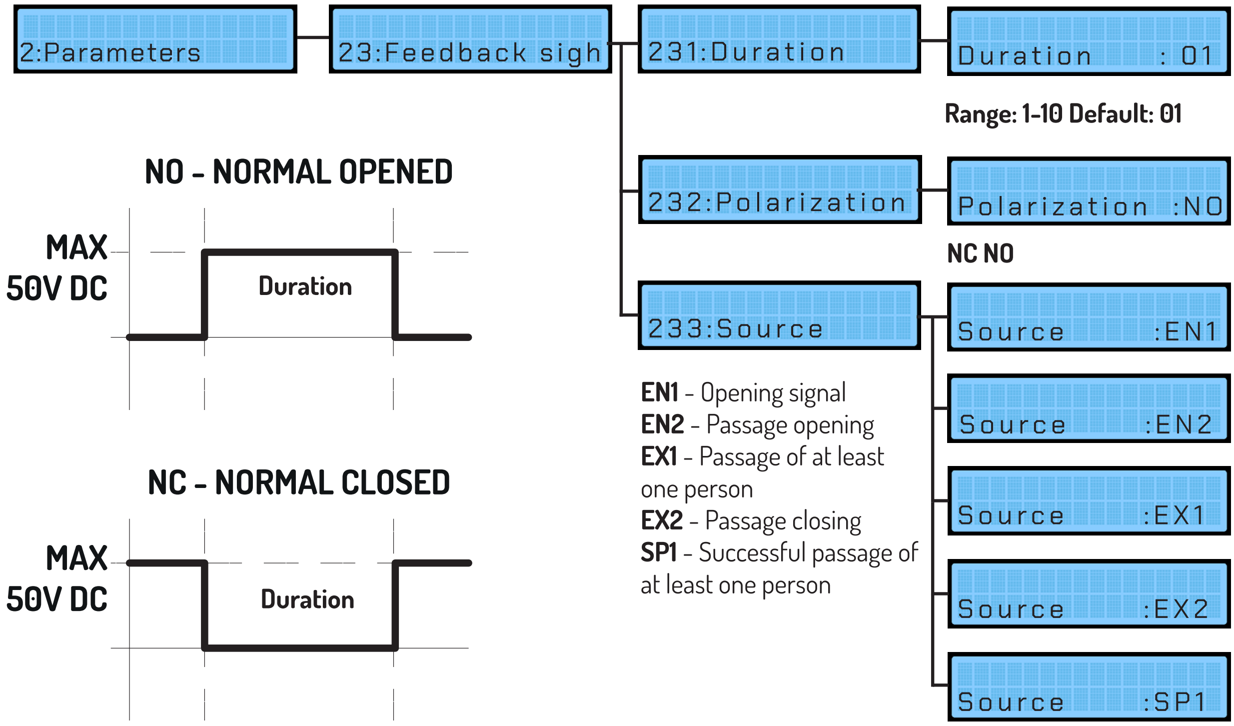


WARNING!

Applying a voltage greater than 5V DC may damage the controller.

CONFIGURATION OF FEEDBACK SIGNALS

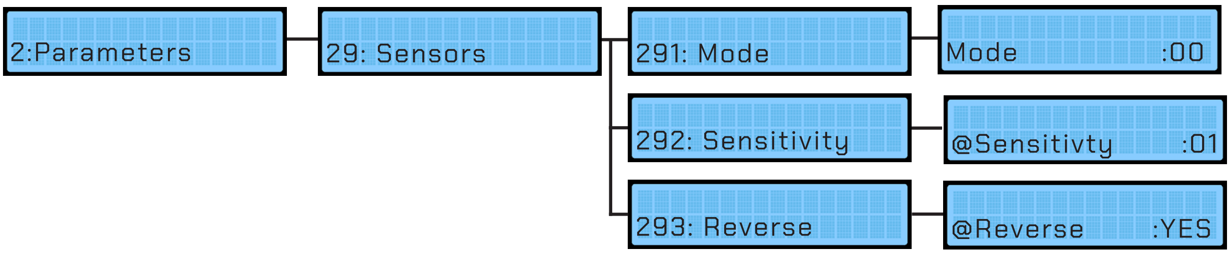
The software allows the configuration of feedback signals indicating various stages of pedestrian passage in terms of signal duration, its polarity, condition, and timing of occurrence. The feedback signal is the closing or opening of the electronic relay contacts, depending on the polarity.



EN1 - Opening signal
EN2 - Passage opening
EX1 - Passage of at least one person
EX2 - Passage closing
SP1 - Successful passage of at least one person

SENSOR SYSTEM FOR ACCESS CONTROL

The software allows setting operational modes for sensor system in pedestrian passages.



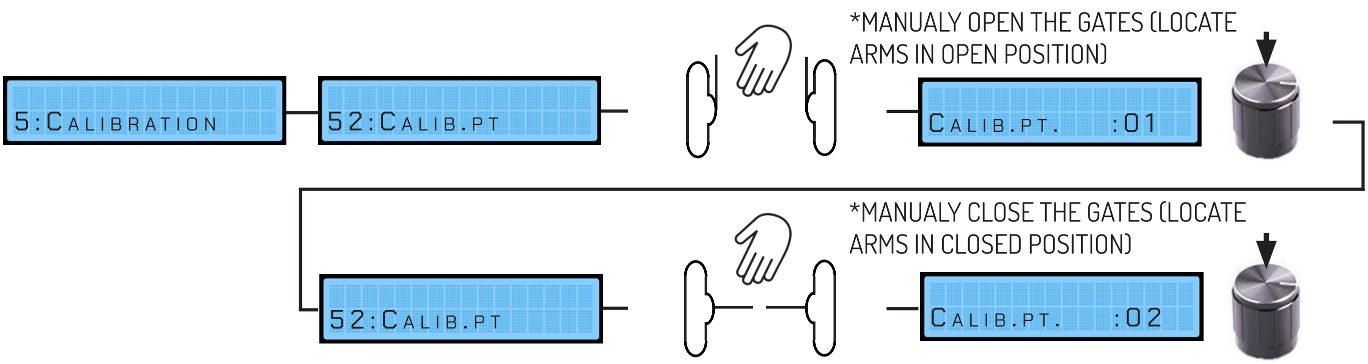
MODE - Switching this mode has no effect on this particular device model.

REVERSE - This function applies to gates equipped with a system for detecting pedestrian passage, such as SG, GT, SK gates. It allows selection of NC (normally closed) or NO (normally opened) operating mode based on the type of sensors connected to the controller.

SENSITIVITY - When set to 02, the device disregards input from the lower sensors.

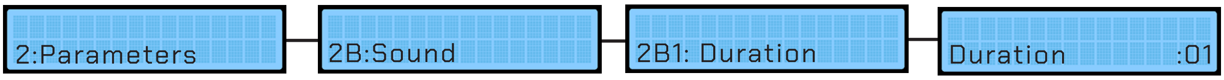
SETTING THE RESTING POSITION OF THE DEVICE WINGS (AUTHORISED SERVICE ONLY)

Setting the resting positions of the wings of the device involves selecting the resting position number, physically positioning the wings of the device, and confirming by pressing the manipulator button for each resting position in sequence.



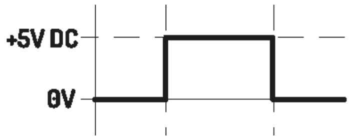
AUDIBLE ALERT

The software allows enabling or disabling and setting the duration of the audible alert connected to the Logic module. This applies to devices equipped with audible signaling.



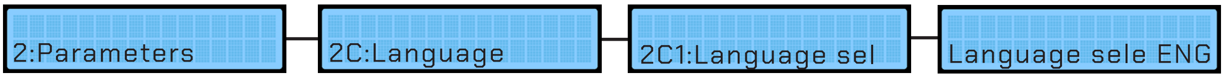
Range: 1-10 Default: 01

A +5V signal is grounded when an alarm occurs (applies to alarms: **MOTOR ERROR, SECURITY ERROR, UNSAFE ERROR)**. Range is from 0 to 10 seconds. Default value: 1 second. **Setting the duration to 00 will prevent the alarm signal from being generated.**



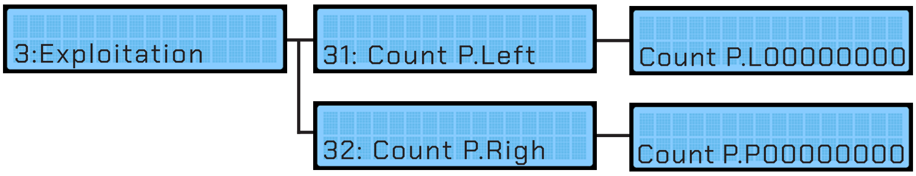
LANGUAGE SELECTION

The software allows choosing the language for displayed messages on the LCD screen.



