Lester Control Systems Ltd

Unit D, 18 Imperial Way, Croydon, Surrey, CR0 4RR.
Tel: **020 8288 0668**
Fax: 020 8288 0667
Email: info@lestercontrols.co.uk
www.lestercontrols.co.uk

ALMEGA2 POSITIONING SYSTEM: QUICK SETUP GUIDE "HYDRAULIC, KP" ISSUE: 3 Date: 05/04/2019

1. PRE-CHECKS (see page 5).
2. SETTING THE OVERRUN DISTANCE
   In general the default value of 500mm should suffice to cover the max distance the lift could ever overrun. However check this distance to ensure the max shaft position values are set correct, before using in normal operation. They can also be adjusted after the learning run.
   a. Set parameters MENU->POSITIONING SYSTEM PARAMETERS->OVERRUN TOP/BOT, typically-500mm.
3. CLEARING OUT THE FLOOR LEVELS / PREVIOUSLY LEARNED VALUES
   This is recommended for each new installation to clear (at the start of installation) any previously learned floor position values. If this is not carried out the lift may have limited travel because of incorrect information such as the terminal limits. **A common occurrence is the Lift does not go UP on inspection.** This feature can only be selected when on inspection. **Once the lift has been commissioned DO NOT USE THIS FEATURE, IT WILL WIPE ALL FLOOR LEVELS!**
   a. Select option MENU->POSITIONING SYSTEM INFO->CLR ALL FLOOR LEVELS->YES to clear floor levels, terminal limit positions, and correction information. ***Note only when on Inspection***
4. SETTING THE TERMINAL LIMITS
   a. **If parameter "SOFTWARE TERM LIMITS" = NO, Mechanical Terminal Limit Switches are fitted.**
      i. Set Terminal Stopping limit switches above/below, top/bot floor level as required.
   b. **Else if Parameter "SOFTWARE TERM LIMITS" = YES.**
      Note: Software terminal limits are NOT recommended when using an Over-speed Governor Encoder because excessive rope slip could cause the terminal limits to move position and hence the lift could either under-travel, or over-travel onto the Over-travel limits.
      i. Set parameter MENU->POSITIONING SYSTEM PARAMETERS->UP TERM LIMIT DIST as desired (distance above top floor level). Typically set at 25mm.
      ii. Set parameter MENU->POSITIONING SYSTEM PARAMETERS->DN TERM LIMIT DIST as desired (distance below bot floor level). Typically set at 25mm.
      iii. **If Terminal Limits are required before the LEARN RUN (i.e. manual setting)**
         1. Take the lift to the terminal floors and record the Absolute Top / Bottom Position Values, Position Value found by pressing MAIN MENU then LIFT / GROUP VIEWER and reading P=????
         2. Enter the values into system as ENTER FLOOR LEVELS (6). (POSITIONING SYSTEM PARAMETERS->FLOOR LEVELS).
         3. The terminal limits will now be set e.g. 25mm above and below top/bot floor levels. The lift will stop on these on Inspection Control.
5. LEARNING THE FLOOR LEVELS BY TAKING THE LIFT TO EACH FLOOR ON INSPECTION.
   a. If PANEL TEST CONTROL is fitted
      i. Switch to Inspection.
      ii. Take the lift to the bottom, and ensure not on the mechanical stopping limit (so the bottom floor level is not below the limit!)
      iii. Record the bottom floor level. Position Value is found by pressing MAIN MENU then LIFT/GROUP VEIWER and reading P=????
      iv. Take the lift UP to the next floor level, and Record the floor level.
      v. Continue until all floor levels have been recorded.
   b. Else if PANEL TEST CONTROL is NOT fitted
      i. On the main terminal rail (lift shaft/car side) remove the wire in terminal **TS** and mark it, then wire in the same terminal as **TS1.** This will switch to Inspection.

ii. Take the lift to the bottom (by bridging the Test Down connections TF and TD). Ensure not on the mechanical stopping limit (so the bottom floor level is not below the limit!)
iii. Record the bottom floor level. Position Value is found by pressing MAIN MENU then LIFT/GROUP VEIWER and reading P=????
iv. Take the lift UP to the next floor level, and Record the floor level.
v. Continue until all floor levels have been recorded.

