

APPLICATION NOTE	AN-Lift-0003v100EN
PROCEDURE FOR ANALOG TORQUE BIAS ADJUSTMENT	

Inverter type	FRENIC Lift
Software version	All versions
Required options	Not required
Related documentation	Reference Manual
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Languages	English

Introduction.

The following procedure describes the adjustment of the torque bias function with FRENIC Lift inverter when using analog signal from a load cell (that measures the load inside the cabin).

Procedure.

Please follow the procedure in the order of the steps.

Step 1. Select torque bias from analog signal (load cell) by setting L54=0

Step 2. Configure the analog input according to the load cell signal connection.

We have to configure the proper function to select the analog input to which the load cell signal is connected, according to table 1.

Analog input used (Load Cell signal)	Function to be configured
Terminal 12 (0-10 V)	E61=4
Terminal C1 (4-20 mA)	E62=4
Terminal V2 (0-10 V)	E63=4

Table 1. Selection of the analog input used for the load cell signal.

All signals are added, therefore it is recommended to set to 0 the functions corresponding to the analog inputs not used (if they are not used for another function).

Step 3. Determination of the load cell signal polarity.

In this step we have to observe if the signal from the load cell increases when the load of the cabin increases or if the signal decreases when the load of the cabin increases.

To do so increase the cabin load and observe if the signal from the load cell increases or decreases.

The result of this observation will be used in step 6.

Step 4. Configuration of the load cell signal **OFFSET**.

To perform this adjustment load the cabin until it is balanced with the counterweight.

This adjustment has to be made with the lift at standstill and the brake applied (closed).

On the multi-function keypad press the  key in running mode until page 20 “TORQUE BIAS BALANCE ADJ.” is monitored (it is called BTBB) in the LED display. BTBB value shows the ratio to the motor rating torque in percentage (%).

The function to be adjusted depends on the analog input used, according to table 2 (C31, C36 or C41).

Adjust the value of the selected function (C31, C36 or C41) until BTBB value becomes 0 (%).

Analog input used (Load Cell signal)	Function to be programmed for the Offset adjustment
Terminal 12 (0-10 V)	C31
Terminal C1 (4-20 mA)	C36
Terminal V2 (0-10 V)	C41

Table 2. Offset adjustment function.

Step 5. Determination of the UP or DOWN direction of the cabin.

We have to determine if FWD or REV direction corresponds to UP or DOWN direction of the cabin.

To do so move the lift (in inspection mode) and observe if FWD or REV is displayed on the multi-function keypad and observe the direction of movement (UP or DOWN) of the cabin at the same time.

It is important to note that FWD or REV refers to the status of the inverter, displayed in the keypad in Running mode in the right upper corner (figure 1). **DOES NOT** refer to the status of the digital inputs, because the functions of the digital inputs may be changed (i.e.: FWD input can be programmed to REV function = 99 and viceversa).

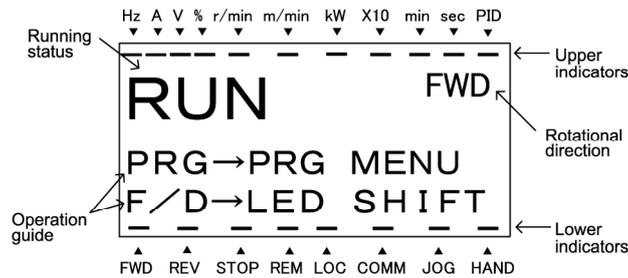


Figure 1. Display of running status.

The result of this observation will be used in step 6.

Step 6. Configuration of the load cell signal GAIN.

To perform this adjustment, unload the cabin (cabin must be empty).

Before proceeding to the gain adjustment, set the analog input gain to 100 %. The gain function depends on the analog input used, according to table 3.

Analog input used (Load Cell signal)	Function to be programmed for the Gain adjustment
Terminal 12 (0-10 V)	C32=100 %
Terminal C1 (4-20 mA)	C37=100 %
Terminal V2 (0-10 V)	C42=100 %

Table 3. Analog input gain function.

On the multi-function keypad press the  key in running mode until page 21 “TORQUE BIAS GAIN ADJ.” is monitored (it is called BTBG) in the LED display. BTBG value shows the ratio to the motor rating torque in percentage (%).