PASSAGE COUNTER

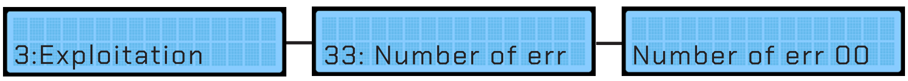
The software allows displaying the state of counters for entry and exit (left/right side). The counter state is saved in FLASH memory every 100 cycles. **In case of power loss, the device does not save the last 100.**



INFORMATION ABOUT ERRORS

The software allows displaying the number of events defined as errors (messages: **Motor Error** - gate arm movement lock, **Security Error** - unauthorized access to the passage zone, **Unsafe Error** - forced gate arm stop). Information about the number of errors compared to the passage counter can be used to analyze device usage patterns. In case of a high number of errors relative to the number of passages, attention should be given to:

- Proper infrastructure where the gates are installed (see „Passenger Movement Control" section),
- Functionality of access control systems (e.g., readers) connected to the gates,
- Proper training of personnel using the devices.

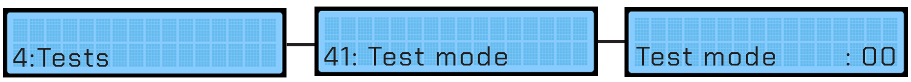


TEST MODE

The software allows enabling the device's test mode (applicable to devices equipped with an electric motor). Test mode triggers the operation of all device circuits and systems cyclically until it is deactivated by pressing the encoder button. The number of cycles completed is displayed on the LCD screen. When navigating to a different menu position on the LCD, the test mode is automatically turned off. The counter resets to zero for each activation of the test mode.

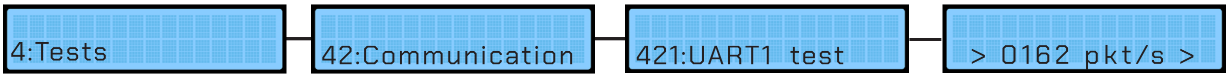
ADDITIONAL SPEED ADJUSTMENT FOR GATE ARMS - During the test operation, there is an option to adjust the speed of the gate arms (applies to SG gates) to choose the optimal moment for simultaneous stopping of both arms when closing the passage.

Adjustment is possible by manipulating the encoder, setting a value displayed on the LCD screen ranging from -9 to +9. Changes to the parameter value will be visible in the test mode only in the next cycle of gate arm movement. The set value is saved by pressing the encoder.



COMMUNICATION BETWEEN ELECTRONIC UNITS MODULES - TEST

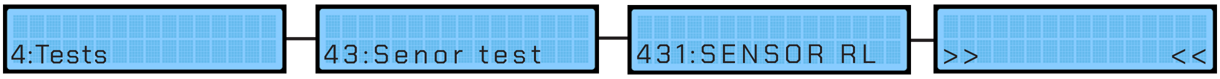
The software allows performing a communication test between the „LOGIC" and „POWER" modules. **During the test, the LCD screen displays current information regarding the number of packets sent per second**. For proper device operation, it is recommended that this parameter is not lower than 150 packets per second. **A display of „0000 pkt/s" indicates no communication.**



SENSORS TEST

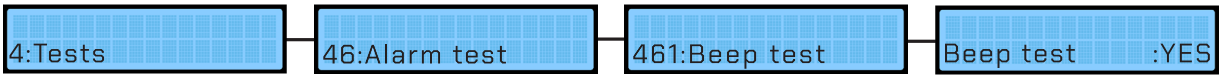
The software allows testing the functionality of sensors in device. **The LCD screen displays the states of sensors connected to the inputs of the POWER module**. To test the sensors, you should select the POWER module of the electronic system to which the sensors are connected (Left Sensor - sensors connected to the left module, Right Sensor - sensors connected to the right module).

To verify the correct operation of sensors, you can cover each sensor with your hand. On the LCD screen, an „X" will appear in the position corresponding to the number of the tested sensor. Additionally, the device will activate an audible signal (applies to devices equipped with sound signaling).



SOUND SIGNAL TEST

Software allows for conducting tests (applicable to devices equipped with sound signaling). Upon initiating the test, the signaling emits a sound lasting approximately 1 second.

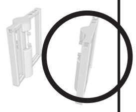


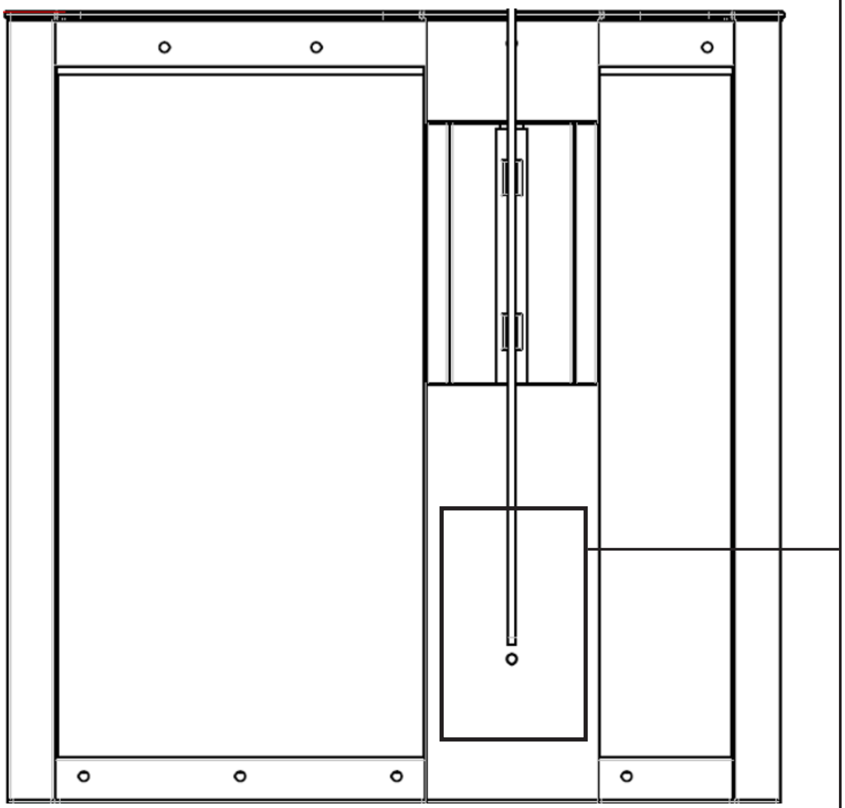
SETTINGS FOR AUTHORIZED SERVICE TECHNICIANS

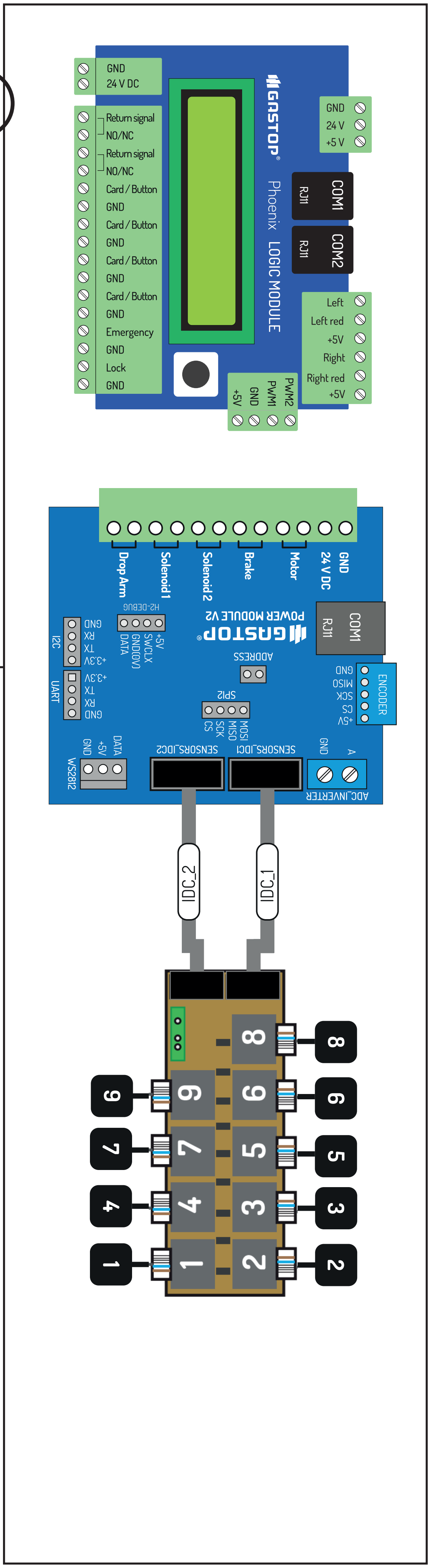
Settings not described in this document are available only to authorized service technicians. They should not be changed independently as it may adversely affect the gate's operation, pose risks to users, or damage the device. **For easier identification, such settings are marked with a red border in the menu tree at the beginning of the chapter.**