Fig 1

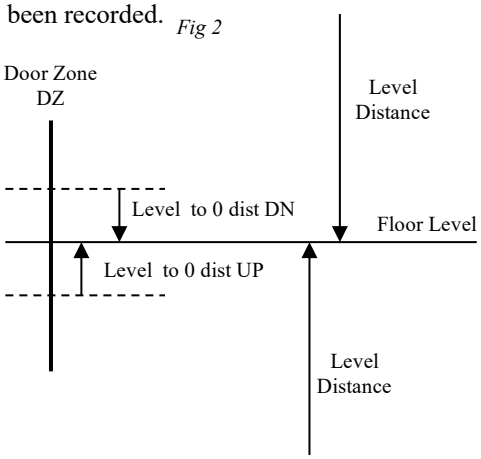
Typical Table of Results (3m floor heights)

Floor 3	= 7000mm
Floor 2	= 4000mm
Floor 1	= 1000mm

Typical Settings (0.5m/s)

Level To 0 Dist UP	= 25mm
Level To 0 Dist DN	= 25mm
Level Distance	= 180mm
Decel Rate	= 200mm/s sqrd

Fig 2



6. ENTER FLOOR LEVELS
Once the levels have been learned / recorded a table will be produced (as Fig1). These need to be entered into the position system as Fig 3 below. Absolute mode is selected via the option box (GREEN when selected), otherwise UP / DN adjust is selected.
    a. From the menu POSITIONING SYSTEM PARAMETERS->FLOOR LEVELS, select each floor in turn and use the selection wheels to adjust the absolute position in millimetres.

0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	2 3 4 5 6	0 1 2	0 1 2	0 1 2

Fig 3

7. PUT THE LIFT ON PREPARE TO TEST CONTROL (DOORS OFF)
    a. Press MAIN MENU then ENGINEERS SELCTION, or
        i. press MAIN MENU then PARAMETERS then SPECIAL SERVICE2 on the screen.
    b. Move the cursor DOWN to highlight “PREPARE TO TEST CTRL”; Press SELECT
    c. Select the Option DOOR OFF.
    d. Press OK.
8. ADJUSTING THE LEVELLING TIME (FROM THE CONTROL PANEL) (see Fig 2)
The levelling distance is pre-set at 180mm to allow 3 seconds of levelling at a typical level speed of 60mm/s (0.06m/s). It is recommended to have at least 3 seconds of level speed to allow the lift to consistently settle on level speed for differing load / oil conditions, thus maintaining floor level accuracy.
    a. Run the lift UP to a floor (preferably a middle floor to avoid terminal / over-travel limits).
    b. Record the time on level speed. If it is more than 3 seconds increasing the parameter POSITIONING SYSTEM PARAMETERS ->DECEL RATE will decrease the level distance and hence time. Similarly reducing the DECEL RATE will increase the level distance and hence time.
9. ADJUSTING THE LEVEL TO ZERO DISTANCE UP/DN (FROM THE CONTROL PANEL) (see Fig 2)
For example the 3 floor lift as Fig1.
    a. Run the lift UP to a floor (preferably a middle floor to avoid terminal / over-travel limits).
    b. Make a note of the position it stops at (e.g. 3995).
    c. Run the lift DN to the same floor. Make a note of the position it stops at (e.g. 4007).
    d. The results show in the UP direction the lift stopped LOW by 5mm and stopped HIGH in the DN direction by 7mm. To compensate for this the parameters POSITIONING SYSTEM PARAMETERS ->LEVEL TO ZERO DIST UP/DN have to be adjusted accordingly. Thus reducing the UP distance by 5mm and the DOWN distance by 7mm will compensate. **Increasing the distance compensates for overshooting floor level. Reducing the distance compensates for stopping short of floor level.**
    e. Try again to the same floor until the target value of 4000mm ±2mm is achieved. This procedure only has to be done for one floor, the other floors will be accurate according to these settings.
    f. For a 2 floor lift adjust LEVEL TO ZERO DIST UP/DN for the top /bottom floors respectively.
10. PUT THE LIFT ON PREPARE TO TEST CONTROL (DOORS PARK OPEN).
    a. As 7(a/b/c/d), but Press DN ARROW to display “PARK OPEN”; Press ENTER

11. SET FLOOR LEVELS.
Up to this point the actual physical floor levels should NOT have been set. The aim was to setup the positioning system to stop at the learned values rather than the actual floor levels. NOW is the time to set the actual floor levels from within the lift car!
    a. Travel to each floor in turn, making a note of the position error in mm. Travelling to each floor in both directions IS NOT NECESSARY as the system should be the same for both UP and DOWN.
    b. From the menu POSITIONING SYSTEM PARAMETERS->FLOOR LEVELS, select each floor in turn and use the selection wheels to adjust the absolute position in millimetres as Fig 4 below.

