# AE-MAESTRO

# Integrated Lift Control System

## INSTALLATION MANUAL

## for Electric Package of Gearless Lift Machines



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|---|---|
| **Document Name** | : AE-MAESTRO Lift Controller Installation Manual for Electric Package of Gearless Lift Machines |
| **Document Code** | : AEM-INSEN-GL |
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# A.PREFACE

This document is written to guide installation of the lift controller for pre-wired system. It guides the installation of electric system of the lift. **This document should be used in together with AE-MAESTRO Integrated Lift Controller and Hand Terminal user manuals.**

Pre-Wired system has been designed to make installation easier and faster. All the cables have either plug and play connectors if they are going to be connected to another socket or dummy terminals to avoid any short circuit. There are labels on all free cables and cable groups with their related information written on them. To avoid any wrong connection, check the labels before connecting any socket or terminal.

### CAUTION

∗ **This document is a quick installation document and does not contain complete information.**

∗ **For more detailed information refer to the user manual of the Integrated Device and Hand Terminal.**

∗ **The scope of this manual is limited only to electrical parts.**

∗ **Installation must be performed only by authorized persons.**

∗ **Check the labels before connecting any socket or terminal.**

∗ **Do not leave the lift in normal mode before completing and testing the system properly.**

∗ **Disconnect the battery sockets when you have finished with the installation and keep them unplugged until the lift will be opened for normal service.**

∗ **This guide is a kind of a technical proposal. Testing and confirming safety parts and functions are under the responsibility of the lift company.**
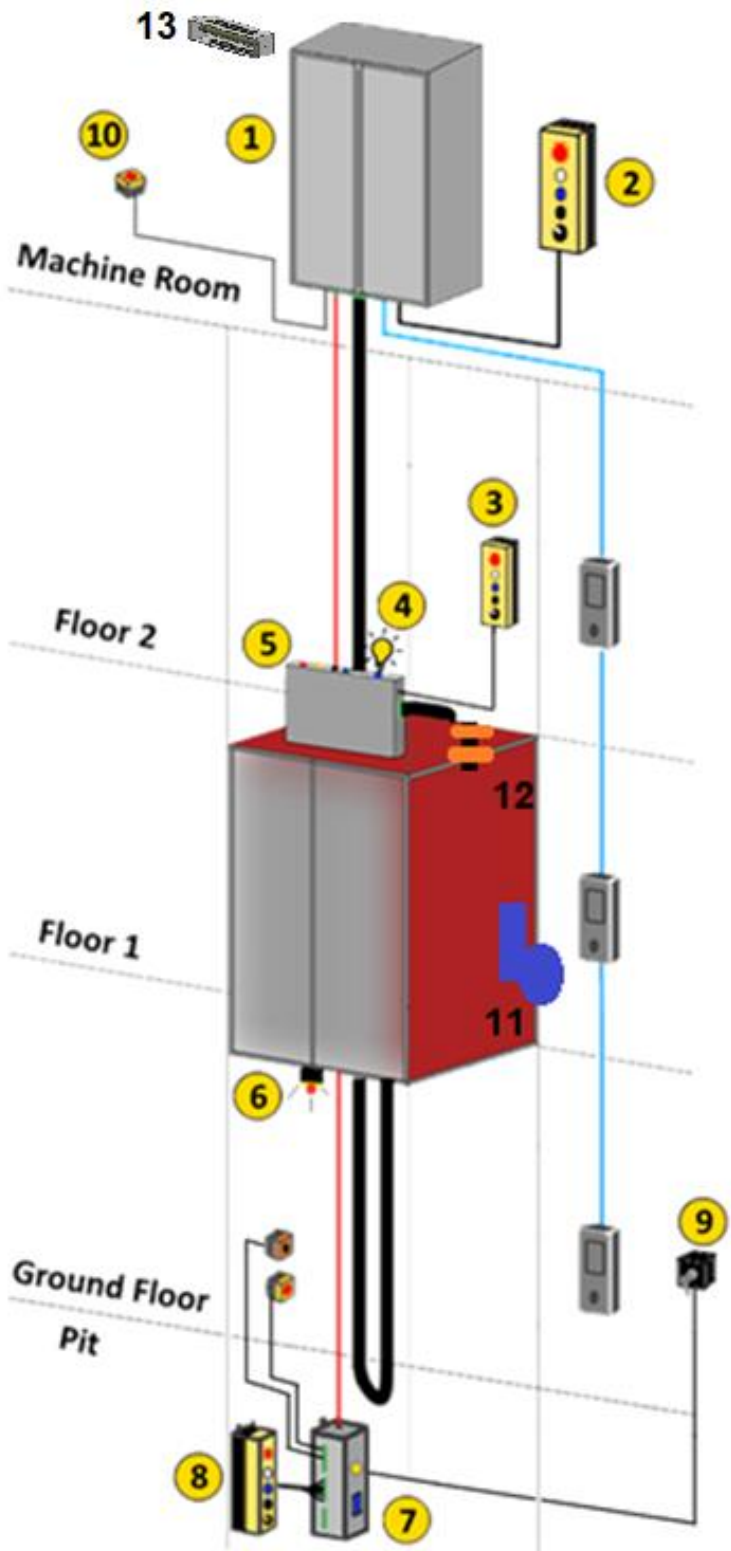
**APPENDIXES:**

AP01-FLOOR LEVEL ADJUSTMENT

AP02-CAR OPERATING PANEL

AP03-LANDING OPERATING PANEL
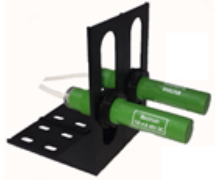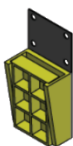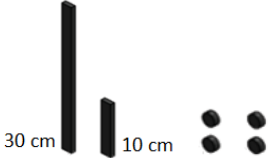
AP06-PRE-TORQUE AND LOAD MEASURING DEVICE

# THE ELECTRICAL COMPONENTS IN SHAFT



**1.** Lift Control Panel

**2.** Recall Command Box

**3.** Inspection Command Box

**4.** Cartop Emergency Lighting

**5.** Cartop Box

**6.** Audible and Flashing Device

**7.** Pit Control Unit

**8.** Pit Command Box

**9**. Pit Inspection Reset Switch

**10.** Machine Side Stop Button

**11.** Shaft Limit Switch

**12.** ML1-ML2 Magnetic Switches

**13.** Braking Resistor
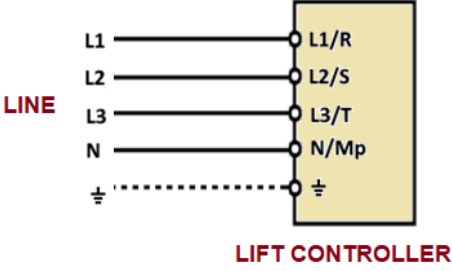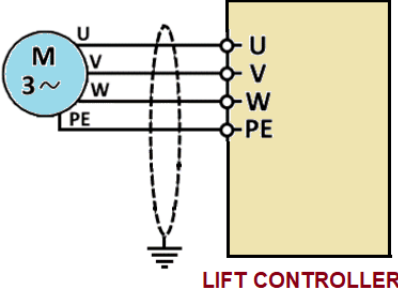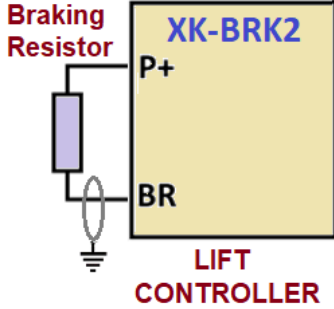
## THE COMPONENTS USED IN SHAFT AND MACHINE ROOM