MASTER MODULE - ELECTRONICAL ELEMENTS

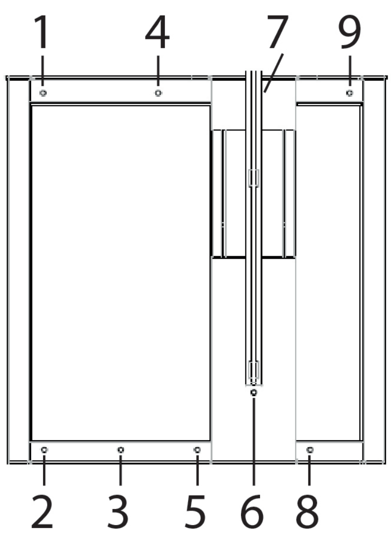
Localization of connections in MASTER MODULE





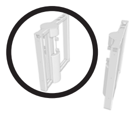


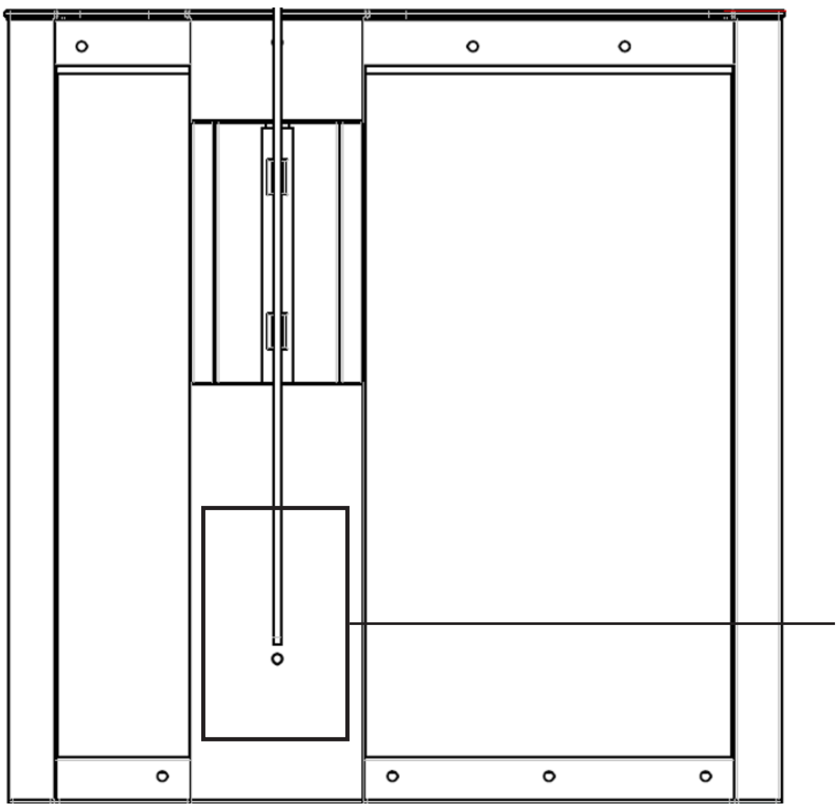
Localization and numbering of recivers in MASTER MODULE

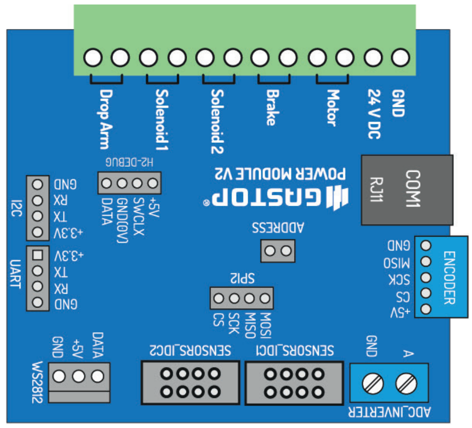


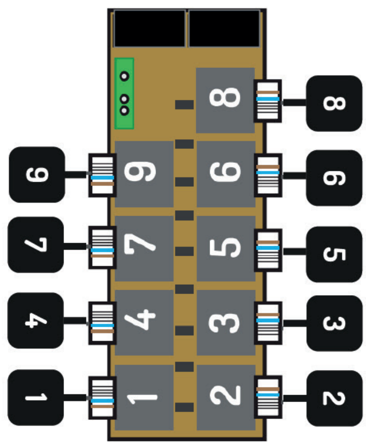
SLAVE MODULE - ELECTRONICAL ELEMENTS

Localization of connections in SLAVE MODULE

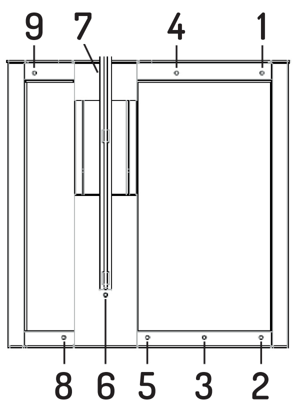








Localization and numbering of emitters in SLAVE MODULE



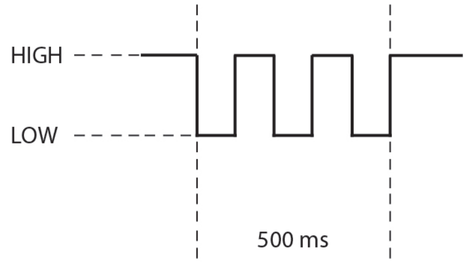
AUTOMATIC SENSORS TEST

The test checks the functionality of the sensors.

Test initiation signal

To initiate the test, send 3 logic LOW pulses within 500 ms.

After the third pulse, the system recognizes the command and begins the test.



Test sequence

After receiving the test initiation signal, the gate will open, then repeatedly activate and deactivate the sensors to check their functionality. It will then close and send the test result in the manner described in the next section. Additionally, the test result remains visible on the display until the manipulator is moved or the device is restarted.

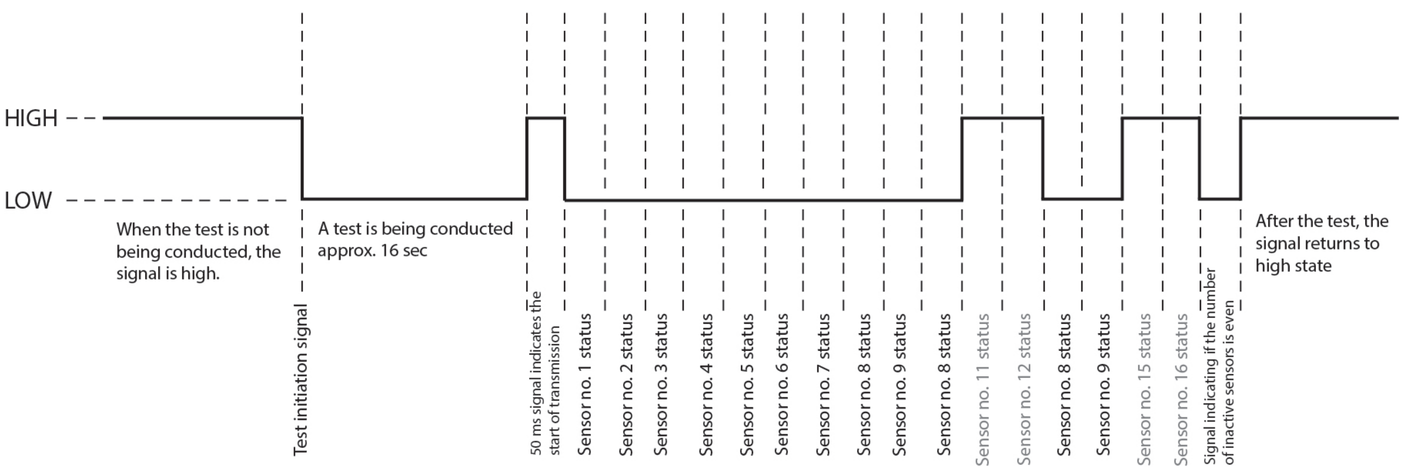
Important: Make sure that no objects or people are inside the gate during the test. This may lead to incorrect test results or damage to the device, as the gate closes automatically after the test, regardless of whether the sensors are obstructed or not.