0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	2 3 4 5 6	0 1 2	0 1 2	0 1 2

Fig 4

12. SETTING UP RE-LEVELLING.
Only setup re-levelling when the floor levels are correctly set otherwise the position point will be inaccurate thus the re-levelling operation will most likely report warnings and errors. As can be seen from Fig 5 the distances are short so accurate floor levels in the first place will ensure trouble free operation.

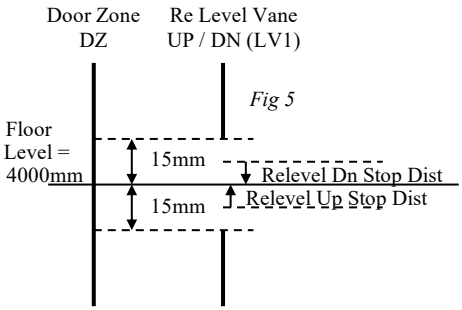


Fig 5

    a. Ensure Re-level vane is set 15mm above / below floor level as shown in fig 5. Test for Re-level UP as follows:
    b. Lower the lift down until it actuates the re-level vane.
    c. Ensure the lift re-levels UP on level speed.
    d. Make a note of the position where it stops, e.g. 3997.
    e. The result shows in the UP direction the lift stopped LOW by 3mm. Therefore decrease POSITIONING SYSTEM PARAMETERS ->RELEV UP STOP DIST by 3mm to compensate.
    f. **Increasing the distance compensates for overshooting floor level. Reducing the distance compensates for stopping short of floor level.**
    g. Repeat the procedure for relevel DN (if reqd). Adjust parameter POSITIONING SYSTEM PARAMETERS ->RELEV DN STOP DIST to compensate.

13. LIMITS (SLOWING/STOPPING) AND BUFFER TESTS
A set of dedicated buttons are available to assist in the testing of the slowing limits, stopping limits and lift buffers (i.e. buffer test). To make the buttons appear press and hold the shaft area of the screen for 5 Seconds. Once the buttons appear they need to be held under “constant pressure” to invoke the function. If the buttons are not pressed for a period of 20 minutes they will disappear. Also to clear the buttons, simply press MENU and press LIFT/GROUP VIEWER to re initialise the lift viewer. (see Fig 6).
    a. TESTING THE SLOWING LIMITS
    Press **TOP** button to register a top car call and, then press **SLOW LIMIT TEST** button under constant pressure to inhibit the STEP signal, thus forcing the lift to slowdown via the slowing limit. Press **BOT** to register a bottom car call and repeat the above process.
    b. TESTING THE TERMINAL LIMITS
    Press **TOP** button to register a top car call and then press **STOP VANE TEST** button under constant pressure to inhibit the stopping signals, thus forcing the lift to stop on the terminal limit. Press **BOT** to register a bottom car call and repeat the above process.
    c. TESTING THE OVERTRAVEL MECHANICAL BUFFERS (BUFFER TEST)
    Note this function is to be used only by responsible Lift Test Engineers!
    Press **TOP** button to register a top car call and then press **BUFF TEST** button under constant pressure to inhibit the **slowing**, **slowing limits** and **stopping signals**, thus forcing the lift to crash stop onto the lift buffers on HIGH SPEED! Press **CPB** to register a bottom car call and repeat the above process.
14. CAN/CANopen INFORMATION
    a. The Positioning system is designed for use with Position Devices incorporating CAN or the industry standard CANopen communication protocol. Therefore information can be transferred from the device and viewed by selecting option MENU->POSITIONING SYSTEM INFO-> CAN/CANOPEN INFO. In particular the error information can be viewed as below:
        i. Schmersal USP: = USP wire Errors / Warnings / CANopen information.
        ii. Hengstler AC58: = Contains Alarm / Warnings / CANopen information.

iii. CEDES = APS Status / Errors /Warnings / CAN Information

15. FURTHER INFORMATION FOR USE WITH AN OVERSPEED GOVERNOR ENCODER (If fitted)

a. **Resetting the Absolute Position:**
It may be necessary to reset the absolute position of the lift for the following reasons:
   i. Excessive Correction: See below
   ii. Clear Correction Levels: With the lift physically at the bot flr level, select to clear.