According to the table 4, determine the initial values and polarity of the gains at the FWD and REV directions (functions L60 and L61).

Motor rotational direction when the elevator is going UP (Step 5)	When the load increases, the load cell signal will (Step 3):	Initial values and polarity of L60 and L61 data	Function codes to be set with no load	
			UP	DOWN
FWD	Increase	+100 (%)	L61	L60
	Decrease	-100 (%)		
REV	Increase	-100 (%)	L60	L61
	Decrease	+100 (%)		

Table 4. Gains to be adjusted and their initial values and polarity at the FWD and REV directions.

Run the elevator UP at a speed of 2 to 10% of the elevator rated speed. Adjust L61 value (or L60, according to table 4), so that BTBG becomes approximately 0 (%) **when the speed is constant.**

Run the elevator DOWN at a speed of 2 to 10% of the elevator rated speed. Adjust L60 value (or L61, according to table 4), so that BTBG becomes approximately 0 (%) **when the speed is constant.**

Figure 2 shows the flowchart for the adjustment of functions L60 and L61.

The procedure is completed.

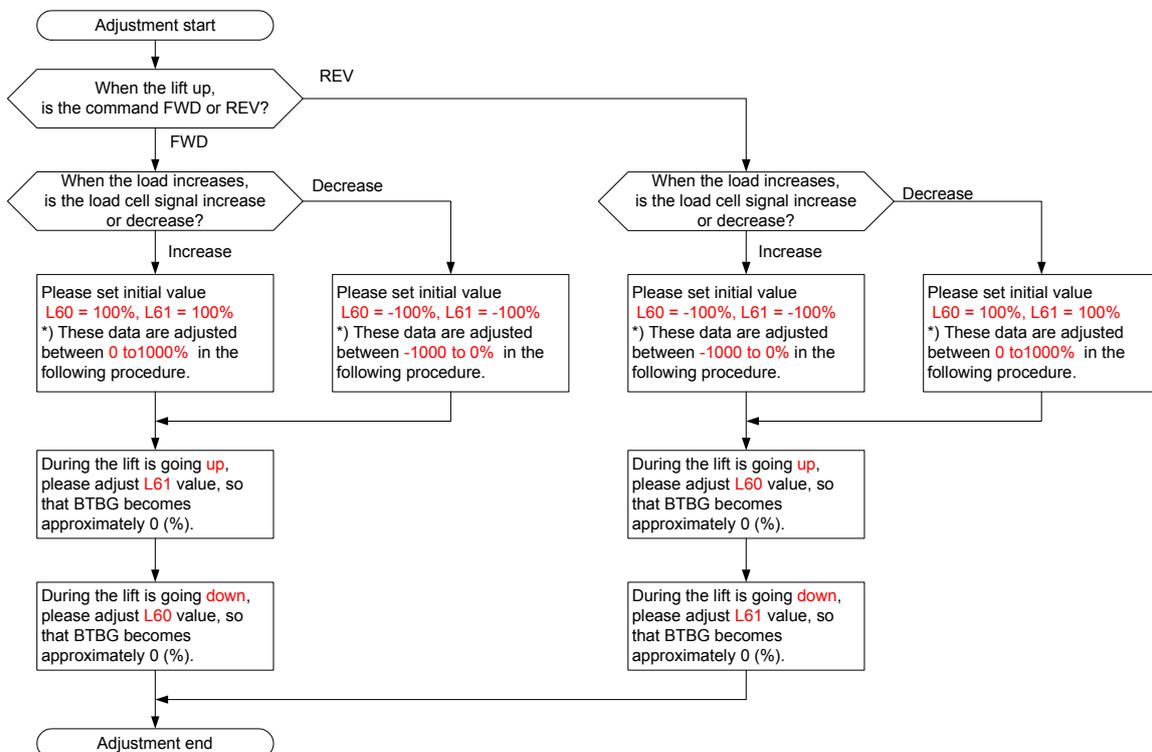


Figure 2. Flow chart for the adjustment of functions L60 and L61.

Document history.

Index	Version	Date	Applied by
1.0.0	First	17/03/2008	David Bedford