SETTING V3F16L DRIVE PARAMETERS IN MONOSPACE

1 PRODUCTS/COMPONENTS AFFECTED

MonoSpace Release 2.0 with V3F16L drive.

V3F16L drive module 769900	rev. 1.1	rev. 1.2
V3F16L drive software (LCE menu 6_97)	ver. 0.49	ver. 0.55

NOTE: TRANSYS INSTRUCTIONS ARE PUBLISHED IN FL-11.65.031.

2 DESCRIPTION OF THE PROBLEM

2.1 Motor type setting

Parameters may be inconsistent if fitter starts to change motor type as instructed but does not really change motor type parameter (LCE menu 6_1) from default value.

2.1.1 Correction

Inconsistent parameters can be avoided by changing motor type to totally different type, and then to the requested type.

2.2 Incorrect shaft setup data causes running to the buffer

Shaft setup may record wrong value for first floor position if setup is started too close to 61:N. When running to first floor, elevator runs to the buffer.

2.2.1 Correction

Check position of 51:N and verify that setup starts >20mm below 61:N edge.

2.3 Poor stopping accuracy

Elevator may stop few millimeters before floor level. This problem is more common with drive software version 0.55 (LCE menu 6_97) than with previous version 0.49.

2.3.1 Correction

Stopping accuracy improves by adjusting tacho filter time (LCE menu 6_23) from default value 30 to 10.

2.4 Failed start and recovery with special start at topmost floor

Special start could cause problem in topmost floor by opening 51:U switch. Problem occurs with high travels and no load situation.

2.4.1 Correction

Problems in topmost floor can be minimized by checking 51:U position (80..100 mm from floor level). Check balancing of the elevator and adjust K parameters (LCE menu 6_53..56) if needed. Adjust also magnetizing current ratio (LCE menu 6_52) and acceleration factor (LCE menu 6_57) if needed.

2.5 Incorrect inspection speed

Factory drive tester overwrites inspection speed (LCE menu 6_28) and can not put it back to default value (0.3 m/s) if the test program is aborted.

2.5.1 Correction

Restore default parameters or set the inspection speed (LCE menu 6_28) manually to 0.3 m/s.

2.6 Elevator does not to run with half load

Shaft friction may cause starting problems.

2.6.1 Correction

Check guide rails, car sling and the counterweight frame, and try to reduce shaft friction. Adjust magnetizing current ratio (LCE menu 6_52) and acceleration factor (LCE menu 6_57) if needed. Adjust also K parameters (LCE menu 6_53..56) if needed.

2.7 Setup stops to 77:U in 2 floor/stop elevator

V3F16L position control requires a dummy floor 61 magnet with short floor distances (< 5 m).

2.7.1 Correction

Add dummy floor 61 magnet into middle of the shaft.

V3F16L Parameter Table 784393

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Changed by: J. Laaksonheimo	(C) KONE Corporation	No of Pages:	2
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The document id of this sheet must match with the id reported by LCE menu 6_0	LCE menu	unit	range	default value	actual value
Elevator parameters					
- **document identification** of the parameter set (= this sheet)	6_0		5000...	**5001**	
- **motor type** (MXmm.Ggg)	6_1		5.10 , ..., 10.20	10.20	
- **nominal speed** of the elevator	6_2	m/s	0.63, ..., 1.00	1.00	
- **elevator load**	6_3	kg	200, ..., 2 000	1000	
- **roping**	6_4		2 , 4	2	

NOTE1! Before motor type can be changed number of pole pairs (6_59) must be set to 0. NOTE2! Before drive type can be changed current measurement scaling (6_38) must be set to 0.

User information					
- **Stator frequency** (synchronous frequency at nominal speed)	6_10	Hz	0.0, ..., 50.0	19.8	
- **Frequency Scaling** (stator frequency / maximum stator frequency)	6_11		0.000, ..., 1.000	0.869	

NOTE! These parameters are calculated by drive and can be read only.

