

1. WARNINGS



CAUTION

This manual contains user guidelines for Merih DDCA60 hardware version v1.05 and software version v1.03. This document will be updated with differences resulting from version differences. Merih Asansor A.S is not responsible for typos or errors that result from version differences.

It is mandatory that Merih DDCA60 and any additional electric/electronic equipment is used by qualified personnel who are capable of reading, understanding and applying the rules written in this technical document. Merih Asansor A.S provides all necessary support for safe use; however it accepts no liability for damages caused by user misuse.



BEFORE FIRST USE

Please read instruction manual and updated complementary documents before using Merih DDCA60 (and/or its additional hardwares) for the first time. It is essential for safety reasons to understand the rules regarding the installation and operation of this product.



GENERAL NOTE

The qualified personnel who will use Merih DDCA60 device should be familiar with the full functionality of the equipment in addition to the assembly and wiring of it.

In order to avoid electrical shocks or any other damage to the product; please check that

- the equipment is not plugged in before assembly and first use
- all wiring is correct and stable
- corresponding hardware and software is used according to the actuating mechanism of the door
- all operation is carried out in accordance with ESD rules. With this purpose the personnel should discharge themselves electrostatically. The personnel should not touch to connectors or other circuit components with bare hands.

2. DEVICE AND LIMITATIONS

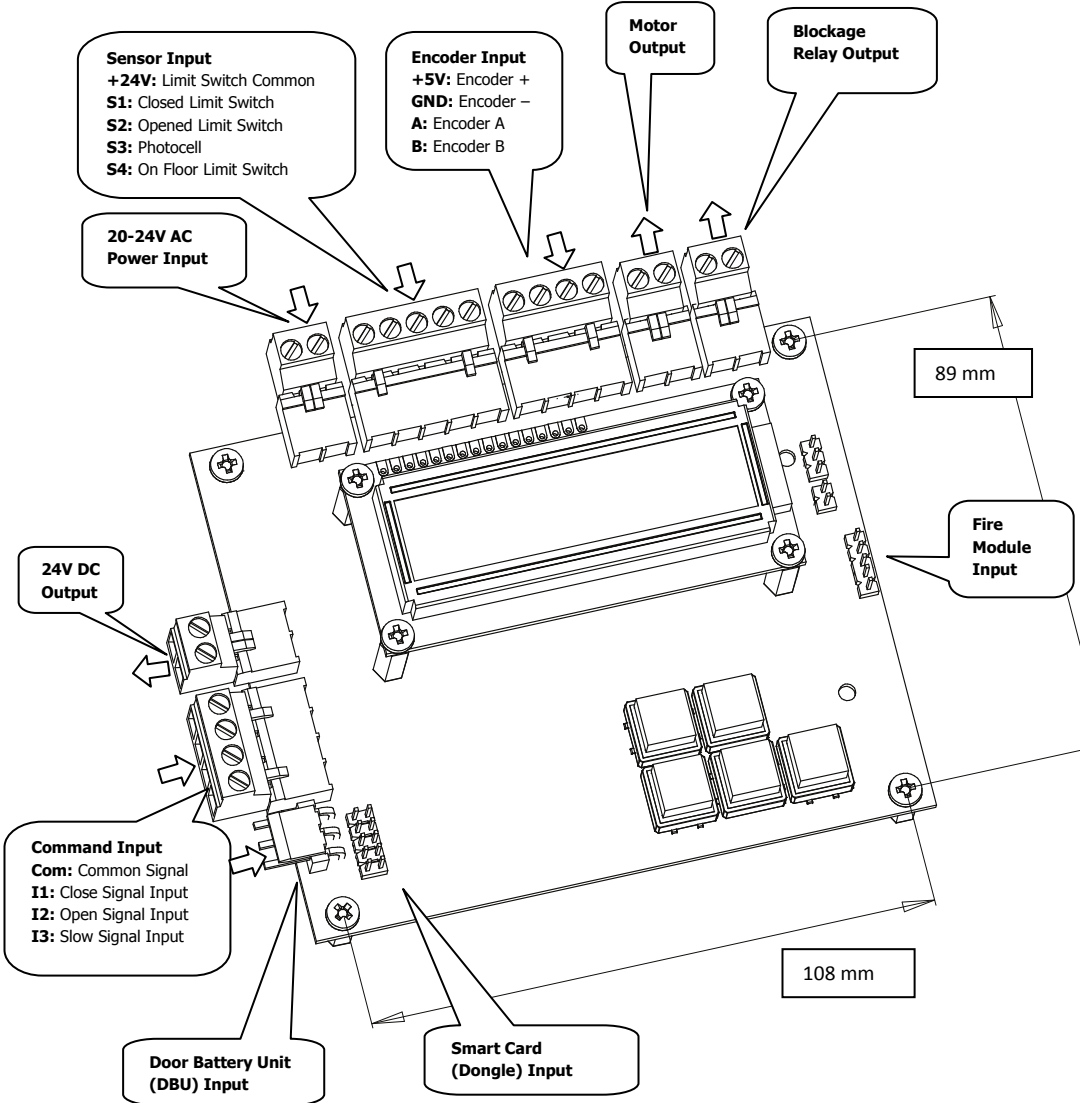
Merih DDCA60 is an electronic board for fully automatic doors.