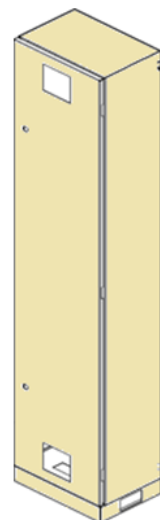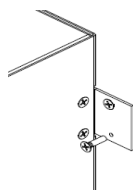| Prewired Inspection Box | KDM Pit Control Box | Pit Stop, Socket and Alarm Box | Inspection and Recall Command Box |
|---|---|---|---|
| Controls car circuit | Controls pit circuit | Connected to Controller | In cartop, controller and pit to move the car |
| Stop Button | Audible and Visual Alarm | Braking Resistor | Pit Leaving Switch |
| Used to stop the lift in machine room | Used under the car | Connected to Controller | Used at the base landing floor |
| Magnetic Switches | Flex Holder | Strip and Round Magnets | Shaft Limit Switch |
| Used on the cartop | Used on the car wall | Used on the rails | Used on the cartop |

30 cm   10 cm

## FIXING MRL CONTROLLER BOX TO THE WALL

- MRL type lift controller box is placed next to the door at the top floor.
- Be careful to install control panels so that the ventilation holes are not exposed.
- Use screws and brackets given to fix the metal box to the wall as shown below.

| CONNECTING LINE SUPPLY |
|---|

| Connect power line cables to the terminals **L1/R, L2/S, L3/T** and **N.** |  |
|---|---|

| CONNECTING MOTOR POWER |
|---|

| 1. Connect motor power inputs to **U, V, W** terminals in controller box.<br>2. Use the given shielded motor cable for this.<br>3. Connect shielding of the cable to the earth bar in the controller. |  |
|---|---|

| CONNECTING BRAKING RESISTOR |
|---|

| 1. Fix the braking resistor onto the wall or control panel box.<br>2. Do not put the resistor into the control panel box.<br>3. Be aware that it will be hot and will emit heat to the surroundings during lift operation. Do not touch it during operation.<br>4. Connect the cables of the braking resistor to the terminals **P+, BR** in XK-BRK2 group in control box.<br>5. Connect the shielding of the cable to the earth bar inside the control panel.<br>6. **Do not run the motor without connecting the appropriate braking resistor. Otherwise the device may be damaged.** |  |
|---|---|

| CONNECTING RECALL COMMAND BOX |
|---|

| Connect recall command box to the controller on **HT-KL** terminal board by plugging **XK-PREV1** and **XK-PREV2** sockets. |  |
|---|---|

## CONNECTING BRAKE, THERMISTOR AND MACHINE SIDE STOP

1. Motor brakes, thermistor and stop are placed in **XK-BRK2** terminal group in controller box.

2. Connect motor thermistor to T1 and T2 terminals in controller box.

3. If there is no thermistor in motor then bridge T1 and T2 terminals in controller.

4. Connect brake coils and brake contacts as shown in the figure to the related controller terminals.

5. Note that the brake monitoring contacts are normally closed (NC).

6. Connect machine stop to 110 and 110A terminals (EN81-20).
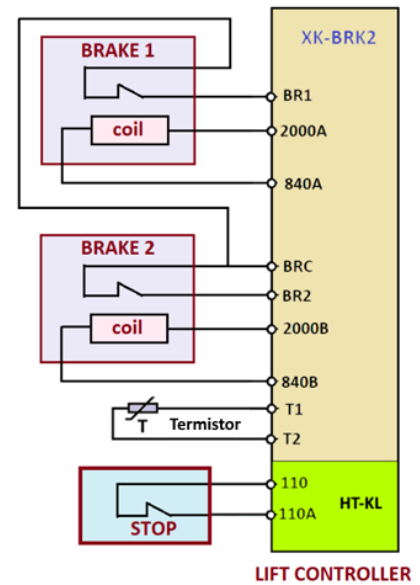


## CONTROLLER OUTPUT TERMINALS AND SOCKETS

The system is prewired. Therefore, there are very few direct cable connections to the controller. The connections are mostly done by plugging sockets or connecting external devices to the labelled dummy terminal. The drawing below shows the output terminals of the controller. The sockets have been arranged in groups for specific tasks.
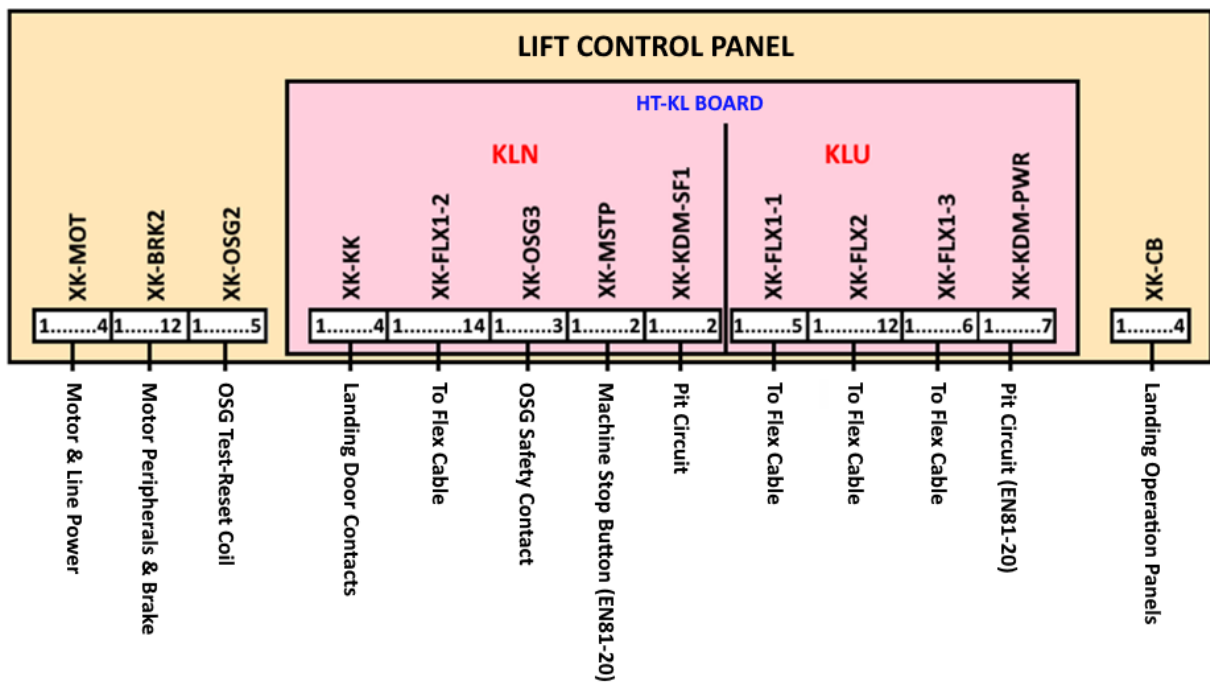
| |
|---|
| • In order to start with autotuning operation safety line must be closed. |
| • **If safety line has been already bridged on HT-KL board with first installation cables in control panel, then these cables must be removed after termination of the installation process!** |
| • If the safety line bridging cables are not avaible for HT-KL board and the car circuit is not wired yet, you can connect inspection box and flex cable next to the controller box. |
| • So, the safety circuit will be closed and autotuning operation can be started. |