Select option MENU->POSITIONING SYSTEM INFO-> RSET ENCODER POSITION ->YES to reset the absolute position of the encoder to the position of the bottom floor level.

b. **Correction Point Moved:** It is vital that correction points do not move once set after a learn run. IT IS STRONGLY RECOMMENDED THAT CORRECTION SENSOR / POINTS ARE FIXED SO THAT THEY DO NOT MOVE. If they do move they will affect floor levels to the amount moved (i.e. 30mm UP if moved 30mm UP etc). Rectify by (v) "Corr Fault Info" (as below)

c. **Correction Point Missing:** If a correction point is not found the event "CORRECT POINT MISSING" is generated in the event logger, and the position error will NOT be corrected! This can be caused by (i)-(v) as "Corr Fault Info" (as below).

d. **Correction Point exceeded:** If the level of correction is exceeded, the event "POS DEV CORR EXCEEDED" is generated in the event logger, and the position error will NOT be corrected! The level in the software is typically set to 50mm. This can be caused by (iv) or (v) as "Corr Fault Info" (as below).

e. **Correction Fault Info:** When the lift has arrived at its destination it looks for a correction point before stopping. If missing / exceeded the lift will still operate as normal but floor levels will slowly drift over time (due to rope slip) until the appropriate action [as below] is taken.
   i. Corr Point missing [re fit corr point]
   ii. Corr Sensor Failed [new sensor]
   iii. Floor Level adjusted > half corr vane length (i.e. >150mm for a 300mm vane) [move corr point central then new learn run].
   iv. Excessive OSG Rope Slip i.e. the OSG trips and the rope slips [move rope back, or reset abs posn, or new learn run]
   v. Corr Sensor Moved [Move back, or new learn run]

f. **Correction information:** Select option MENU->POSITIONING SYSTEM INFO-> CORRECTION INFO to view the current correction information. From this menu correction levels can be viewed for each floor. A test would be to run the lift to each floor and the current level should be similar for each floor. If one is vastly different to all the rest then typically the correction point for that floor has moved.

g. **Position Device Power Output:** Typically the position encoder will be powered through a relay output from the micro processor. This is to reset the encoder under communications failure by re-cycling the power. If a communications lost condition is detected this output will de-energise every 10 seconds for 2 seconds to re-cycle the power.

16. PRE-CHECK INFORMATION:

A. Door Zone Sensor / Door Zone Actuators Fitted At Each Floor Level.

a. Ensure **Door Zone Actuators (DZA's)** are fitted at each flr lev and operate the **Door Zone Sensor (DZS)** fitted on the lift car. Also the **DZA's** are clear of any obstructions of the lift car and **DZS**.

b. Also ensure the signal from the **Door Zone Sensor** can be seen in the lift controller. This can be achieved by pressing MAIN MENU then LIFT/GROUP VEIWER on the Almega keypad which will display the screen as Figs 6/7 below:

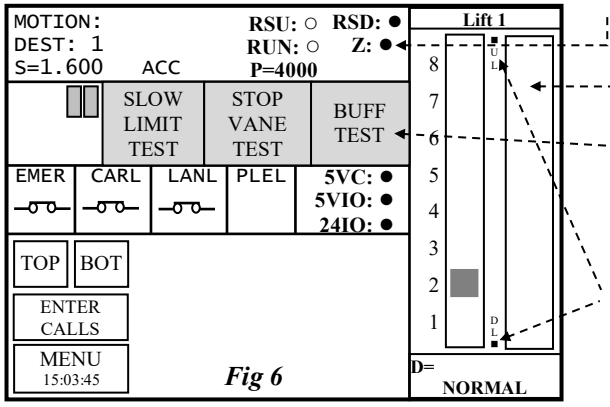


Fig 6

DZ sensor / Input must be ON!

Note for special Buttons
Press and Hold the shaft Area for 5 seconds to make the test buttons appear.
3 Test Buttons appear in the area dedicated for extra door operators.

If the software terminal limit parameter is set, the terminal limits will appear in the lift viewer as shown.

Filled RED	= no position value assigned
Filled GREEN	= limit is ok
Not Filled	= limit is broken (on the limit)

B. Motor Wiring / Speed

a. Ensure motor windings and valves are wired correctly. Ensure the motor runs at the correct / expected speed when on Inspection, Normal and Level Speed. E.g. for 0.3m/s, the Almega LCD display will show "S = 0.30", and is the actual measured speed.

C. Almega Parameters

a. TRAVEL SETUP (Press Menu-> PARAMETERS->TRAVEL TIMES)

STOP TIME	= 0	Milliseconds
BRAKE RELEASE TIME	= 0	Milliseconds

b. POSITIONING SYSTEM SETUP (Press Menu-> PARAMETERS->POSITIONING SYSTEM SETUP)

SPEED PROFILE CONTROL	= NO
WITHIN FLOOR LEV DISTANCE	= 35mm
LEVEL TO ZERO DISTANCE UP	= 25mm
LEVEL TO ZERO DISTANCE DN	= 25mm
LEVELLING DISTANCE	= 180mm
ACCEL RATE	= 1500mm/s^2
SLOW DIST CALC NON PROF CTRL	= TRAVEL SPEED PAR
OVRSPEED GOV DIAMETER	= Diameter of OSG (i.e. 300mm for Atwell VG OSG)

D. Slowing Limits

a. Ensure slowing limits are set as the backup slowing distances (BSD) as below. (Also see shaft wiring drawing). Setting the distance too great may generate events "SLOWED: UP/DN SLOW LIMIT" and result in inaccurate floor levels at the terminal floors!

b.