Additional elevator parameters					
- **acceleration** (determines also jerk)	6_20	m/s^2	0.40, ..., 0.65	0.50	
- **jerk** (manually changeable)	6_21	m/s^3	0.40, ..., 1.20	0.80	
- **D factor** (= derivativel gain of speed controller)	6_22	s^2/m	0.0, ..., 15.9	3.5	
- **tacho filter time**	6_23	ms	0, ..., 50	30	
- **speed reduction** (= reduced speed / nom. speed)	6_24		0.30, ..., 1.00	1.00	
- **tacho fault counter**	6_25		0, ..., 10	5	
- **start delay** (= brake open command -> speed ref.)	6_26	s	0.10, ..., 0.50	0.15	
- **vane length** (= electrical length of 61 vanes)	6_27	mm	50, ..., 500	150	
- **inspection speed** (= elevator speed in inspection or RDF mode)	6_28	m/s	0.3, 0.5	0.3	
- **final jerk distance** (= additional distance used for final jerk)	6_29	mm	0, ..., 250	**125**	

NOTE! Final jerk distance (6_29) changes also Distance advence (6_48).

Machinery Parameters and Variables				
- **Default parameter lock** (0 = open, 1 = locked)	6_50	0, 1	1	
- **tacho scaling factor**	6_51	0.400, ..., 0.900	0.900	
- **Base amplitude** (I_{mag} / I_{nom} at start)	6_52	0.500, ..., 1.000	0.75	
- **Minimum voltage** (K1)	6_53	0.000, ... , 0.050	0.017	
- **Load compensation low** (K2)	6_54	0.000, ... , 0.300	0.153	
- **Load compensation high** (K3)	6_55	0.000, ... , 0.200	0.141	
- **Motor voltage** (K4)	6_56	0.229, ... , 0.415	0.294	
- **Acceleration Factor** ()	6_57	0.40, ... , 1.50	1.20	
- **Deceleration Factor** ()	6_58	0.00, ... , 0.80	0.25	
- **number of pole pairs**	6_59	0, ... , 15	10	

NOTE1! Default values for motor parameters (6_53, ..., 6_56 and 6_59, ...,6_68) are calculated when motor type (6_1) is selected. NOTE2! User can finetune parameters with LCE userinterface.

Commissioning and tests			
- **enable traction test**	6_80	0, 1, 2	0
- **motor torque measurement**	6_81	-1.500, ..., 1.500	0

NOTE! Traction and buffer tests are valid for one start only.

Permanent Store			
- **default parameters**	6_98	0, 1	0

3 CORRECTIVE ACTIONS

3.1 Drive parameter settings

Instead of AM-01.01.026-AP8 (-) 2001-12-20, chapter 26.3.2 Setting the Parameters, p. 91 (127) following procedure should be followed, when setting the elevator dependent parameters.

Step	Action	Note
1	Check drive software version.	6_97, should be 0.49 or 0.55 This is needed in step 12.
2	Set default parameter lock to 0.	6_50, value 0
3	Set the default parameters to 1.	6_98, value 1
4	Switch the power OFF and ON.	Factory default parameters are loaded and shaft setup is cleared, when power comes on. IMPORTANT! Loading of the parameters takes approx. 20 seconds. Do not disturb the drive module during that time!
5	Set number of pole pairs to 0.	6_59, value 0
6	Preset machinery type.	Change 6_1 to some other machinery type than wanted machinery type. This is needed to be sure that changes in step 11 will be made correctly.
7	Save parameters to permanent memory.	6_99, value 1
8	Switch power OFF and ON.	
9	Set elevator roping.	6_4, according to roping Changing roping does not start parameter calculation so it has to be set before other elevator parameters in step 11.
10	Set number of pole pairs to 0.	6_59, value 0
11	Set other elevator dependent parameters.	6_1, according to machinery type 6_2, according to nominal speed 6_3, according to elevator load
12	Set tacho filter time.	6_23, value 30 with drive software ver. 0.49 and 10 with drive software ver. 0.55.
13	Save parameters to permanent memory.	6_99, value 1
14	Switch power OFF and ON.	
15	Verify parameters.	Check parameters 6_1…6_3, 6_23 and 6_28. If 6_59 has zero value or 6_28 is not 0.3, restore factory default parameters and set parameters again.

3.2 Adjusting magnetizing current ratio and acceleration factor

Needed when elevator does not run with half load.