## CONNECTING FLEX CABLE TO CONTROL PANEL

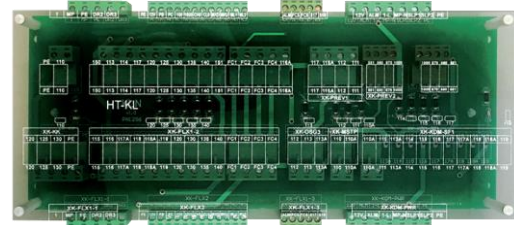| | |
|---|---|
| The terminals for the flex cable are on HT-KL board. There are two pieces flex cables between car and controller, one 12 the other 24 wires.<br><br>In installation, if the car is not been already installed then you can connect the inspection box in machine room. This is necessary to have the safety contacts closed in order to run motor for autotuning. |  |
| 1- Take 24 wire flex cable and connect its terminals labelled with…<br>   XK-FLX1-1<br>   XK-FLX1-2<br>   XK-FLX1-3<br>   to their corresponding sockets on HT-KL board in the controller box. |  |
| 2- Take 12 wire flex cable and connect its terminals labelled with XK-FLX2 to its corresponding socket on HT-KL board in the controller box. |  |
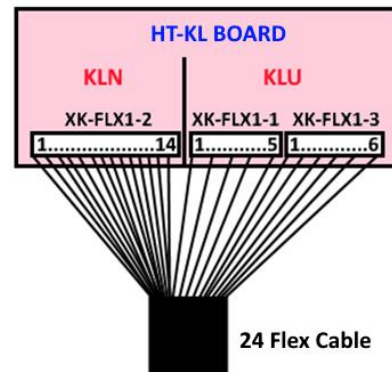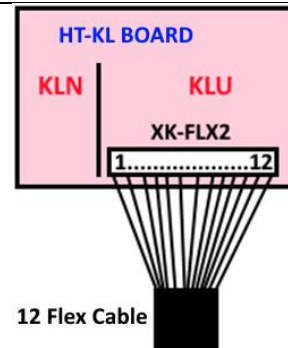
## CAR ELECTRIC INSTALLATION

| | |
|---|---|
| 1. Place inspection box onto the cartop.<br>2. Flexible cable is already equipped with plug in connectors on both ends.<br>3. There are two boards inside the inspection board PWL and PWH.<br>4. Connect flex cable to the related terminals in PWL and PWH boards inside the inspection box as shown on the connection diagram on page **C01-FLEXIBLE CABLE CONNECTIONS** presented in project schemas.<br>5. PWH is the lower board and carries safety line and 220V / 230V signals.<br>6. PWL is the upper board and it serves as the car controller. |  |

| | |
|---|---|
| 7. Take other end of 24 wire flex cable and connect its terminals labelled with…<br><br>XH-HV3<br>XL-LV2<br>XH-HV1<br>XH-HV2<br><br>to their corresponding sockets on PWL and PWH boards in cartop inspection box. |  |
| 8. Take other end of 12 wire flex cable and connect its terminals labelled with XL-LV1 to its corresponding socket on PWL board in cartop inspection box. |  |
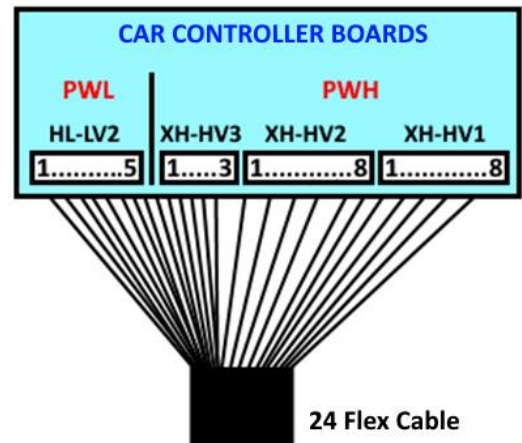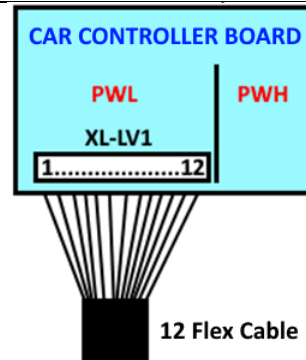
**CONNECTION OF CAR PANELS**

1. **For ALYA Series COP**
   a) Connect cable labelled **CON(A)** between CON(A) socket in PWL board and CONA socket of ALYA car panel.
   b) If you have two COPs inside the cabin, then connect **CON(B)** between PWL board and CON socket of the second ALYA car panel in the cabin. Set door type to B from ALYA car panel dip switch.
2. **For other COP Series**
   a) Connect cable labelled **CON(A)** between CON(A) socket in PWL board and CON socket of PWS board in car panel.
   b) If you have two COPs inside the cabin, then connect **CON(B)** between PWL board and CON socket of PWS board inside the second car panel in the cabin. Set door type to B from PWS dip switch.

See **AP02-CAR OPERATING PANEL** section in Appendix for mechanical and electrical installation of car panels.
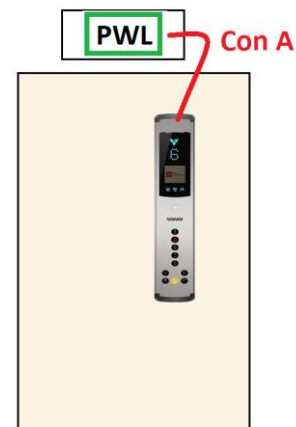


**CONNECTIONS OF CAR CIRCUIT**

Connect the remaining car devices to the inspection box as shown in the following circuit diagrams presented in schemas of the project on pages:

**C02-CAR TOP CONNECTIONS PWH** and **C03-CAR TOP CONNECTIONS PWL**

| CONNECTING LANDING PANELS | |
|---|---|
| 1. Read the manual of landing panels (LOP) in Appendix-3, AP-03.<br>2. Landing panels are serially connected and must have a unique floor number id to communicate.<br>3. All LOPs are delivered as their floor numbers already saved.<br>4. So, read their floor numbers on their pockets to find their floor.<br>5. You can set the floor number of any LOP at any time by following the instructions in LOP manual **AP03-LANDING OPERATING PANEL** in Appendix.<br>6. Fix LOPs to the walls at the landings regarding to the instructions in AP-03.<br>7. Connect XK-CB socket to the controller.<br>8. Connect all landing panels to the cable of XK-CB.<br>9. If the pit board (SPT) is not used in system, a termination resistor must be installed at the end of the line. |  |
| CONNECTING LANDING DOORS | |
| 1. Connect **XK-KK** socket to the controller terminals to connect door contacts.<br>2. At each floor disconnect the dummy white terminal shown below and connect these cables to the door contacts. **LKK/A-B** is the name of this cable.<br>3. Connect green-yellow cable to the metal chassis of the door.<br><br> |  |

| CONNECTING SHAFT PIT (Only for EN81-20 Standard) |
|---|
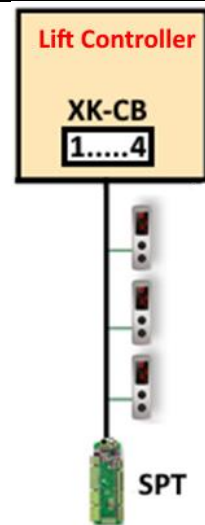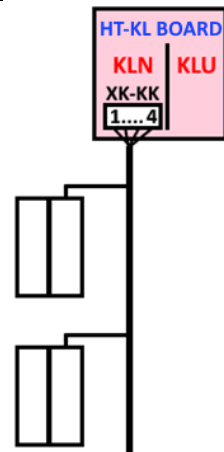
- Connect **XK-KDM-SF1** and **XK-KDM-PWR** sockets to the controller to implement shaft pit.
- Connect SPT board, which is in shaft pit box **KDM**, to the socket of the LOP in ground floor.
- Connect other shaft pit devices to the terminals of the KDM box as shown on the diagram in the project schemas.
- Place KRR switch at the landing onto door frame or onto a wall near it. It must be located outside of the shaft.
- KRR switch must change its state after an exit from pit inspection. Otherwise the system will not switch to the normal mode.
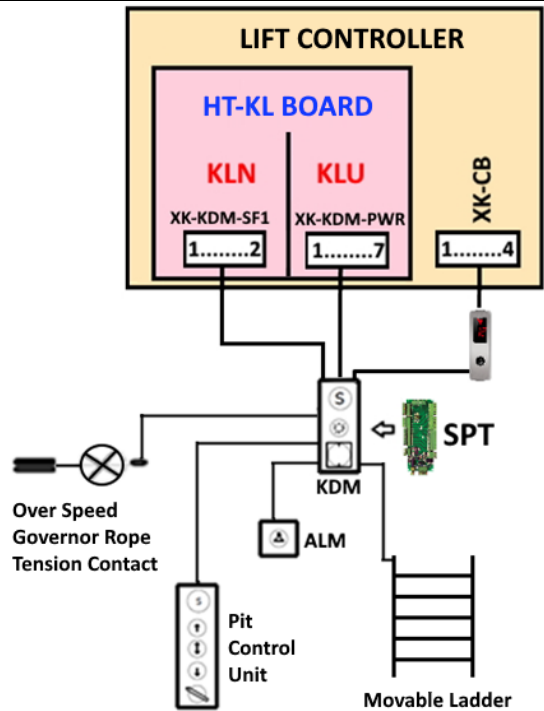


| CONNECTING SHAFT PIT (Only for EN81-1 Standard) |
|---|

- Connect **XK-KDM-SF1** socket to the controller to implement shaft pit.

# ENCODER CONNECTIONS FOR GEARLESS MACHINES

1. Open the front cover of the device. ICA board should be placed on the right side.
2. Check the supply voltage information of the encoder.
3. Read the product code written on the encoder and check if it matches to one of encoders given below. Otherwise connect encoder to ICA board regarding the colours given in the data sheet of the encoder used.
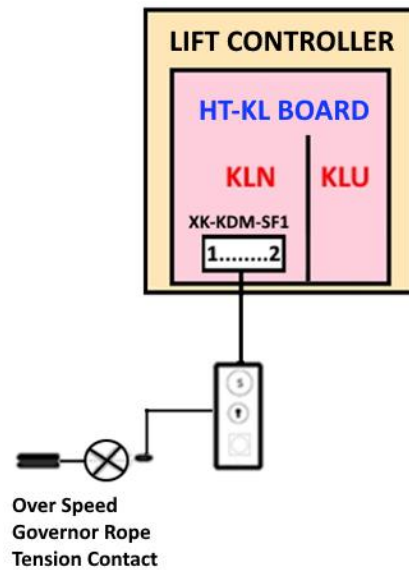4. Encoder cables should be connected to ICA board as shown the diagrams below.
5. Please check data sheet of the encoder before connecting it to ICA board to verify cable colours of the encoder. The cable colours of the encoders may change depending on the manufacturer of the traction machine.
6. You should specify the type of the absolute encoder you are using in parameter M16.
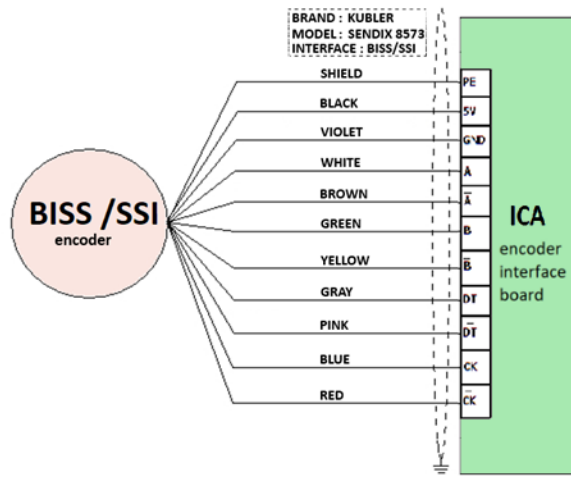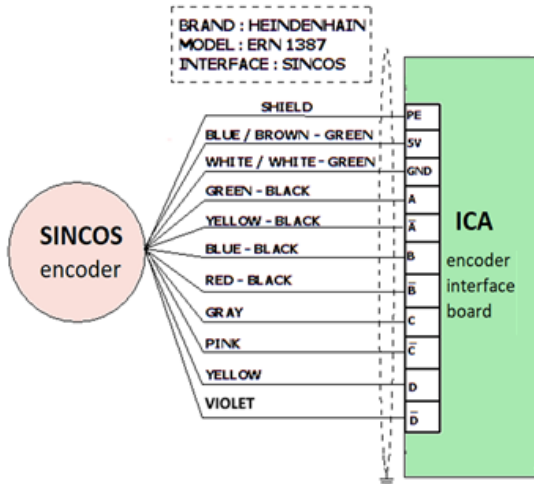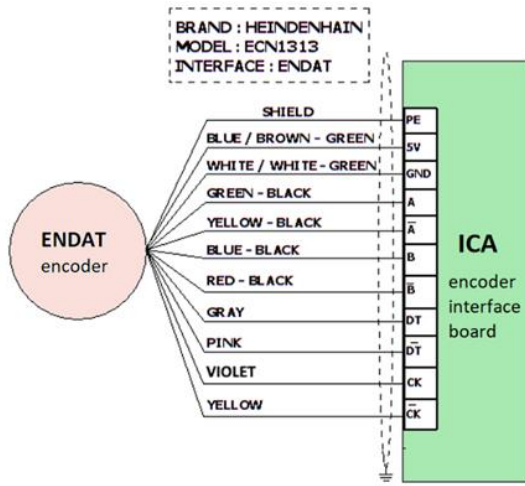
| | |
|---|---|
| 1. The controller must be started in inspection mode due to the position of the switch in recall command box.<br>2. **Switch on** power to energize the controller. |  ON ⬆ |
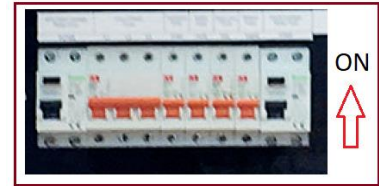
## FRONT LED PANEL