Supply Voltage	20-24V AC	28-34V DC
Encoder	One channel or double channel 20-1024 pulse per revolution	
Motor Type	24V Brushed DC Motor	
Motor Power	Max 150W	
Door Length	35 – 250 cm	
Door driving speed	1cm/s – 40 cm/s	
Operation temperature	-20°C ~ 50°C	

2.1 DEVICE USAGE AND OPERATION SEQUENCE

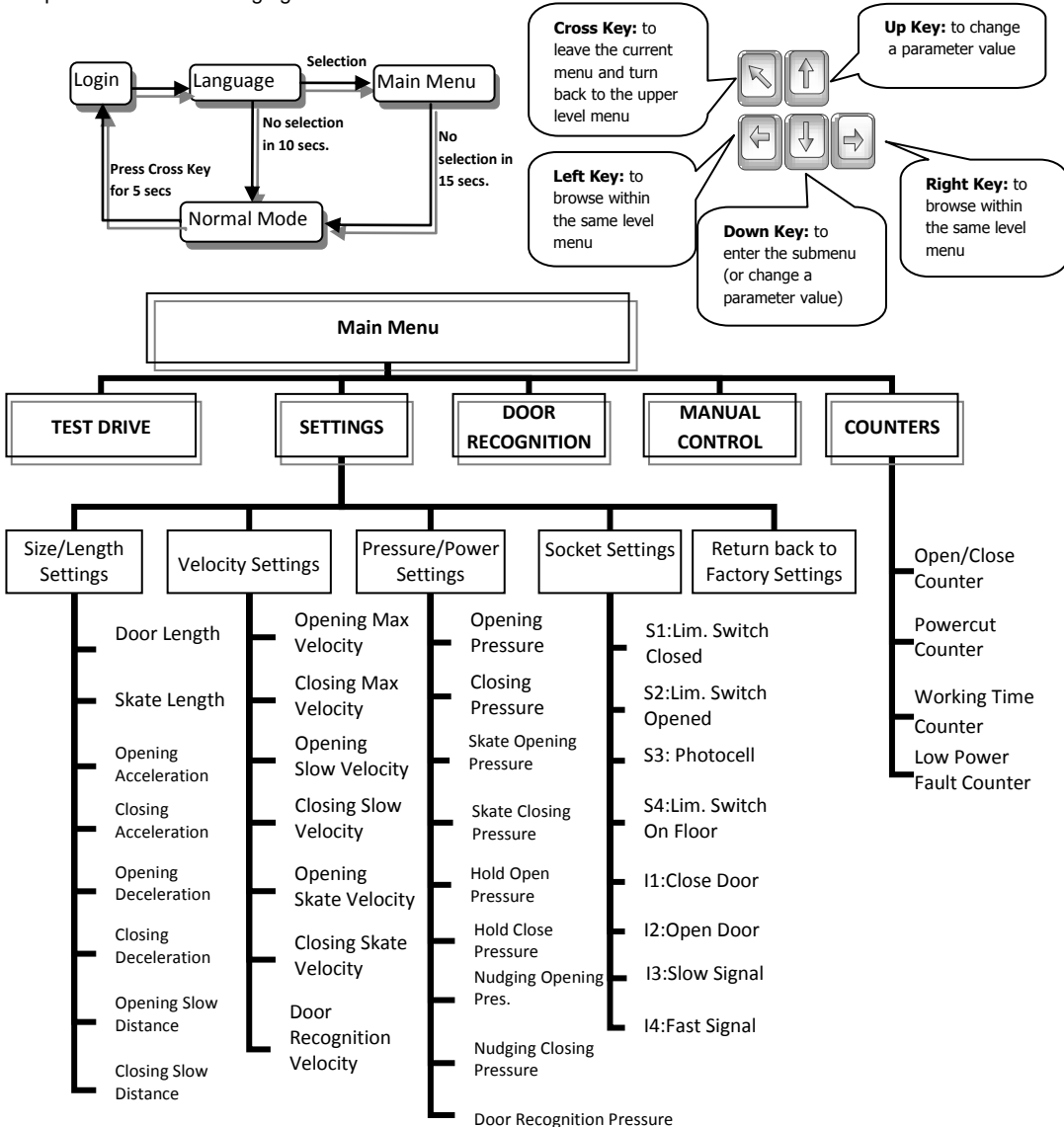
- Complete the socket connections
 - Limit Switch (Sensor) socket
 - Input (Command) socket
 - O1 (Blockage Relay) socket
- Power up DDCA60
- Choose the desired language
- Update socket connection settings
- Start and complete Automatic Recognition (if necessary)
- Check door profile by using test mode
- Improve the door profile (if necessary)
- Switch to Normal Mode and Operation (by waiting on the main menu)

