



GALaxy IV – M1000 AC Drive QUICKSTART



WARNING

Elevator control products must be installed by elevator personnel who have been trained in the construction, maintenance, repair, inspection, and testing of elevator equipment. The elevator personnel must comply with all applicable safety codes and standards.



NOTE

Every precaution, whether or not specifically stated in this document, should be taken when installing, adjusting or servicing any elevator. All safety precautions should be followed to make sure life and limb of the service person and public is not endangered.

Power Requirement and Voltages

Check the power requirement and voltages according to the job schematics.

- 1) Wire Motor and Main Line Power as shown in job schematics.
- 2) Install and wire Governor.
- 3) Add temporary connections and set toggle switches on Main I/O Board GALX-1102 as shown below.
- 4) Wire the DBR temperature sensor to the temperature sensor board, if controller is equipped with dynamic breaking resistors.
- 5) Check/set parameters in controller LCD user interface. See "GALaxy IV Controller Settings" page of this guide.
- 6) Check/set parameters in drive. See "Drive Settings" page of this guide.
- 7) Wire encoder cable to the drive and check Encoder PPR.
- 8) Check PIC and PAL fault LEDS.
 - If LCD displays "Open" – check door lock/gate bypass switches.
 - If LCD displays "INS ERR" – make sure that the **INS** input is high and the **ACC**, **MRI**, **ICI**, and **AUTO** inputs are off.
- 9) Check speed and direction of motor rotation.
 - If platform runs slow, overcurrent fault on drive, or motor rotation or encoder channels are set wrong, check LE03 parameter on drive.

To configure the controller to operate a running platform for construction use, set toggle switches and install temporary connections as shown below.

Left Side of Board	Right Side of Board	Toggle Switches
S10 – GOV GOV – TF TF – BF BF – PS PS – HSS RG7 – RG5	HSS – FFS FFS – CST CST – UN UN – DN DN – INS	Door Lock Bypass – Down (Bypassed) Gate Bypass – Down (Bypassed) Independent – Down Auto Door – Down Stop Switch – Up (Run) Inspection – Down
Run Bug		1106/1107 I/O Board
Inspection Common – INS Inspection Up – IU Inspection Down – ID Inspection Enable – IEN (Cannot be held high)		FEP (on 1102 Board) – FEP (on 1106/1107 Board) FEP – MES MES – ALT ALT – MRS MRS- HWS HSW – HWS2
Main I/O Board Jumpers		
EQS1 – EQST (if earthquake mode is enabled)		

GALaxy IV Controller Settings

Preset the following parameters from the LCD User Interface “Adjustable Variables” menu.

Safety Processor Adjustable Variables Submenu (Motor Encoder Speed Feedback):	
<ul style="list-style-type: none"> TOP SPEED (contract speed FPM) ENCODER RPM (set to motor RPM) ENCODER PPR (set to motor encoder PPR) ENCODER TYPE (set to 4 = incremental) CONTROL TYPE (set to 2 = Tract DF) 2 STOP (0 = Mult – Stop; 1 = 2 Stop) REAR DOORS (0 = Front Only; 1 = Rear) UTS VELOCITY (set to TOP SPEED) DTS VELOCITY (set to TOP SPEED) 	<ul style="list-style-type: none"> INSP VELOCITY (set to 140) LEVELING VEL. (set to 140) ETS UP VEL. (set to TOP SPEED – only used for reduced stroke buffer) ETS DOWN VEL. (set to TOP SPEED – only used for reduced stroke buffer) SOFT STOP TIME (set to 3) PAL ETS UP VEL. (set to TOP SPEED) PAL ETS DN VEL. (set to TOP SPEED)
NTS Processor Adjustable Variables Submenu	
<ul style="list-style-type: none"> TOP SPEED (contract speed FPM) ENCODER RPM (set to motor RPM) ENCODER PPR (set to motor encoder PPR) ENCODER TYPE (set to 0 if using tape selector; set to 1 if using tapeless selector) UT VELOCITY (set to TOP SPEED) 	<ul style="list-style-type: none"> DT VELOCITY (set to TOP SPEED) UT1 VELOCITY (set to TOP SPEED) DT1 VELOCITY (set to TOP SPEED) UTn VELOCITY (set to TOP SPEED) DTn VELOCITY (set to TOP SPEED)
Car Motion Submenu	
When Using Tape Selector:	When Using Tapeless Selector:
<ul style="list-style-type: none"> TOP SPEED (set to Contract Speed) INSPECT SPEED (set to 25 FPM) ENCODER PPR (set to 64 PPR) ENCODER RPM (FPM value of Contract Speed and set) ENCODER TYPE (set to 4) MOTOR RPM (set to value of A1 => CONTRACT MTR SPD in M1000 Drive) 	<ul style="list-style-type: none"> TOP SPEED (set to Contract Speed) INSPECT SPEED (set to 25 FPM) ENCODER PPR (set to 10,000 PPR) ENCODER RPM (set to governor RPM) MOTOR RPM (set to value of A1 => CONTRACT MTR SPD in M1000 Drive)
	When Using APS Selector:
	<ul style="list-style-type: none"> TOP SPEED (set to Contract Speed) INSPECT SPEED (set to 25 FPM) ENCODER PPR (not used) ENCODER RPM (not used) MOTOR RPM (set to value of A1 => CONTRACT MTR SPD in M1000 Drive)
System Options Submenu	
Encoder Type:	Encoder Node:
<ul style="list-style-type: none"> 0 = Based on CONS.DAT file 1 = Turck Encoder 2 = Dynapar Encoder 3 = Wachendorff Encoder 4 = Tape Selector Feedback 	<ul style="list-style-type: none"> Not used for tape selector. If tapeless, then set node as follows: Turck = 63 Dynapar = 1 Wachendorff = 127 Note: This parameter gets set automatically when encoder type is changed.
	Encoder Baud Rate:
	<ul style="list-style-type: none"> 0 = 250K (default) 1 = 125k (used if communication errors)