Step	Action	Note
1	Adjust magnetizing current ratio and acceleration factor	6_52, max. value 0.80 6_57, max. value 1.30
2	Save parameters to permanent memory.	6_99, value 1
3	Switch power OFF and ON.	Check that the problem disappeared and that there are no other faults.

3.3 Adjusting K parameters

Needed when elevator fails to start and recover with special start at topmost floor.

Step	Action	Note
1	Adjust minimum voltage (K1)	6_53, see max. value from table 1 or 2
2	Adjust load compensation high (K3)	6_55, see max. value from table 1 or 2
3	Adjust motor voltage (K4)	6_56, see max. value from table 1 or 2
4	Save parameters to permanent memory.	6_99, value 1
5	Switch power OFF and ON.	Check that the problem disappeared and that there are no other faults.

Table 1. Max. K parameter values for speed 0.63 m/s

Machine	MX05/10			MX06/10	MX10/10		
Load	320 kg	400 kg	480 kg	630 kg	800 kg	900 kg	1000 kg
6_53 (K1)	0.009	0.014	0.020	0.018	0.010	0.013	0.016
6_55 (K3)	0.065	0.082	0.098	0.092	0.070	0.079	0.087
6_56 (K4)	0.117	0.117	0.117	0.116	0.117	0.117	0.117

Table 2. Max. K parameter values for speed 1.0 m/s

Machine	MX05/10			MX06/10	MX10/10		
Load	320 kg	400 kg	480 kg	630 kg	800 kg	900 kg	1000 kg
6_53 (K1)	0.009	0.014	0.020	0.018	0.010	0.013	0.016
6_55 (K3)	0.104	0.130	0.155	0.145	0.111	0.125	0.139
6_56 (K4)	0.295	0.295	0.295	0.293	0.296	0.296	0.296

4 OTHER INSTRUCTIONS

Response of LCE user interface might be slow. Do not rush!

Fault code 0120 is shown several times with LCE software ver. 5.0.1. Fault code 0120 refers to warning of a start sequence failure and can be disregarded.

Elevator may stop few millimeters before floor level. Stopping accuracy improves by adjusting tacho filter time (LCE menu 6_23) between 10...30.

Drive need may be missing (LCE led) and shaft setup does not start. Switch power OFF and ON. Restart shaft setup.

Elevator has starting problems and there seems to be a torque problem to get the car moving. Machinery brake is perhaps not opening correctly. Adjust brakes and check that both brakes get power. See FL-04.06.005 (-) 2002-07-04 MX05, MX06, MX10 brake wiring problem.

Motor cable and main supply cable connectors may be damaged if there is used too big screw driver or excessive torque to tighten the screws.

MX05-10 q2 machineries and corresponding drive parameters

machinery type (see machinery plate)	MX05/10	MX06/10	MX10/10
motor parameters (LCE menu 6_1)	05.20	06.20	10.20

5 WHERE TO GET MORE INFORMATION

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3 CORRECTIVE ACTIONS

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4	Switch the power OFF and ON.	Factory default parameters are loaded and shaft setup is cleared, when power comes on. IMPORTANT! Loading of the parameters takes approx. 20 seconds. Do not disturb the drive module during that time!
5	Set number of pole pairs to 0.	6_59, value 0
6	Preset machinery type.	Change 6_1 to some other machinery type than wanted machinery type. This is needed to be sure that changes in step 11 will be made correctly.
7	Save parameters to permanent memory.	6_99, value 1
8	Switch power OFF and ON.	
9	Set elevator roping.	6_4, according to roping Changing roping does not start parameter calculation so it has to be set before other elevator parameters in step 11.
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KONE MonoSpace with V3F16L
Field Letter

3.2 Adjusting magnetizing current ratio and acceleration factor

Needed when elevator does not run with half load.

Step	Action	Note
1	Adjust magnetizing current ratio and acceleration factor	6_52, max. value 0.80 6_57, max. value 1.30
2	Save parameters to permanent memory.	6_99, value 1
3	Switch power OFF and ON.	Check that the problem disappeared and that there are no other faults.

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6_56 (K4)	0.295	0.295	0.295	0.293	0.296	0.296	0.296

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