2.2 MOUNTING AND SOCKET CONNECTIONS OF THE BOARD



3. USER INTERFACE

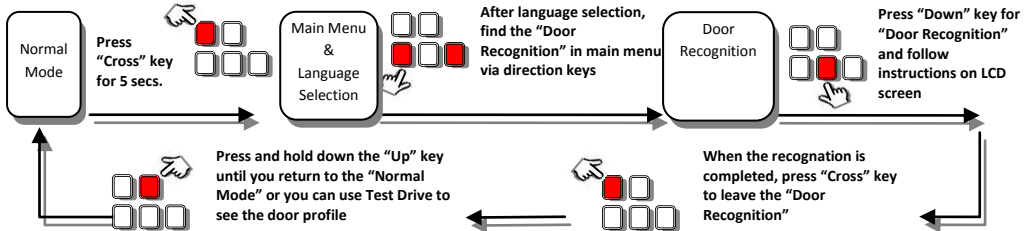
Merih DDCA60 board has a menu system including a LCD screen and five buttons for setting necessary parameters and managing the board.



3.1

Automatic Door Recognition

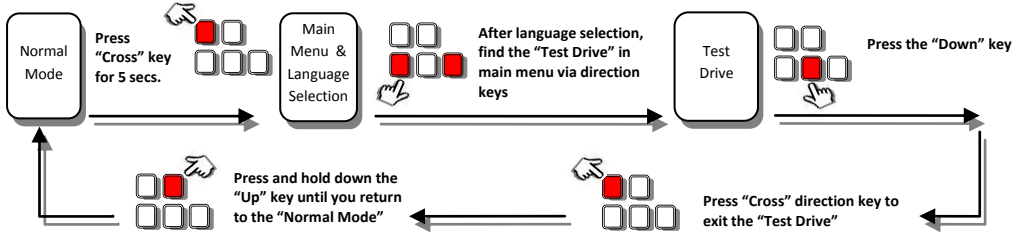
This function helps Merih DDCA60 board to identify the type of the door and door length by moving the door first in closing then in opening direction.



In all doors series (except Folding D & W - type), width of the door will be shown on the screen when the recognition is done. Door length may be detected 5 cm more or less, this situation does not cause any negative effect on door comfort. If an unexpected result is shown, please update recognition settings (velocity and pressure) and try again.

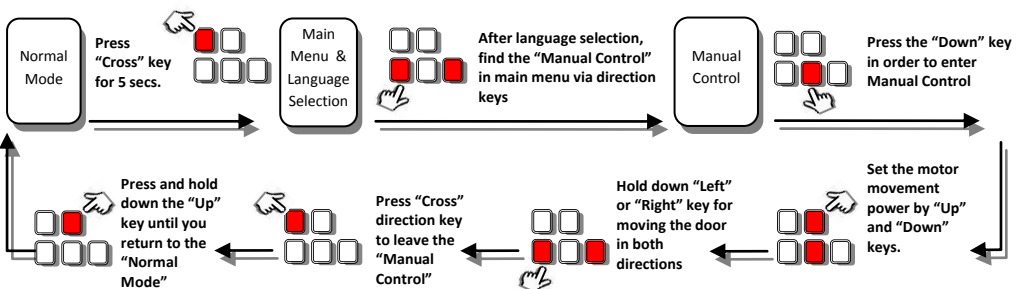
3.2 Test Drive

Test Drive can be used to observe the performance of the door after all the parameters are set. During this mode, board opens and closes the door continuously without checking command inputs and photocell input. However, Blockage detection is still activated during Test Drive.



3.3 Manual Control

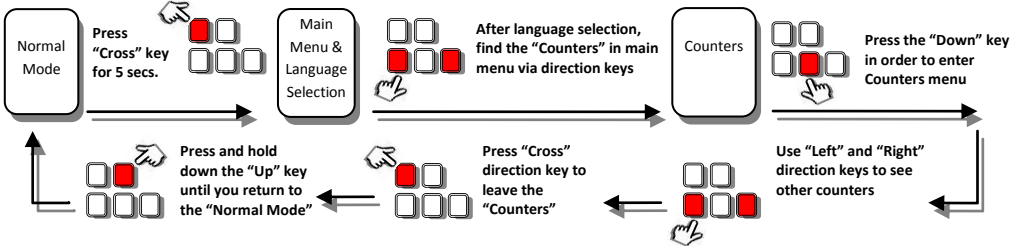
In this menu, the door can be moved in opening or closing direction regardless of door parameters. In this case, a constant voltage is applied to the terminals of the motor in the desired direction.