| | |
|---|---|
| • There is a led panel in front cover of the device.<br>• It gives information about the status of some important variables.<br>• LED panel is used by default to show current floor number.<br>• However, it can be used to monitor a number of variables, too. This can be done by adjusting parameter E03- LED DISPLAY.<br>• There is a bar between two LED columns, which shows the state of the system.<br>• Green means normal mode, yellow inspection mode and red error case.<br>• In case of any motion the bar flashes<br>• The safety line 120…140 can be monitored here. |  |

## HAND TERMINAL

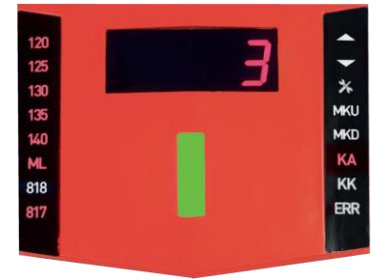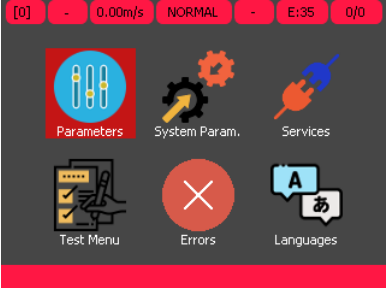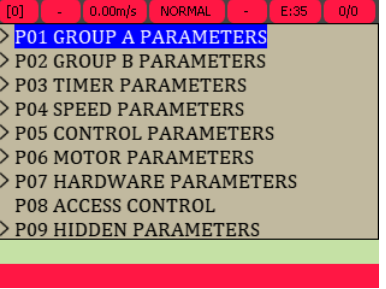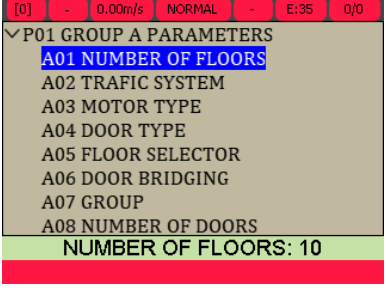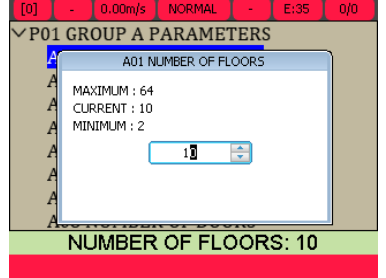| | |
|---|---|
| • Hand Terminal should be used to adjust parameters and carry on the services implemented in the device software.<br>• It must not be present during operation of the lift.<br>• Hand terminal can be used as plugged onto the device as well as via CAN-Bus in the shaft and cabin.<br>• The software of the device can be updated by using hand terminal. Program file is transferred from an SD card.<br>• Read AE-MAESTRO Hand Terminal manual before going further. You will need it to monitor the lift, edit parameters and performing operations.<br>• However, as an example how to change the number of floors will be explained below.<br>• To work with software (Control-2.20u and Motor Driver 2.20g) you need a terminal **software 2.20t** or higher. Please check. |  |
| The main screen shows the following values about the lift:<br> • Real time travel of the car.<br> • Safety line.<br> • Car position<br> • Car speed<br> • Door state<br> • Current calls<br> • A message line about the state of the lift.<br> • Some of the important inputs and outputs. |  |

| | |
|---|---|
| • Press **ENT** button to go to the menu.<br>• In this screen you can move by using cursor keys (arrows).<br>• In order to enter into an application or sub-menu come to the related icon by using cursor keys on the screen and press **ENT** when its icon is highlighted.<br>• For example, select Parameters and press **ENT** while parameter icon is being highlighted.<br>• So, you will go into parameter menu. |  |
| In Parameters menu select **Group A** by using up and down arrows and press ENT when Group A is highlighted.<br><br>You can select other parameter groups similarly. |  |
| Then select **A01-NUMBER OF FLOORS** in order to change number of floors with arrow keys in the list of the Group A parameters as explained above and press **ENT**. |  |
| • In the following screen Number of floors will be displayed on the screen.<br>• Select the number you want to set as number of floors of the lift by using up and down arrow keys.<br>• Then press ENT key to save your selection.<br>• So parameter A01 is saved as 2.<br>• You can use this method to see and change other parameters. |  |

| LOADING AND SAVING PARAMETERS | |
|---|---|
| - The parameter set of the device can be saved into **the SD card** and reloaded from it again.<br>- So, the parameters can be back-up, transferred to another device or restored from the file in SD card.<br>- Use **IMPORT** utility in hand terminal to save parameters into a file in SD card.<br>- Use **EXPORT** utility in hand terminal to restore parameters from a file in SD card.<br>- EXPORT and IMPORT utilities work only on the device not via CAN-Bus. |  |
| **SOFTWARE UPDATE** | |
| - Software of the device can be updated by using the hand terminal.<br>- Copy the program file you want to load to the device into the **SD card**.<br>- Insert SD card into the slot in the hand terminal.<br>- Place hand terminal onto the device.<br>- Update operation cannot be performed via CAN-Bus.<br>- Select **Data-Software** icon. |  |
| - There are two processors inside the device. Therefore, you should select ICM or ICS Upload icon to upload.<br>- **To update the hand terminal software**, hold F1 during energizing the hand terminal.<br>- You can start the update with the ENT button on the selected file from the screen that appears.<br>- Press STOP button to inhibit any motion. |  |
| - Before starting any update procedure switch the controller to the inspection mode<br>- You should select the file you want to upload on the screen by using **UP** and **DOWN** arrow keys.<br>- Then press **ENT** to select the program file and start uploading.<br>- Do not switch off the system during operation.<br>- You must switch off and restart the system after software update. |  |