Speed (m/s)	BSD (mm)	Speed (m/s)	BSD (mm)	Speed (m/s)	BSD (mm)
0.2	= 250	1.0	= 900	2.0	= 2150
0.5	= 450	1.25	= 1200	2.5	= 3000
0.75	= 700	1.6	= 1600	3.0	= 3900

E. Overspeed Governor Encoder (if fitted)

a. Ensure Correction Sensor/Points are firmly fixed and cannot move. Also central to floor level.

b. Ensure the encoder coupling to the OSG is fitted correctly and all the grub screws are tightened.

17. SOFTWARE SLOWING LIMITS (Using Cedes Dual Positioning System):

A. Almega2 Parameters

Note: When non-profile setup (Hydraulic), only the parameters **underlined and in BOLD** apply.

a. POSITIONING SYSTEM (Press MENU->POSITIONING SYSTEM PARAMETERS)

- **i. SOFTWARE SLOW LIMITS = YES**
- ii. SLOW LIMIT DECEL RATE = 1700
- iii. SLOW LIMIT JERK RATE = 1700
- **iv. CALC SLOW LIMIT DIST HS = (READ ONLY)**
- **v. SLOW LIMIT RESET DIST = 750**
- **vi. SLOW LIMIT DIST ADJUST = -50**

b. TRAVEL SPEEDS (Press MENU->PARAMETERS->TRAVEL SPEEDS)

- **i. SLOW LIMIT COMMS LOST SPEED = 0.5 m/s**

B. RSU and RSD status with software slowing limits.

a. Ensure Bottom and Top floors are assigned.

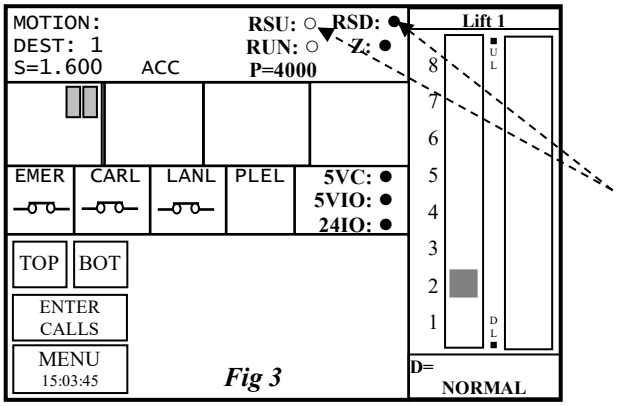


Fig 3

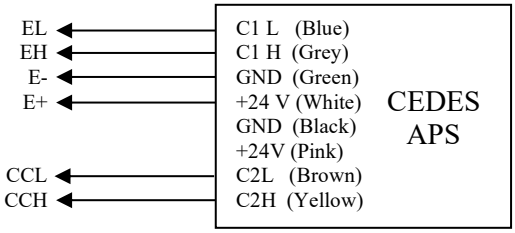
If the SOFTWARE SLOW LIMITS parameter is set, the RSU/RSD will indicate the software slow limit status as below.

Filled RED = Top/Bottom floor not assigned
Filled ORANGE = Slow limit comms lost
Filled GREEN = Activated
Not Filled = Not Activated

C. Wiring

a. Ensure CEDES channel 1 connected to Position Encoder CAN

b. Ensure CEDES channel 2 connected to CAR CAN



D. Calculated Slowing Limit Distance HS

This can be viewed from the parameter (POSITIONING SYSTEM PARAMETERS->CALC SLOW LIMIT DIST HS). This parameter is updated every 1s for the speed HS. It's also updated when running with the HS value.

E. Non-profile setup

a. When using non profile control and slow dist calc=Travel Speed PAR, i.e. hydraulic, adjust the backup slowing limit by setting the 'SLOW LIMIT DIST ADJUST' by x value.
e.g. when it is set to default -50, it puts the backup slowing limits -50mm behind the actual slowing distance. (Press MENU->POSITIONING SYSTEM PARAMETERS-> SLOW LIMIT DIST ADJUST)

b. The debug screen will show the last up/down slow distance.
(Press MENU->POSITIONING SYSTEM INFO-> DEBUG INFO)