As long as one of the 'opening' or 'closing' buttons is pressed, the door will try and move in commanded direction. As comfort control is inactive, the user must be careful that the door does not hit too fast.

3.4 Counters

Counters menu contains information about board operation and statistics.



Open/Close Count: Shows how many times door is opened and closed.

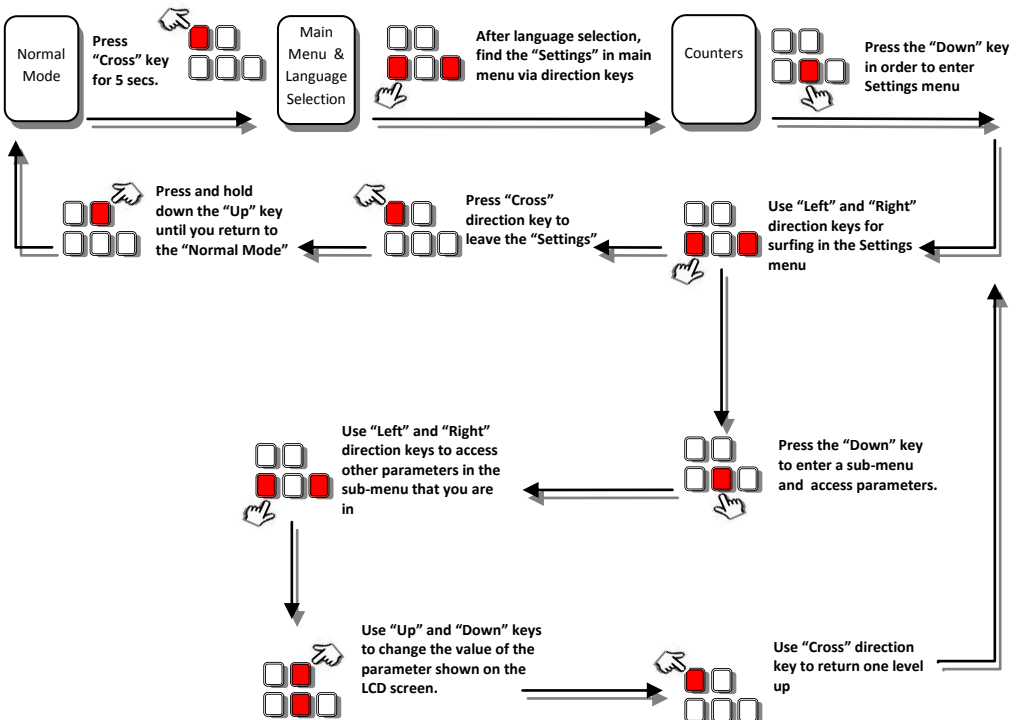
Powercut Count: Shows the power outage count while board is working.

Working Time: Indicates the operation time of the board in "days" unit.

Low Power Fault: Shows the number of times when there is a voltage drop in transformer because of the door strain.

3.5 Settings

Parameters in the "Settings Menu" are grouped by sub-menus as Size/Length, Velocity, Pressure/Power and Socket Settings. (see page 4.)



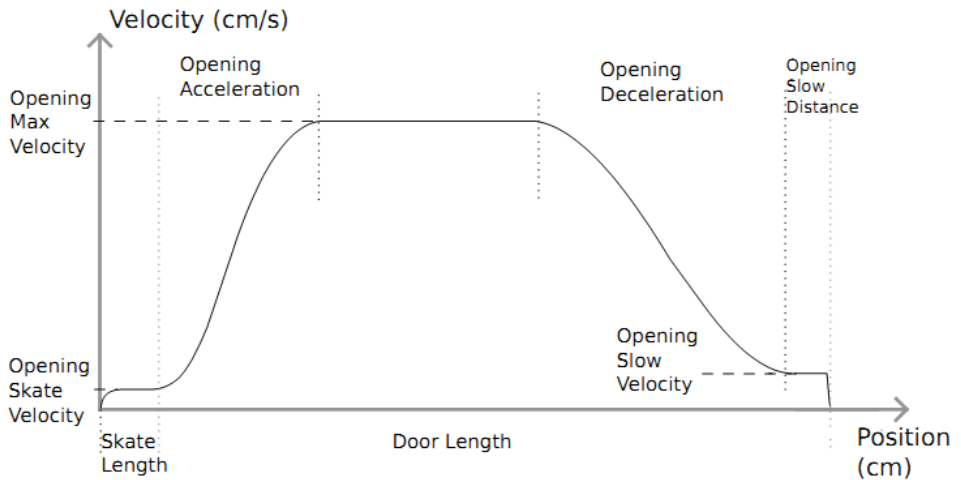
3.5.1 Size/Length Settings

Contains size and length parameters shown in the door movement profile graphs below, in opening or closing direction (see page 4).