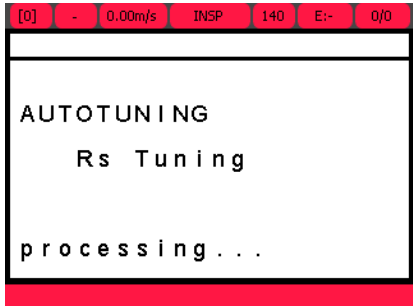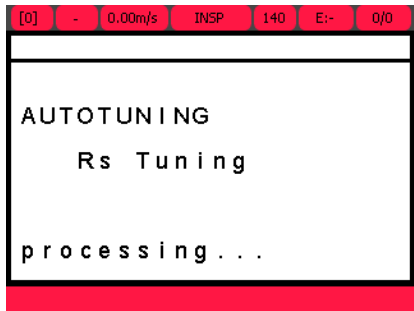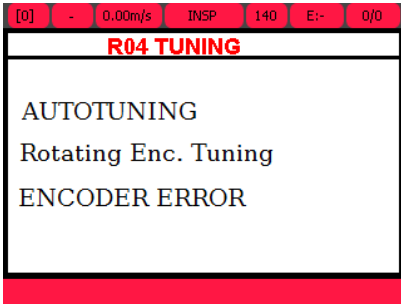| INITIAL PARAMETER SETUP | |
|---|---|
| • AE-MAESTRO has an interactive installation menu which can be used to set most of the general parameters.<br>• Using this menu facilitates setting up the system.<br>• You will be asked to set requested parameters one by one depending on the previous selections.<br>• Firstly, switch to the **INSPECTION mode.**<br>• Then click on the **SETUP** icon to start with the installation. | [0] - 0.00m/s INSP - E:35 0/0<br><br>Input States   Data,Software   Graph<br><br>Setup |
| • Installation menu starts with **A15 INSTALLATION MODE** parameter.<br>• In order to go to the application, you must select **A5=1** to activate installation and initiate setup.<br>• Installation mode bypasses some errors since the system has not been installed properly in the shaft yet.<br>• You will need this facility to place shaft switches, magnets, etc.<br>**Installation Mode is only in inspection mode active**. Its value will be switched to 0 as soon as the system is switched to the normal mode. | [0] - 0.00m/s INSP - E:- 0/0<br>A15 INSTALLAT.MODE<br><br>MAX:    1<br>VALUE:  1<br>MIN:    0<br>              0-NOT ACTIVATED<br>              1-ACTIVATED<br><br>EXIT>>ESC        CONFIRM>>ENTER |
| • Once setup application has been started, you will be asked for entering a number of parameters related to your system and motor specifications.<br>• You can leave this menu by using **ESC** button.<br>• When you click on the **CONFIRM** button the next screen for the next parameter will come.<br>• When A03 Motor Type is asked, select **2-Syncronous** for gearless traction machine. | [0] - 0.00m/s INSP - E:35 0/0<br>A03 MOTOR TYPE<br><br>MAX:    2<br>VALUE:  2<br>MIN:    0<br>         0-OPEN LOOP ASYNCRON.<br>         1-CLOSED LOOP ASYNCRON<br>         2-SYNCHRONOUS<br><br>EXIT>>ESC        CONFIRM>>ENTER |
| • Select appropriate parameters on each screen.<br><br>• So, the required parameters to start installation work with the controller and to run the motor will be adjusted. | [0] - 0.00m/s INSP - E:35 0/0<br>M16 ENCODER TYPE<br><br>MAX:    7<br>VALUE:  0<br>MIN:    0<br>        0-INCREMENTAL<br>        1-ENDAT<br>        2-SiNCOS<br>        3-BISS<br><br>EXIT>>ESC        CONFIRM>>ENTER |
| • Of course, you will need to do some more modifications on parameter related to comfort, timing and special requested functions.<br>• You can also change these parameters at any time after completing the setup program, when needed. | [0] - 0.00m/s INSP - E:- 0/0<br>S01 NOMINAL SPEED-m/s<br><br>MAX:    5<br>VALUE:  1<br>MIN:    0 ,009     1.00<br><br>EXIT>>ESC        CONFIRM>>ENTER |

| | |
|---|---|
| • The last screen in setup menu is **M18 Tuning Mode.**<br>• If you confirm this parameter, setup operation will be terminated and you will be directed to the tuning operation.<br>• If you want, you can leave the setup program now and execute tuning later.<br>• Tuning procedure is explained below.<br>• If you want to continue with the tuning operation follow the instructions of tuning as explained below. |  |

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|---|---|
| 1. Autotuning operation should be carried out to get encoder offset position and motor characteristics<br>2. Switch recall switch to **position 1** on recall command box. |  |

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| **M18 TUNING MODE**<br><br>**0- Stationary Tuning**<br>• In this method, tuning process is carried out without any rotation of motor.<br>• This method should be selected if the ropes have already been hanged onto the pulley. Otherwise rotating tuning is preferred.<br>• Any motion of the motor must be prevented.<br>• Be sure that the brakes are closed and are holding the motor fixed.<br>• Select **0-STATIONARY TUNING** in M18 TUNING MODE parameter **M18=0.** |  |

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| **M18 TUNING MODE**<br><br>**1- Rotating Tuning**<br>• Rotating tuning is always preferred and gives better result, use this method if possible.<br>• Be sure that the ropes are disconnected out of the pulley and the rotation of the motor will not move the car.<br>• The motor will rotate less than one quarter tour during the operation.<br>• This rotation will be smoothly.<br>• Select **1-ROTATING TUNING** in M18 TUNING MODE parameter **M18=1.** |  |

| TUNING IN OPERATION | |
|---|---|
| <ul><li>Turn on **INSPECTION** switch on recall command box to **INSP** position.</li><li>The system must stay in **inspection mode** and **safety line** must be closed along the operation to execute tuning process.</li><li>To start tuning operation, select **R04-TUNING** under **SERVICES** icon.</li><li>The car must not be staying at bottom or at top floor. Move it anywhere not close to the ends of the shaft.</li></ul> | R01 UCM ERROR CLEAR<br>R02 SHAFT LEARNING<br>R03 FLOOR PULSE ADJUST<br>R04 TUNING<br>R05 UCM TEST<br>R06 LIMIT STOP TEST<br>R07 OPERATIONS<br>R08 FACTORY DEFAULTS<br>R09 CLEAR ERROR LOG<br>R10 CLEAR ENCODER DATA |
| **Operation Stage 1**<br><br><ul><li>Press the blue **RUN** button on the **recall command box** and hold it pressed until the end of the tuning process.</li><br><li>Press **UP** arrow button on the **hand terminal** to start the operation.</li></ul> | 0.00m/s<br>**R04 TUNING**<br><br>AUTOTUNING<br>(^)--START |
| **Operation Stage 2**<br><br><ul><li>So, tuning operation has been started.</li><li>Continue pressing onto **RUN** button on **recall command box**.</li></ul> | [0] - 0.00m/s INSP 140 E:- 0/0<br><br>AUTOTUNING<br>Rs Tuning<br><br>processing... |
| **IN OPERATION**<br>**In rotating tuning…**<br>1. If the motor rotates more than one tour, then terminate operation by releasing **RUN** button.<br>2. In rotating tuning the motor rotates smoothly until the nearest pole position.<br>3. If it is currently staying just in its pole position, then it firstly rotates for some degrees to get away from this position and rotates again to find the pole position.<br>4. If there is no rotation the system will terminate the operation by giving an error message.<br>5. Increase the value of the parameter **C20-TUNING CURRENT** and repeat the tuning operation once more**.**<br>6. If the operation fails again, then **increase C20** step by step until the tuning operation will complete successfully. | [0] - 0.00m/s INSP 140 E:- 0/0<br><br>AUTOTUNING<br>Rs Tuning<br><br>processing... |