Feedback signal after test

During the test, the return signal remains LOW. Once the test is complete, a data packet containing the test result is sent.
The start of this packet is marked by a single HIGH bit lasting 50 ms. This is followed by the statuses of individual sensors, each represented by a 50 ms signal:
LOW indicates the sensor is functioning correctly, while HIGH indicates a failure.

Please note two important points:
*Sensors 8 and 9 appear multiple times in the sequence.
*Sensors 11, 12, 15, and 16 are not present in the device, and are therefore always reported as inactive (HIGH).

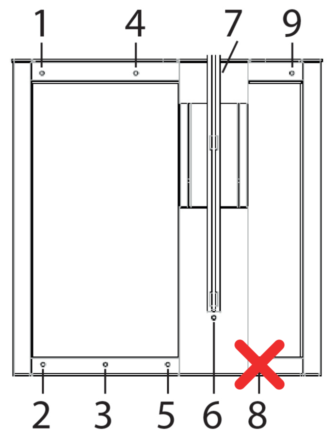
The sequence ends with a parity bit that indicates whether the number of faulty sensors is even.
If the number is even, the signal is LOW; if odd, the signal is HIGH.



Each 50 ms bit reflects the status of one sensor

Sensors no. 11, 12, 15, and 16 are not present in the device. Their corresponding signal bits are always set to high.

EXAMPLE: ONE FAULTY SENSOR (NO.8)



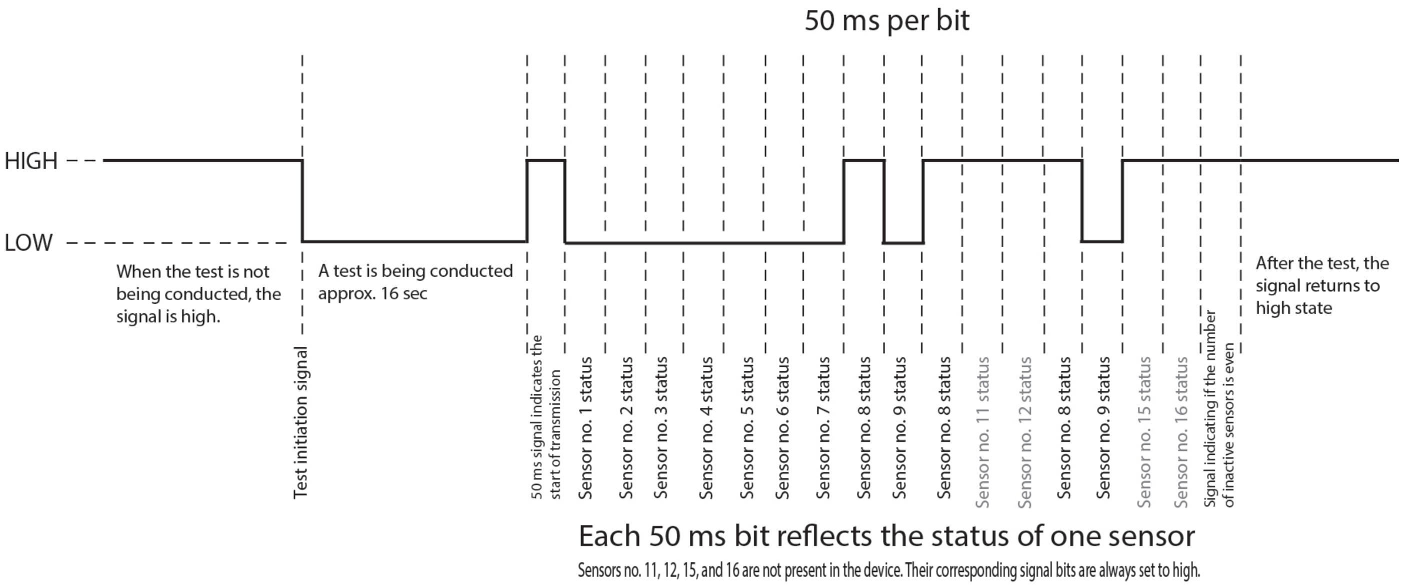
During the test, all sensors are checked and their results are encoded in the return signal. Suppose only sensor no. 8 is not working. The signal would look as follows:

Transmission start bit: HIGH for 50 ms

Sensor statuses (50 ms each):
- Sensors 1–7 → LOW
- Sensor 8 → HIGH (fault)

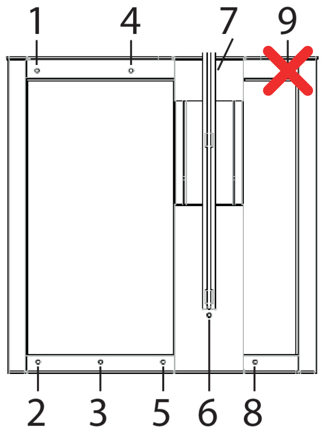
Parity bit: Since only one sensor is faulty (odd number), the final parity bit is HIGH

As a reminder: Sensors 8 and 9 appear more than once, and sensors 11, 12, 15, and 16 are not physically present – they will always return HIGH.



EXAMPLE: ONE FAULTY SENSOR (NO.9)

During the test, all sensors are checked and their results are encoded in the return signal. Suppose only sensor no. 9 is not working. The signal would look as follows:



Transmission start bit: HIGH for 50 ms

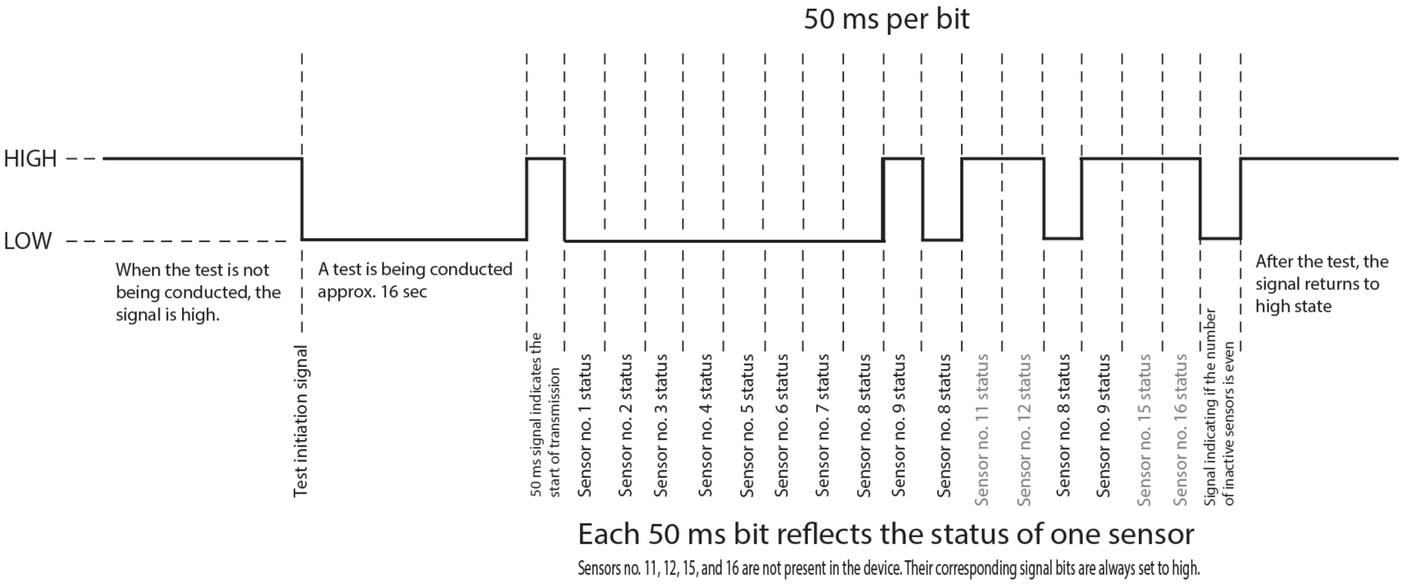
Sensor statuses (50 ms each):
- Sensors 1–8 → LOW
- Sensor 9 → HIGH (fault)

Parity bit: In this case, sensor 9 appears twice in the return signal. Even though there is only one actual faulty sensor, it is reported twice. As a result, the signal contains two HIGH bits indicating failure.