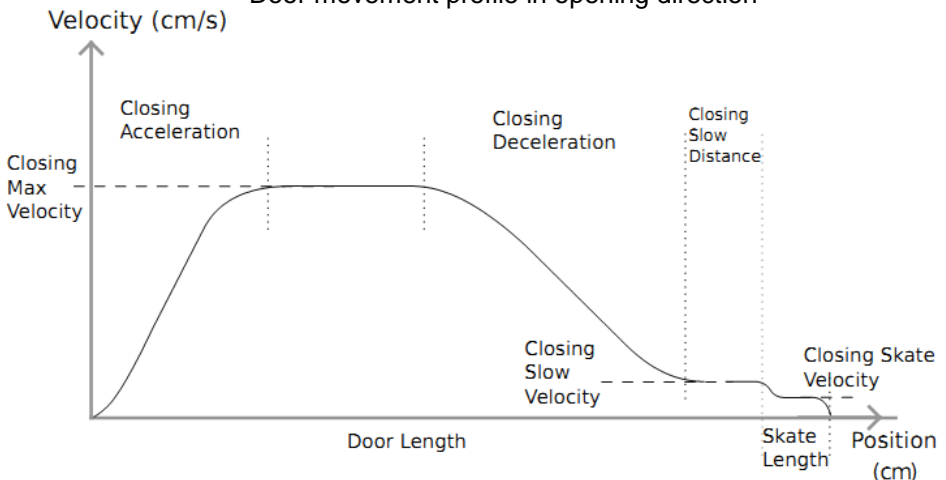
“Skate Length” parameter is in “mm” unit, although all the other parameters are in “cm” unit.

3.5.2 Velocity Settings

Contains velocity parameters shown in the door movement profile graphs below, in opening or closing direction (see page 4).



Door movement profile in opening direction



Door movement profile in closing direction

3.5.3 Pressure/Power Settings

Contains parameters which determine the maximum power to be applied during the door movement in case of door strain (see page 4).

Pressure parameters in opening or closing direction affect directly the sensitivity response of the door in any blockage condition. Therefore, not only the performance but also the safety of the door must be considered when setting these parameters.



Nudging Mode: If blockage condition is detected while the door moves, the direction is changed and the door tries to complete the movement in reverse direction. Then, the door attempts to move in blockage direction again. If it detects the blockage in that direction again, and this is repeated 3 times in a row, the door detects a situation that prevents to complete the movement and enters nudging mode. In this mode, door moves in blockage detected direction with high pressure (nudging pressure) and slow speed with an audible warning alert. Nudging Mode is also activated by the “Slow Command” signal. The aim of the nudging mode is to remove the problem which causes to prevent door movement.

3.5.4 Socket Settings

Includes the parameters which determine operation type of the Sensor (Limit switch) and Input (Command) sockets. (see page 4 for these parameters).

For these parameters, there are three values available corresponding to the operation type:

Yes-Normally:1 : This option must be selected if there is no power in mentioned socket input (led off) when signal is inactive, although there is power on the socket (led on) when the signal is active. This setting is also known as “Normally Open”.

Yes-Normally:0 : This option must be selected if there is power in the socket input (led on) when signal is inactive, although there is no power on the socket (led off) when the mentioned signal is active. This setting is also known as “Normally Close”

No- N / A: Specifies that the signal is not used.



For D and W folding series doors, limit switches are used, so “Yes – Normally 0/1” should be selected for operation type of S1 and S2 sockets.



If the main control board has one signal, instead of two signals as “Close the Door” and “Open the Door; ‘I2 – Open Door’ parameter must be selected as “No- N / A”. In this case, door will be closing while ‘I1 – Close Door’ signal exists and will be opening when signal is gone. If possible; configuring the main control board for two signals is more secure rather than one signal.



Unused signals in “Socket Settings” must be definitely selected as “No- N / A”.

3.6. Return Back to Factory Settings

Parameters are already set to defaults as factory settings. But if the user desires, he/she can configure the door movement comfort as he/she wants. However, if undesired movements occur on the door due to parameter changes, this feature is being used to return back to the factory defaults. To return back to the factory defaults, simply follow the instructions on LCD screen.

4 - TROUBLESHOOTING

No Power on the Board

Be sure that the green led below 24VAC (L2) is on. If red led (L1) is on instead of the green one, change the fuse of the board (250V 8A).