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| **IN OPERATION**<br>**In stationary tuning…**<br>• Since there will be no rotation, brakes must be held closed along the operation.<br>• However, if the brakes are not adjusted well to hold the machine fixed then the motor may rotate. In this case tuning operation fails.<br>• Therefore, the brakes must be checked before tuning operation.<br>• In stationary tuning the system will apply signal to the motor to find pole position without any rotation. | [0]   -   0.00m/s   INSP   140   E:-   0/0<br><br>AUTOTUNING<br>   Rs Tuning<br><br>processing... |
| **Faults in Operation related to Tuning:**<br>**ENCODER ERROR:**<br>• This error is caused mainly due to the faulty or wrong earth connections.<br>• Check earth connections and wires.<br>**MOTOR CONNECTION ERROR:**<br>• The device output stage does not sense three motor phase windings.<br>• The wires and connections between motor and the device output should be checked.<br>**ENABLE ERROR**<br>• This error arises if the safety line is cut by any reason during the operation. Releasing RUN button may cause this error.<br>**TUNING ERROR**<br>• Any rotation of the motor in stationary tuning may cause tuning error. | [0]   -   0.00m/s   INSP   140   E:-   0/0<br>**R04 TUNING**<br><br>AUTOTUNING<br>Rotating Enc. Tuning<br>ENCODER ERROR |
|     **Operation Stage 3**<br><br>• When the operation has been completed then you will be informed on the screen.<br>• Then stop pressing **RUN** button.<br>• Now, you can return to the main menu by pressing **ESC** button.<br>• Continue staying in inspection mode. | [0]   -   0.00m/s   INSP   140   E:-   0/0<br>**R04 TUNING**<br><br>AUTOTUNING<br><br><br>COMPLETED |

**MOTION TEST**
1. Give a motion command by pressing **RUN** and **UP** or **DOWN** buttons in **recall command box**.
2. If you observe a very rapid rotation or no motor rotation, then reverse the value of the parameter **M17-ENCODER DIRECTION** in **MOTOR PARAMETERS**.
3. Then try the first step once more.
4. You should observe a normal rotation in both directions. Otherwise, increase **C20-TUNING CURRENT** and repeat the tuning operation once more.

**DIRECTION TEST**

- Give a motion command by pressing **RUN** and **UP** or **DOWN** buttons in **recall command box**.
- Observe the motion of the car.
- If the **car travel direction** is opposite to the **command direction given**, then reverse the value of the parameter **M19 MOTOR DIRECTION** in **MOTOR PARAMETERS**.

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- After that, the motor runs at the desired direction with desired speed then tuning operation is successfully completed.
- Now you can start the processes to prepare the system for normal operation.
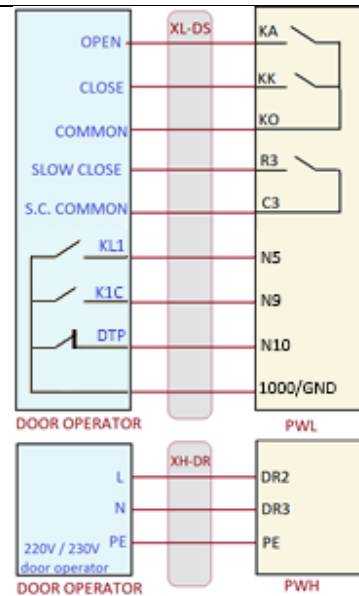- Continue staying in inspection mode.

## CONNECTION OF DOOR OPERATOR AND SIGNALS (EN81-20)

Door Operator is connected with two cable groups:
1. **XL-DS** carries door control signals from PWL. The signals are:

    KA output is Door Open Command

    KK output is Door Close Command.

    KO is the common terminal of KA and KK.

    R3 is the Slow Close Command.

    C3 is common of Slow Close.

    KL1: Door Close Limit for Door 1

    DTP: Door Motor Temperature

    K1C: Obstruction Contact for Door 1

2. **XH-DR** carries power supply for door operator from PWH. These are:

    DR2 is Line

    DR3 is Neutral

    PE is Earth



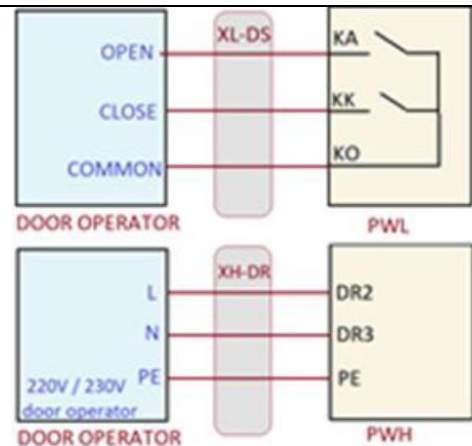## CONNECTION OF DOOR OPERATOR AND SIGNALS (EN81-1)

Door Operator is connected with two cable groups:

**XL-DS** carries door control signals from PWL. The signals are:

    KA output is Door Open Command

    KK output is Door Close Command.

    KO is the common terminal of KA and KK.

**XH-DR** carries power supply for door operator from PWH. These are:

    DR2 is Line

    DR3 is Neutral

    PE is Earth

| CAR ILLUMINATION CONTROL |
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- There is a detection system for car illumination control inside car operating panel.

- It inhibits the motion of the car if the light inside the cabin goes off, while the car light is on (busy signal on).