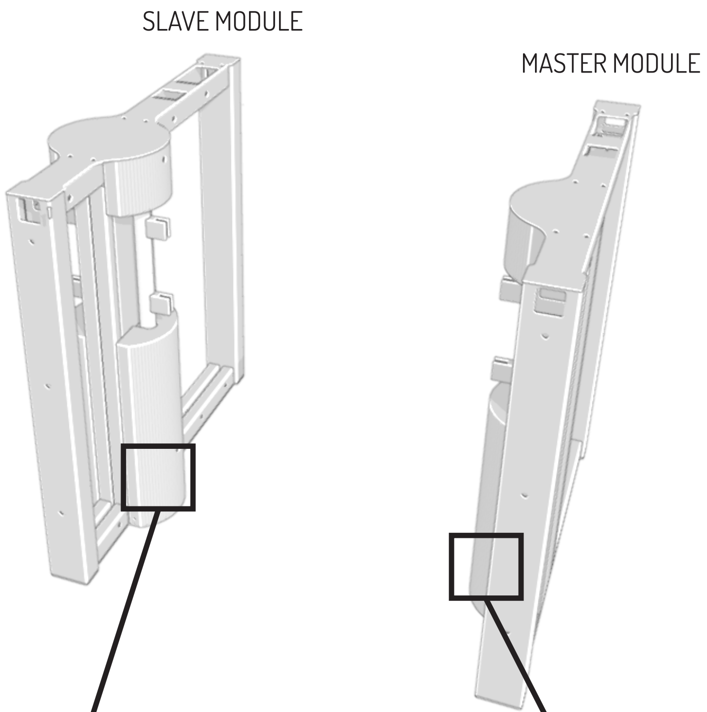
Therefore, the total number of faulty sensor signals is even, and the parity bit at the end will be LOW.

This behavior ensures that the system reflects repeated sensor identifiers correctly, even if they refer to the same physical sensor.

As a reminder: Sensors 8 and 9 appear more than once, and sensors 11, 12, 15, and 16 are not physically present – they will always return HIGH.

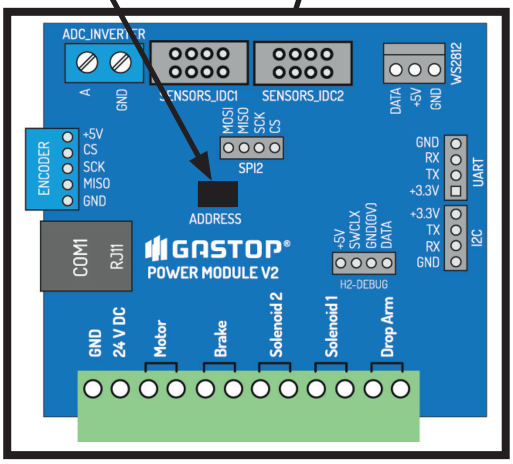


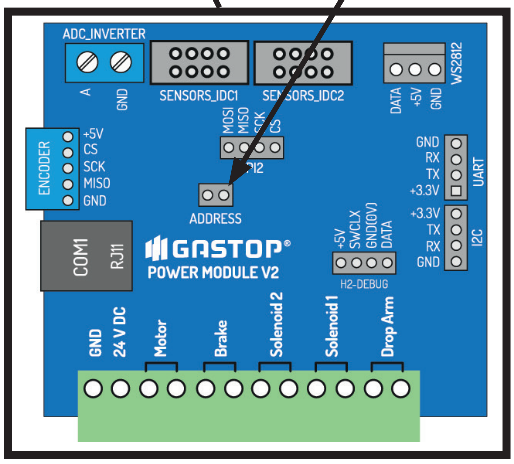
DEFINING LEFT AND RIGHT SIDE OF THE PASSAGE



Place a jumper on the Power (Slave) electronic module of the slave gate, on the pins labeled „H3 – ADDRESS."

There should be **no jumper** on the ‚Power (Slave)' module located inside the master gate module.

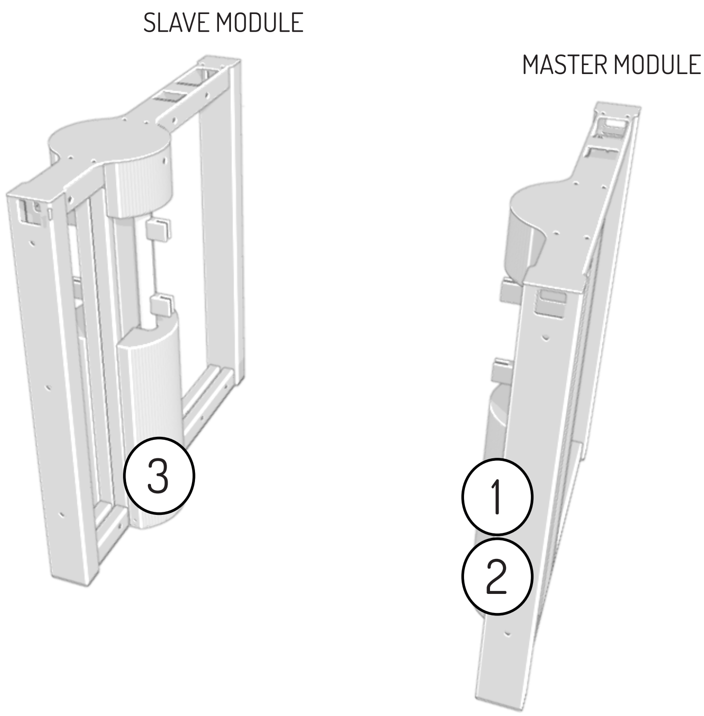




PROGRAMMING ELECTRONIC MODULE

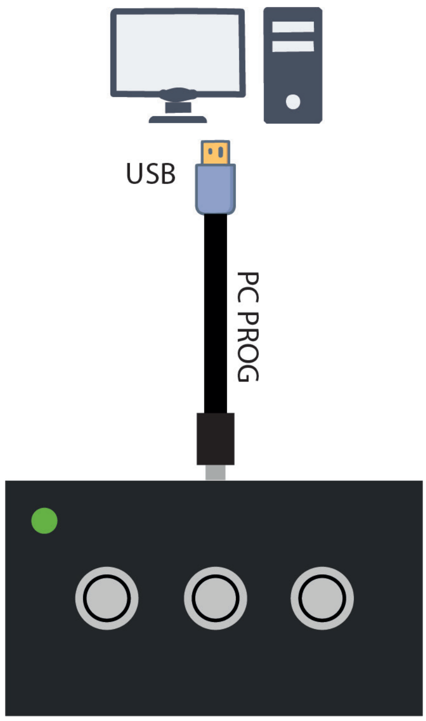
In the case of replacing an electronic module or performing an update, new software must be uploaded to the electronic modules listed below.