Be sure that 24VAC Input Socket has power, if not, check transformer input and output connections.

No Movement on the Door

Be sure that Power Input and Motor Socket connections are correct and in contact. To test the correction of these terminal connections, "Manual Control" should be selected in the main menu and door movement should be observed. Increase the power enough to allow the door movement. If there is still no movement on the door, be sure that 24VAC is available on the Power Input Socket.

If the door is moving in Manual Control, but there is no movement in Test Drive and/or Normal Mode: Try to increase pressure parameters (Door Recognition Pressure, Opening Pressure, Closing Pressure, etc.)

Be sure that Input (Command) Socket Settings are correct. (One signal-Two Signal Setting)

Door Moves Too Fast

Fast Signal (Settings-->Socket Settings->I4) may be activated. This mode is for fire elevators. If it is not used in a fire elevator, it should be set as "No- N/A".

Be sure that Door Recognition is done.

Be sure that encoder connection is correct.

Door Remains Either Fully Opened or Fully Closed

If this situation occurs in Normal Mode, make sure that Input (Command) socket settings are correct and check if the signal that you need (Open/Close) is available, by monitoring the related leds.

Door Moves in Reverse Direction

If the door moves in a different direction rather than the one specified and displayed on the LCD screen, change sides of the motor terminal connections and repeat the "Door Recognition" process.

Door Hits Before Slowing Down Enough

Be sure that Door Recognition is done.

Be sure that Skate Length is entered correctly.

Enter an enough deceleration ramp value.

Reduce the Slow Velocity in mentioned direction.

Door Slowdowns Early

Be sure that Door Recognition is done.
Be sure that Skate Length is entered correctly.
Reduce the Slow Distance in mentioned direction.

Door Detects Blockage Unnecessarily

Be sure that Door Recognition is done.
Be sure that Skate Length is entered correctly.
Check the Photocell Settings in Socket Settings menu (Yes Normally 1, Yes Normally 0 or No N/A)
Be sure that pressure settings are high enough

Overheat on Motor or DDCA60 Board.

Reduce the "Hold Open Pressure" or "Hold Close Pressure"

Door Recognition Problems

Gives "Encoder Error"

Be sure that encoder and motor connections are correct.
If the "Door Recognition Pressure" is entered too low, door may not move. Try to increase the parameter.

Door Width is Detected Incorrectly

Door width may be detected within +/- 5 cm tolerance. This situation does not affect the door comfort, therefore it could be neglected.
If width of the door is detected with an error more than 5 cm, try again by increasing the "Door Recognition Pressure" parameter and make sure that the selection of telescopic or central door type is correct.
Make sure that the skate works well and does not hang out (achieving both opening and closing movements exactly) in the closing direction.

Gives "Limit Switch Error" Message

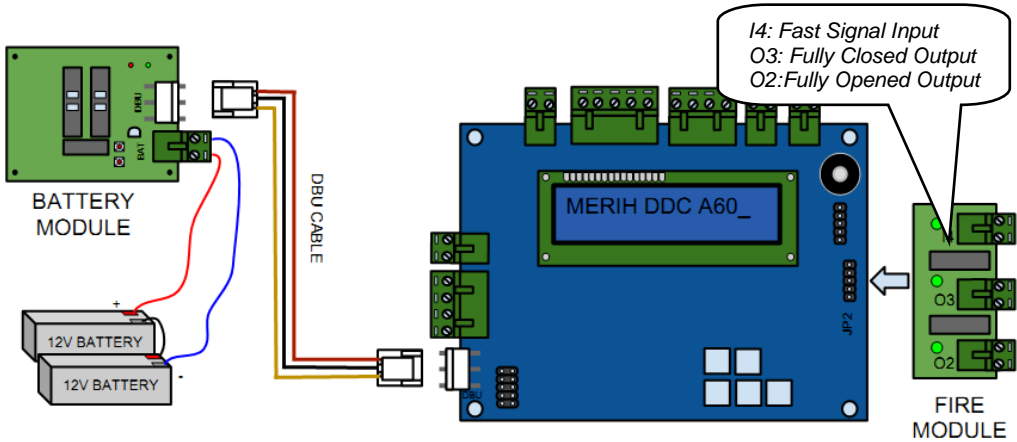
Error 1: Both limit switches are detected pressed. Check Sensor Socket settings.

Error 2, Error 3, Error 4: Open Limit Switch and Close Limit Switch are interchanged, or limit switches are selected as "Yes - Normally..." although they are not available.

Hits Very Fast on Door Recognition

Reduce the "Door Recognition Velocity" parameter.