-  Sensitivity of the light detector system can be adjusted with the potentiometer on GN02 board inside the car panel. It is marked by the red circle in the photo.
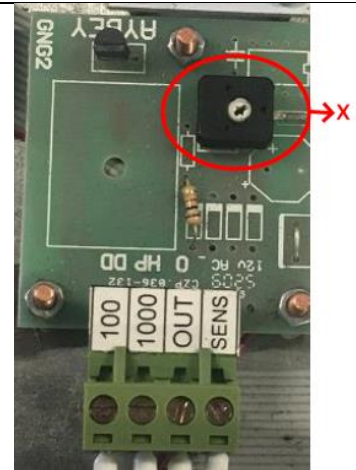


| BYPASS  SWITCH (Only for EN81-20 Standard) |
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- Bypass switch has 4 positions and bypasses only car or landing doors.
- **Position 0:** No bypass. This is for **NORMAL OPERATION** mode.
- **Position 1: 120 and 125** are bridged. This means:
  In systems with two automatic doors, landing door contacts of side B are bridged.
  In systems with semiautomatic doors landing door contacts are bridged
- **Position 2: 125-130** are bridged. This means:
  In systems with automatic doors, landing door contacts in side A are bridged.
  In systems with semiautomatic doors landing door locks are bridged
- **Position 3: 130-140** are bridged, namely car door contacts are bridged (side A and B).
- **Note:** In order to be able to move the car in inspection mode, while door contact are bridged, door limit switches **KL1** (for car door side A) and **KL2** (for car door side B) must have been already installed and defined.



| AUDIBLE AND FLASHING DEVICE (Only for EN81-20 Standard) |
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- When the lift is moved in the bypass mode, it gives an audible and light warning.
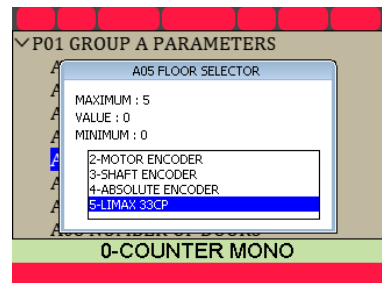
- It can be mounted anywhere under the cabin.

| CAR LIMIT SWITCH |
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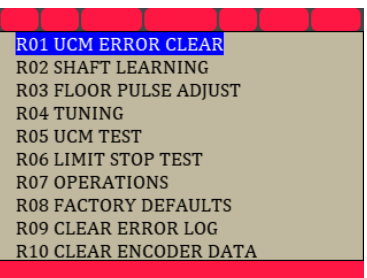| | |
|---|---|
| • Mount mechanical limit switch with roller by using supplied metal bracket onto the cartop.<br>• Connect its cable to X-KLSK socket to PWH board in inspection box.<br>• Move the car to downwards with inspection or recall command to the position where the car is just below the shaft limit.<br>• Place and fix the lower shaft limit cam there.<br>• Move the car to upwards with inspection or recall command to the position where the car is just above the shaft limit.<br>• Place and fix the upper car limit cam there. |  |

| INSTALLATION OF FLOOR SELECTOR AND ADJUSTING FLOORS |
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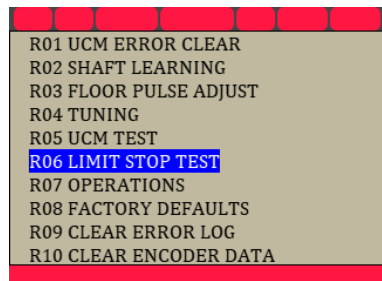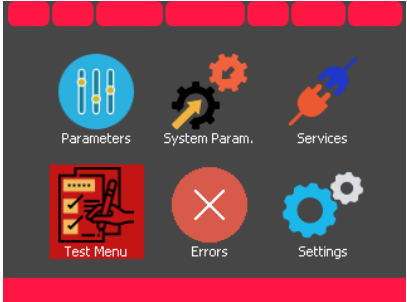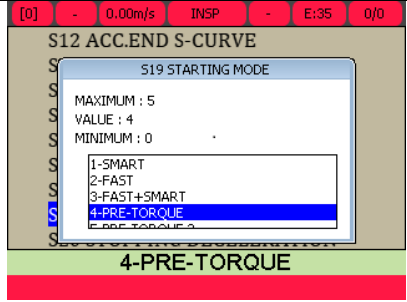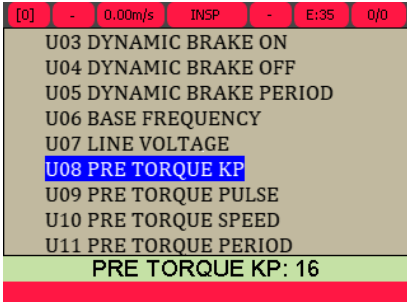| | |
|---|---|
| • After selecting the floor selector system that you are going to use in parameter **A05** go to the document in Appendix-1 about floor selector installation.<br><br>• Installing shaft switches, teaching floor levels and fine floor adjustments is explained in this manual. |  |

| CLEARING PERMANENT ERRORS |
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| • Some critical errors, mainly UCM (unintended car motion) error block the lift and do not allow further operation.<br>• These errors are even not cleared when the system is switched off.<br>• The only way to get rid of them is using a special error clearing section.<br>• Go to SERVICES icon and then select line **R01-UCM-CLEAR ERROR** in services menu. |  |

| TESTING SAFETY FUNCTIONS |
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| • There are a number of test routines implemented in software.<br>• They can be started in SERVICES menu.<br>• **SHAFT LIMIT TEST**<br>The performance of the shaft limit switches can be tested by using this test. See section 10.2 in device user manual for detailed explanation of this test.<br>• **MANUAL UCM TEST**<br>This test has been implemented to simulate an unintended car motion situation and see the response of the system. See section 7.4 in device user manual for detailed explanation of this test. |  |

| LIFT TEST MENU |
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- There is a special utility for testing the lift in normal operation.
- To activate it select Test Menu icon.
- The doors or calls can be easily cancelled.
- A call to the top or bottom floor can be created.
- Any number of random lift travels can be executed automatically.
- A detailed explanation of Lift Test Menu is presented in user manual in section 10.1.
- After the installation of the lift has been completed run this routine to see if any function fails.
- This facility can be used later for troubleshooting by enabling or disabling some peripherals.

| ANTI-ROLLBACK and PRE-TORQUE ADJUSTMENTS |
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- AE-MAESTRO offers mainly two technics to prevent anti-rollback in starting phase.
- One is **ANTI-ROLLBACK** application.
- Second one is **PRE-TORQUE with load sensor feedback.**
- Pre-torque application needs feedback of the load in the cabin.
- Therefore, pre-torque method can be used only if the car has a weight measuring device installed.

| SETUP OF ANTI-ROLLBACK SYSTEM (without load sensor) |
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- To activate Anti-Rollback function set **S19-STARTING MODE** in **SPEED PARAMETERS** as **S19=4**.
- This application can be used without load sensor as **ANTI-ROLLBACK.**
- If rollback still presents, go to **P09-SPECIAL PARAMETERS** menu and adjust parameters **U08, U09, U10** and **U11** to get a better result. Read **section 5.5 of user manual f**or better understanding of the function of these parameters.
- Please be aware of that the configuration that gives best comfort **may vary depending on the motor type and application**. **You may need some trials**.

| PRE-TORQUE ADJUSTMENTS WITH LOAD SENSOR |
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- In pre-torque method a torque is applied to the motor before opening the brakes.
- The magnitude and the direction of the torque is estimated **regarding to the output of the load measuring** device.
- A load sensor system is required as the feedback loop.
- Go to the Installation Manual: **AP06-AEM INSEN_PRET_SENSOR** for the installation procedure of the load sensor and pre-torque.

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