Device module	Electronic module	No.	Software Name
Master	Logic module (Master)	1	F030-gastop-master-RCT6.hex
Master	Power module (Slave)	2	F030-gastop-slave-RCT6.hex
Slave	Power module (Slave)	3	F030-gastop-slave-RCT6.hex



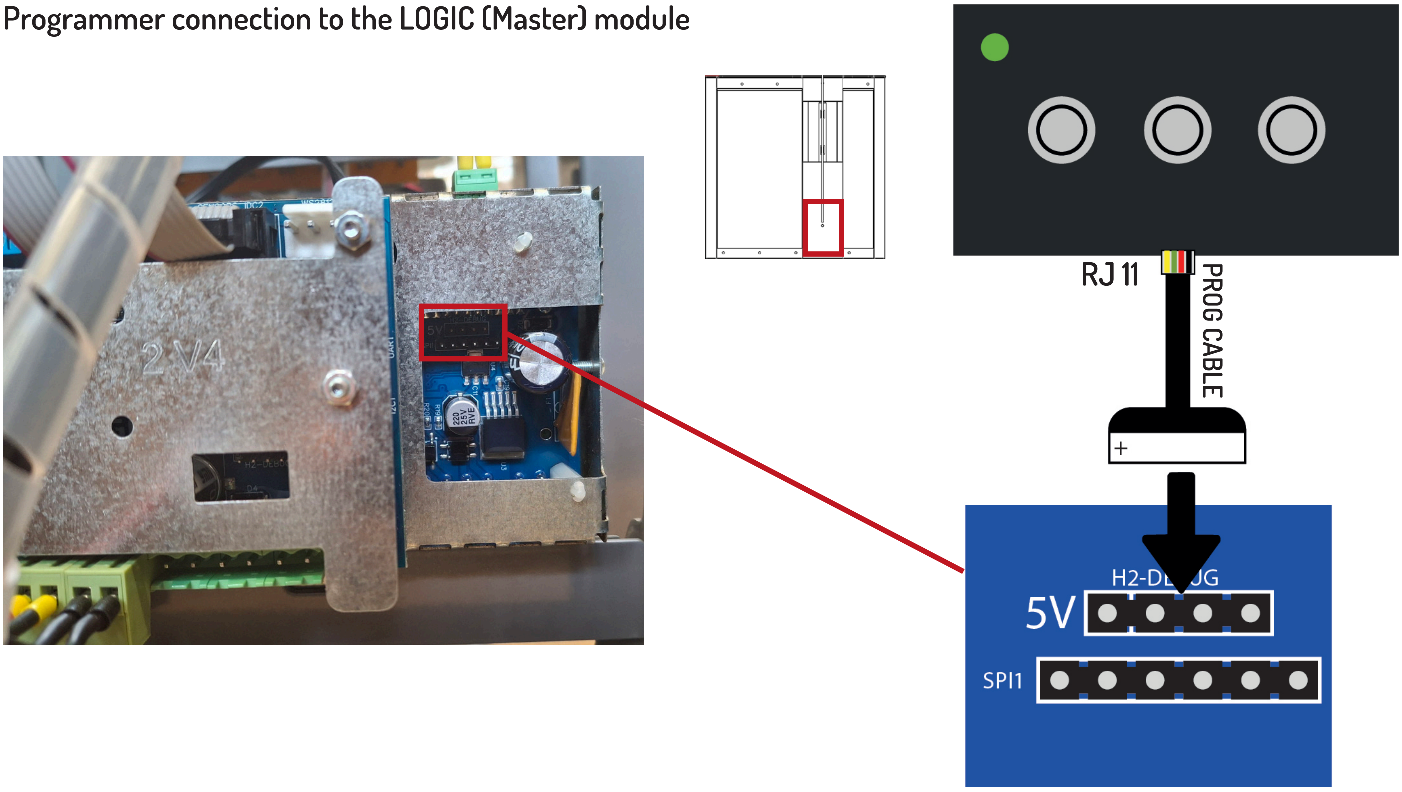
Programmer connection to the PC

Connect the programmer to the PC using the supplied USB to mini-USB cable.

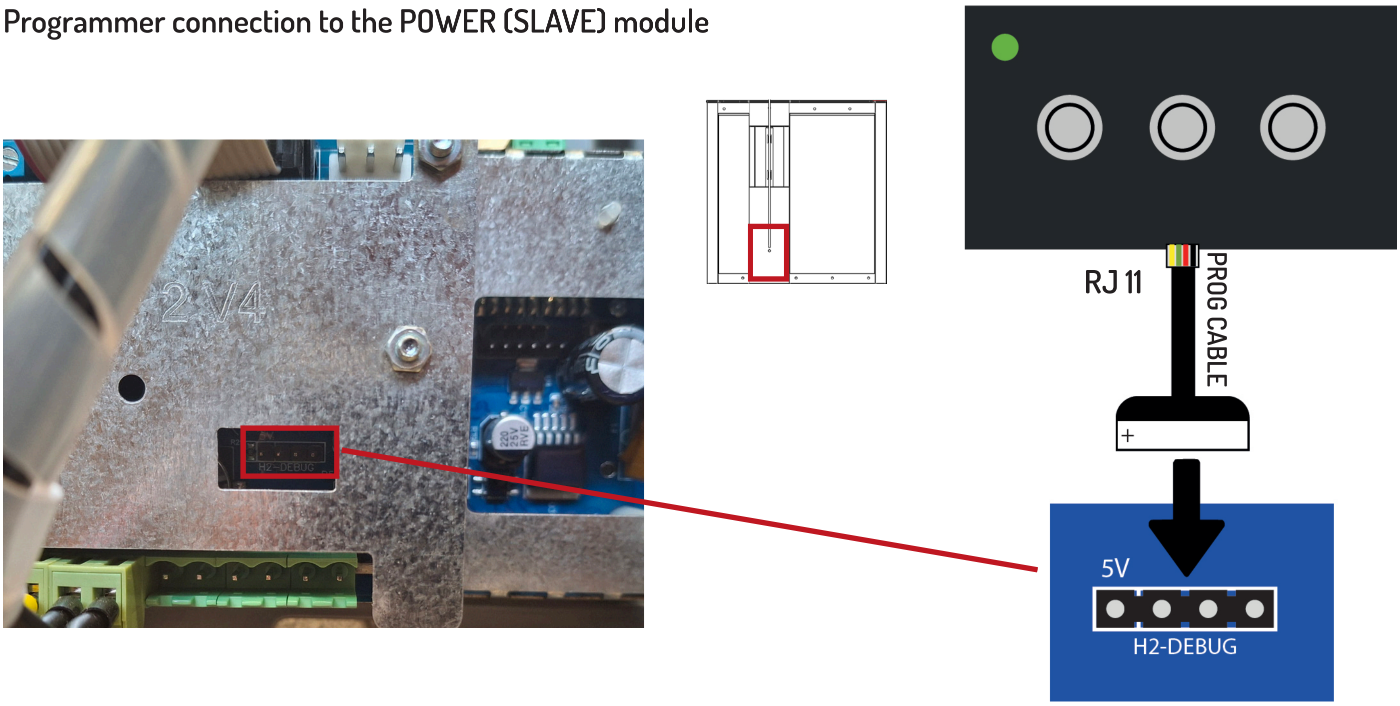


Connect the programmer according to the diagrams shown below.

Programmer connection to the LOGIC (Master) module

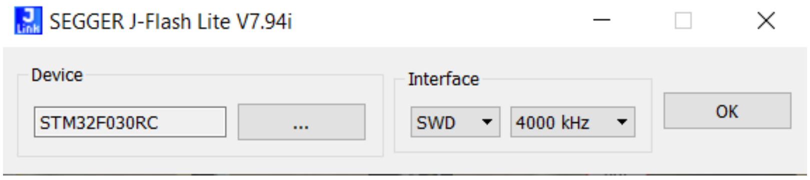


Programmer connection to the POWER (SLAVE) module



Programming using SEGGER J-Flash Lite

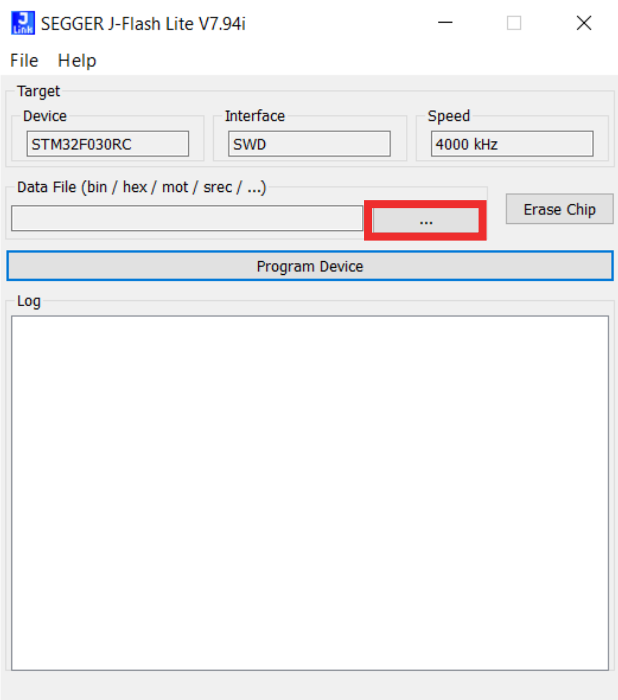
1. After launching the program, in the first window, select:
Device: **STM32F030RC**
Interface: **SWD 4800 kHz**
Then confirm by clicking **OK**.