5 – ADDITIONAL MODULES



5.1. Door Battery Module (DBU)

Door Battery Unit (DBU); charges the battery in a controlled way for having longer life batteries, as long as 24V power is available on DDCA60. When a power cut occurs, it provides DDCA60 supply from batteries. In this case, it prevents passengers from being stuck in elevator cabin, if it stands on a floor level.

DBU, (if "On Floor Limit Switch" is active) opens the door fully and power downs the DDCA60 board on a power cut situation, in order to stop fully discharging batteries. Green led on the board indicates that batteries are being charged and the red led indicates that the battery terminals are reversely connected and must be corrected immediately.



If there is no power on the board, although DBU is connected and batteries are full; this means that DBU is powered off itself to prevent fully discharge. If you want to power DDCA60 up without power (via battery supply), you should press both of the buttons on the DBU board, on the same time. In this way, board is powered up once, and does not need to hold down buttons anymore. You may use the door or board for any operation. However if the door becomes fully open, and "On Floor Limit Switch" is active at the same time; DBU will power off the board again.



Supplying the batteries directly is not supported on the Merih DDCA60 board. Door Battery Unit (DBU) and its DBU cable must definitely be used.

5.2. Fire Module (FM)

Fire Module (FM) must be plugged if the door will be specifically used as a fire elevator door.

I4: Fast Signal Input: The signal which comes from the main control board and provides the door's fast move (Fire Mode).

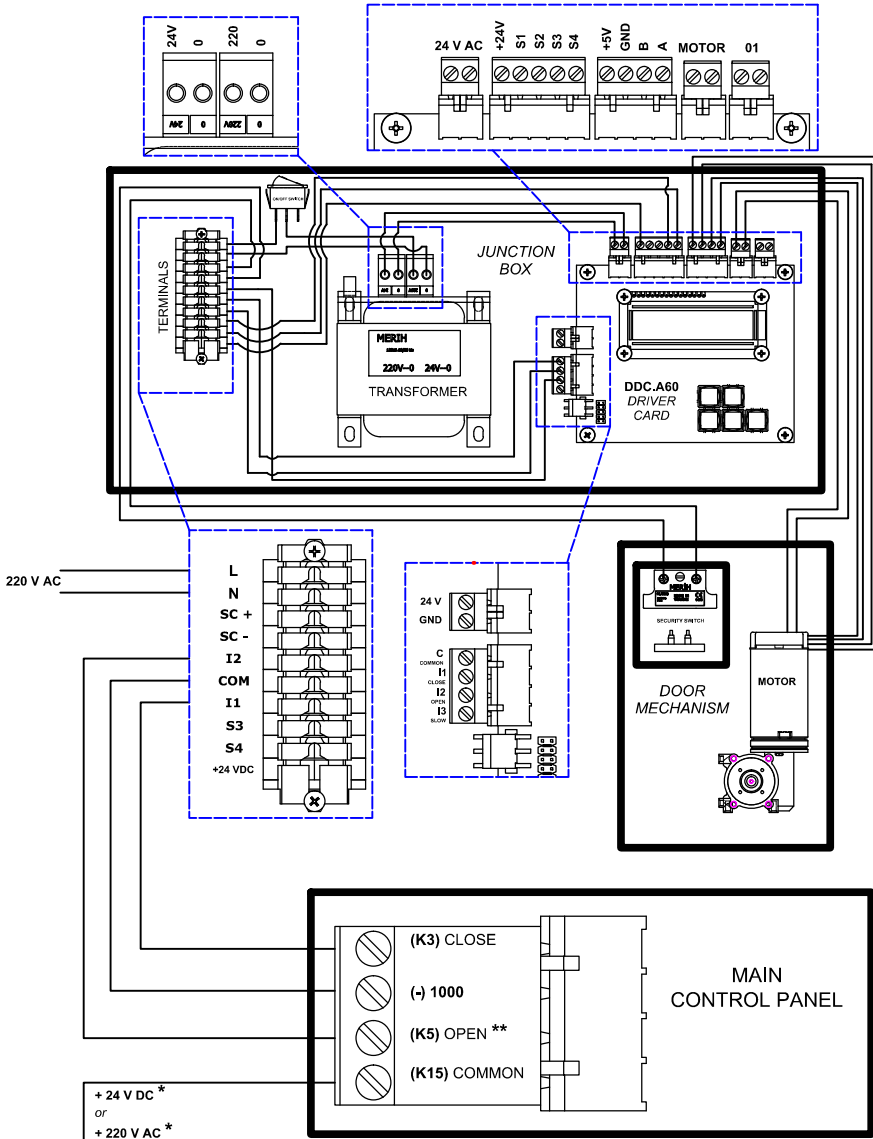
O3: Fully Closed Output: The signal that informs the main control board that the door is fully closed.



O2: Fully Opened Output: The signal that informs the main control board that the door is fully opened.