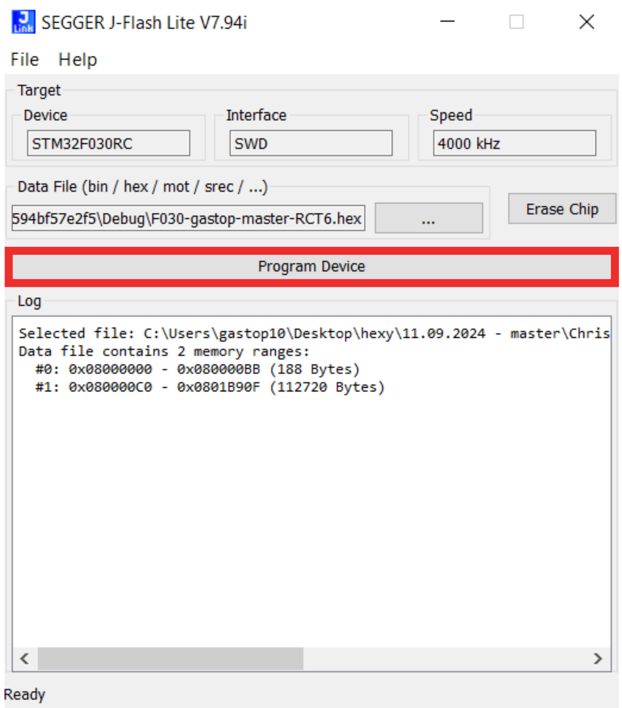


2. In the next window, specify the **location of the HEX file by clicking the „...” button.**
Pick sotware for master module while programming master module and for slave while programming slave module. **For help reffer to page 14**

3. By clicking "**Program Device**", the device programming will begin. This process takes a few seconds.

Warning: Do not press „Erase chip” if not needed! This action will restore factory settings and will **require the device to be fully reconfigured.**





4. After completing the programming process, you can safely disconnect the programmer from the device.

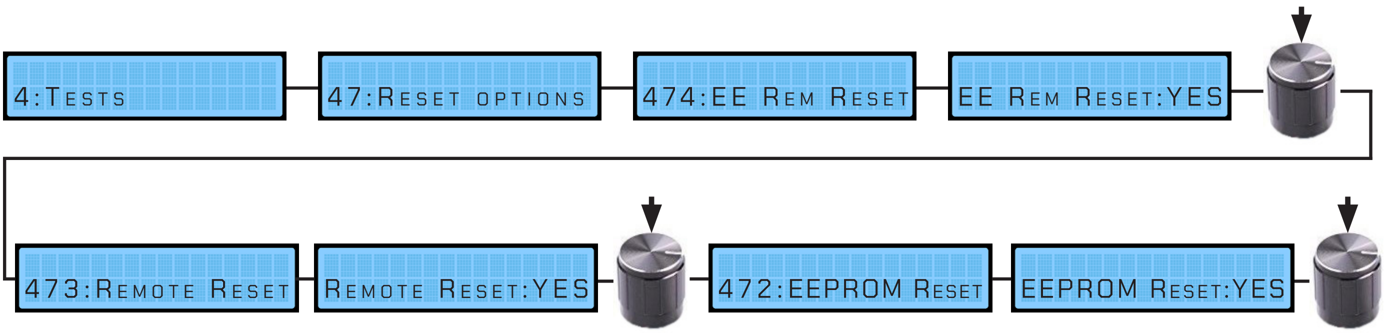
5. Restart the device. Once powered on again, it will be ready to resume operation.

DEVICE RECONFIGURATION

After the replacement of any electronic component (Master module, Slave module, encoder), the device requires reconfiguration:
- Devece memory reset
- Configuration of the devices parameters

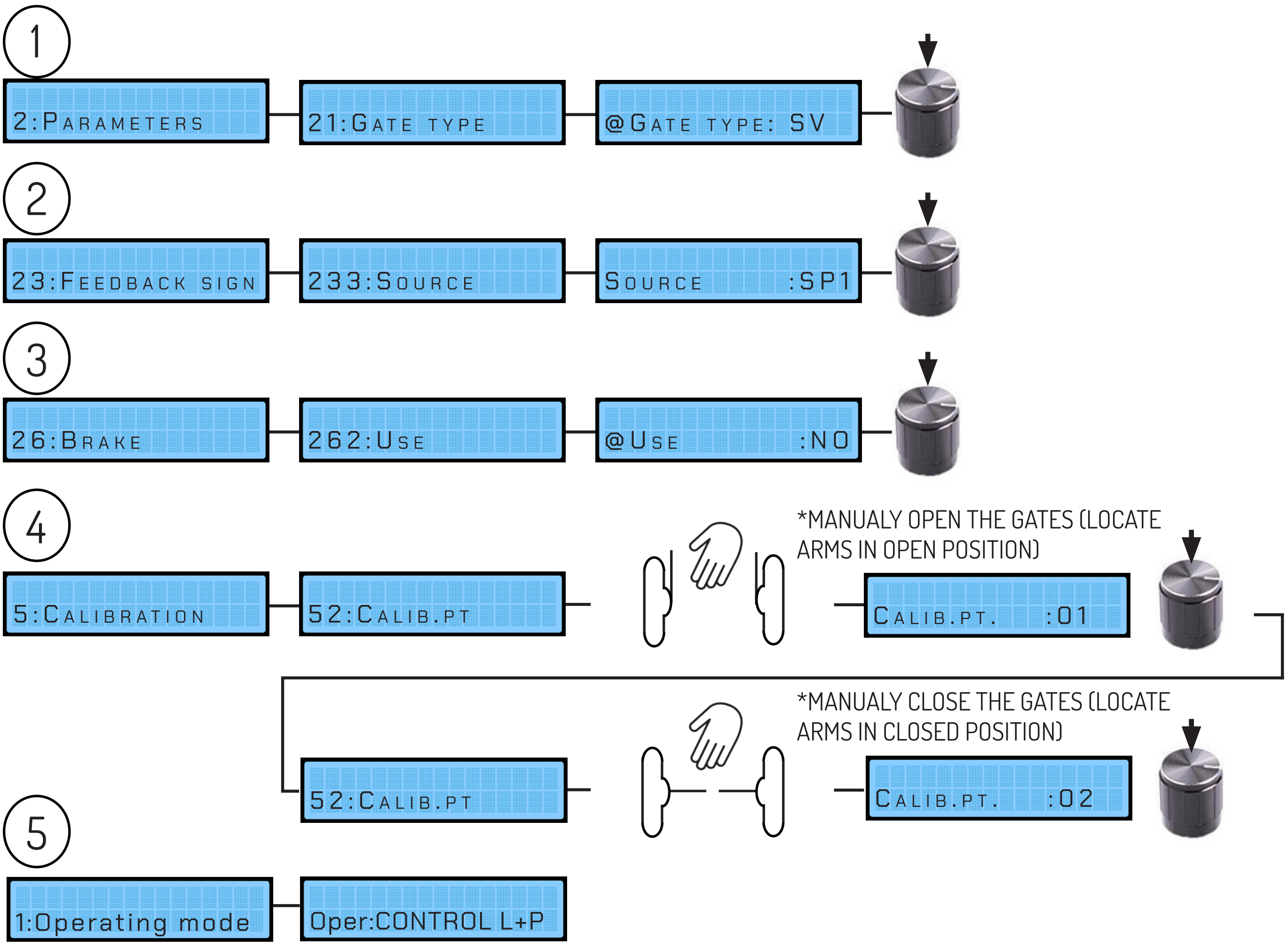
Device memory reset

To begin the device reconfiguration process, the memory of all modules must be cleared. Refer to the diagram below for instructions.

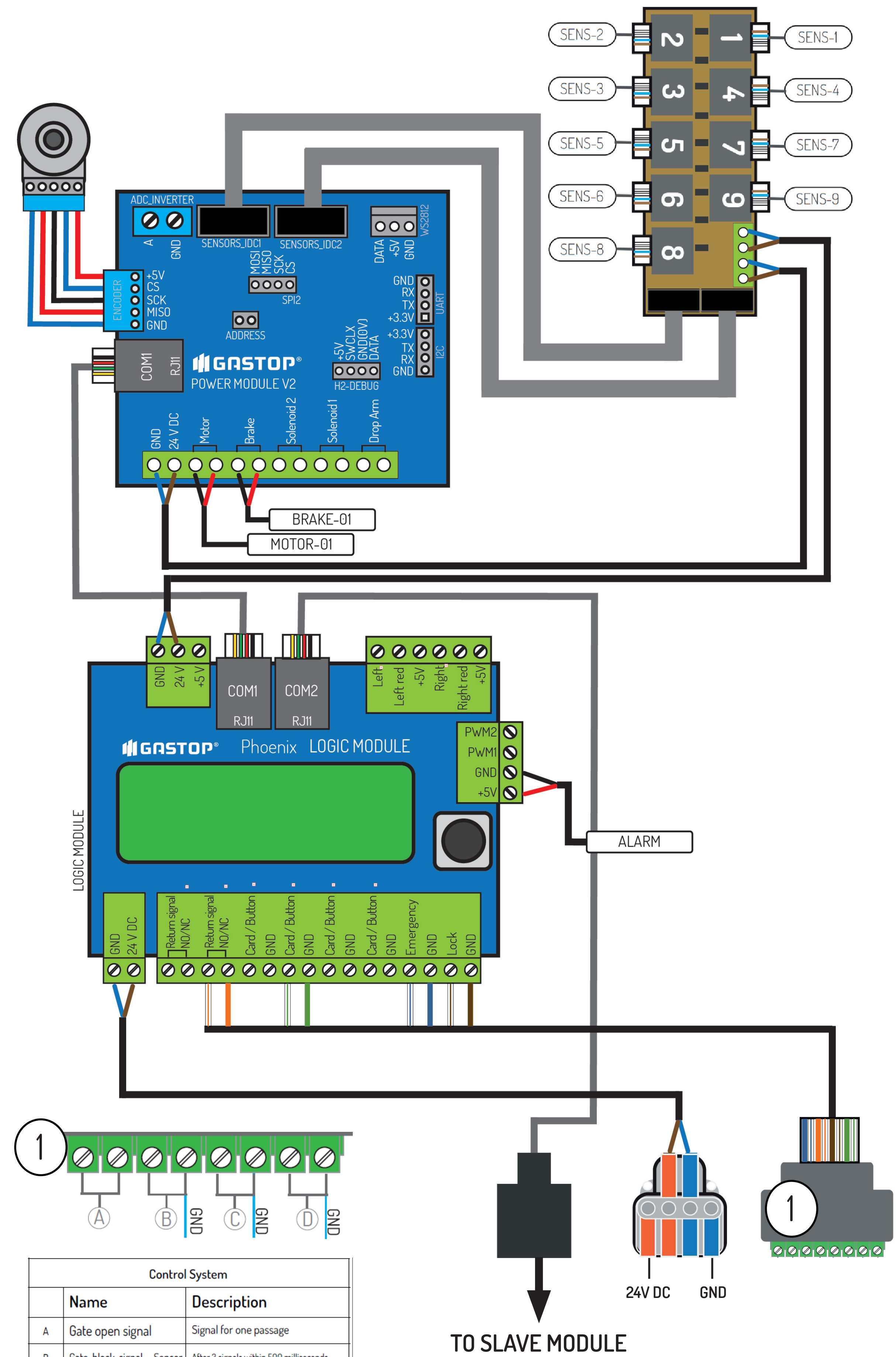


Note: This step can be skipped if the memory was cleared during programming. However, it is essential to ensure that **all three modules forming the gate system are reset in this way.**

Reconfiguration of the device parameters

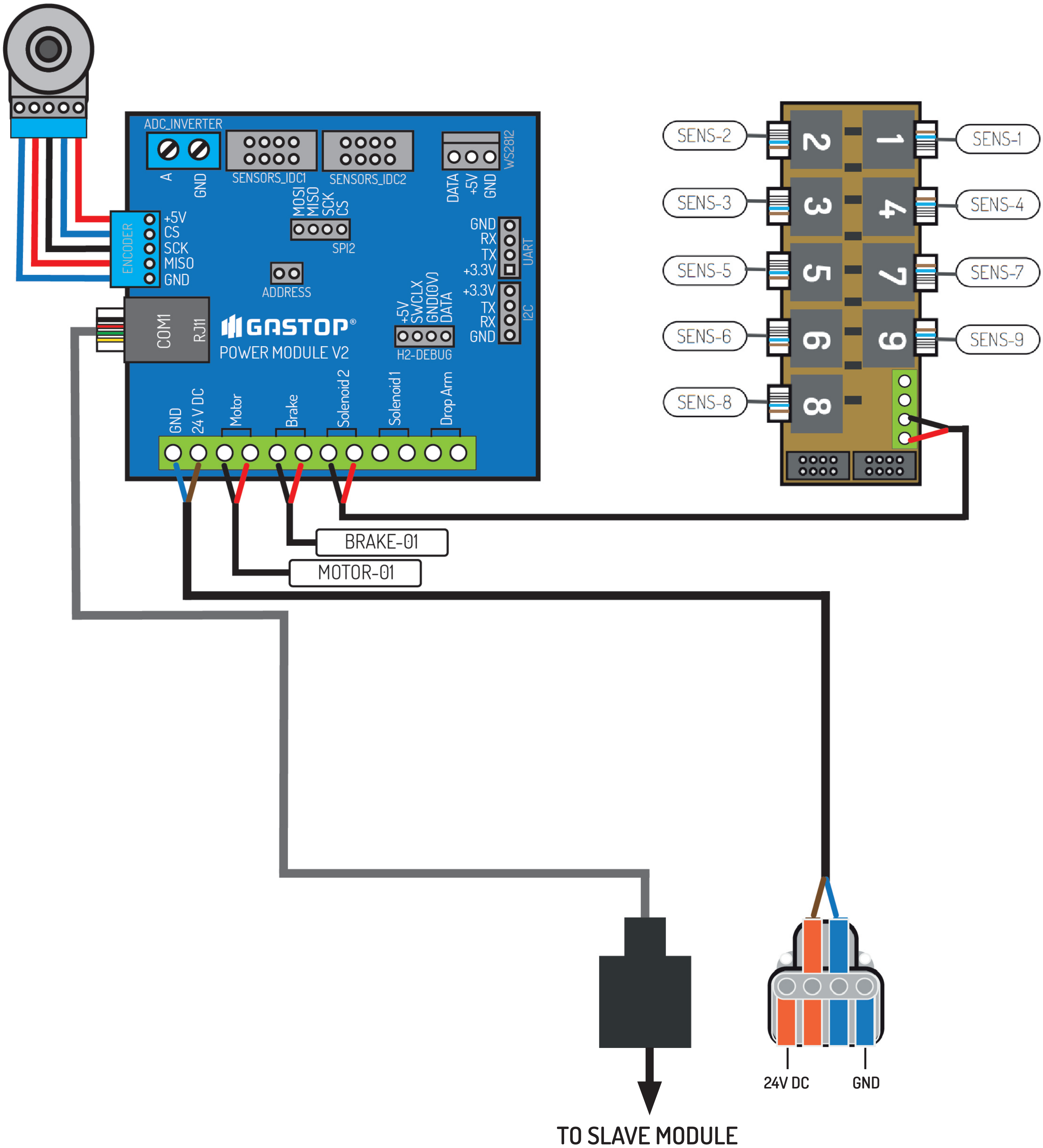


WIRING DIAGRAM OF THE MASTER MODULE



Control System		
	Name	**Description**
A	Gate open signal	Signal for one passage
B	Gate block signal - Sensor test trigger	After 3 signals within 500 milliseconds will trigger sensor control mode
C	Feedback signal / Sensor test return signal	Successful passage signal **(signal when sensors detected passage)**
D	Emergency open signal	Emergency passage clearance

WIRING DIAGRAM OF THE SLAVE MODULE



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