If fire module is plugged and the necessary connections are done, I4 (Fast Signal) must be set as "Yes-Normally:1" or "Yes-Normally:0" in the Socket Settings menu. Additional setting is not required for O2 and O3 signals. These output relays work as Normally Open (N/O).

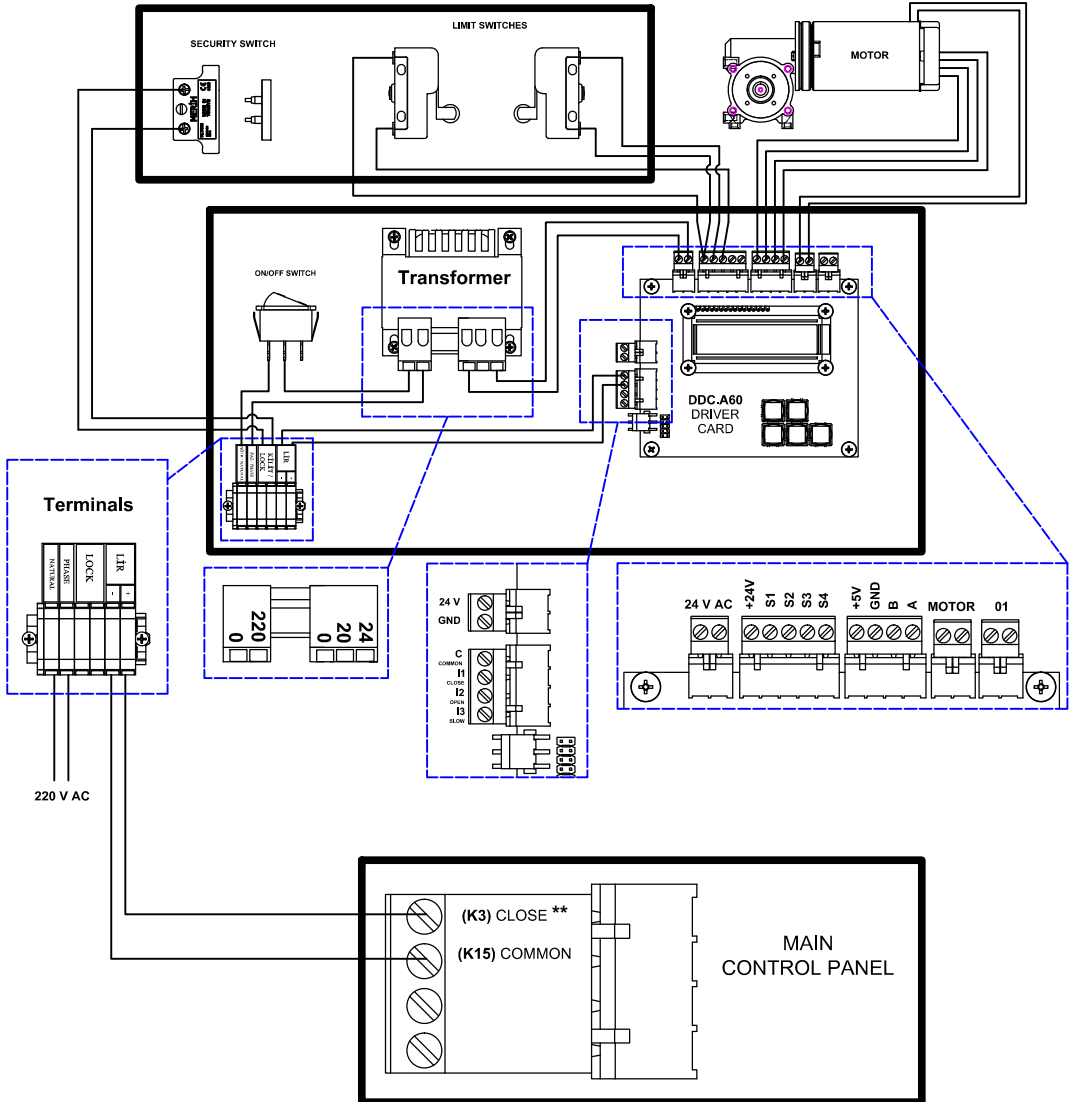
THE WIRING DIAGRAM FOR THE SLIDING DOORS



* 24VDC or 220VAC are both available for open and close signals.

** If there will be only Close Signal and no wiring for Open Signal, the "I2 Open Door" parameter must be selected as "No-N/A" in the Socket Settings from the main menu of the DDC.A60.

THE WIRING DIAGRAM FOR THE FOLDING DOORS



* 24VDC or 220VAC are both available for open and close signals.

** If there will be only Close Signal and no wiring for Open Signal, the "I2 Open Door" parameter must be selected as "No-N/A" in the Socket Settings from the main menu of the DDC.A60.