For governor mounted encoders, to calculate the RPM, divide the contract speed of the car by the distance traveled in one revolution with the governor as shown below: $RPM = \text{Speed fpm} / (\text{diameter GOV (in feet)} * \pi)$

NOTE

- For a 1 ft. Dia. Governor: $RPM = 350 / (1 * \pi) = 350 / 3.1415 = 111.4$
- For a 16 in Dia. Governor: $RPM = 350 / (1.33 * 3.1415) = 350 / 4.188 = 83.5$ [NOTE: (16"/12" = 1.33ft)]

Drive Settings M1000 AC Drive

Preset the following parameters from the M1000 drive keypad.

Drive A1 Submenu			
Contract Car Speed	= CONTRACT CAR SPEED FT / MIN (OR FPM)		
Contract Motor Speed	= NAMEPLATE MOTOR RPM		
Encoder Pulses	= ENCODER PPR		
NTSD Speed	= 10 FT / MIN (OR FPM)		
NTSD Deceleration Rate	= 5.00 FT / SEC ²		
Motor Torque Limit	= 250%		
Regen. Torque Limit	= 250%		
S-Curve A2 Submenu			
Acceleration Ramp 1	= 7.99 FT / SEC ² (OR FPS ²)		
Deceleration Ramp 1	= 7.99 FT / SEC ² (OR FPS ²)		
Jerk & Acceleration Start	= 30.00 FT / SEC ² (OR FPS ²)		
Jerk & Acceleration End	= 30.00 FT / SEC ² (OR FPS ²)		
Jerk & Deceleration Start	= 30.00 FT / SEC ² (OR FPS ²)		
Jerk & Deceleration End	= 30.00 FT / SEC ² (OR FPS ²)		
Power Convert A4 Submenu			
Input Voltage	= RMS LINE – LINE VOLTAGE APPLIED TO DRIVE.		
UV Detect Level	= 80%		
Motor A5 Submenu			
Motor Rated Power (IM)	= NAMEPLATE HP		
Base Voltage (IM / PM)	= NAMEPLATE VOLTAGE		
Motor Rated Speed (IM / PM)	= NAMEPLATE RPM		
Motor Rated FLA (IM)	= NAMEPLATE AMPS		
Number of Poles (IM)	= NAMEPLATE # OF POLES (SEE BELOW)		
Maximum Frequency (IM)	= NAMEPLATE FREQUENCY HZ		
PM Motor Rated Capacity (PM)	= NAMEPLATE HP		
PM Base Voltage (PM)	= PM BASE VOLTAGE (PM)		
PM Motor Rated FLA (PM)	= NAMEPLATE AMPS		
PM Motor Poles (PM)	= NAMEPLATE # OF POLES (SEE BELOW)		
User Switches C1 Submenu			
Speed Command Source	= SERIAL HPV REF.		
Run Source	= SERIAL HPV SEQ.		
Serial Run Command Source	= TERMINAL + SERIAL		
Serial Command Mode	= HPV MODE 1		
Enc. 1 Rot. Direct	= FWD = C. C. W.		
Motor Rotation	= STANDARD		
Encoder Select	= ENDAT SIN/COS		
Ser. Enc. Comm. Spd.	= ?		
Logic Inputs C2 Submenu		Logic Outputs C3 Submenu	
Term S1 Func. Sel.	= RUN UP	P1 Func. Sel.	= DURING RUN 2
Term S2 Func. Sel.	= RUN DOWN	M1 – M2 Func. Sel.	= SPD REG. RELEASE
Term S3 Func. Sel.	= DRIVE ENABLE	M5 – M6 Func. Sel.	= DRIVE READY
Term S4 Func. Sel.	= MOTOR CONT. FDBK.		
Term S5 Func. Sel.	= FAULT RESET		
Term S6 Func. Sel.	= NOT IN NTSD		
Term S7 Func. Sel.	= TERM NOT USED		
Term S8 Func. Sel.	= TERM NOT USED		
Control Method U8			
Control Method (for PM Motor)	= PM ClosedLoopVct		
Control Method (for IM Motor)	= Closed Loop Vect.		
Number of Poles for Induction Motors (IMs)			
1800 RPM Motors	= 4 Poles		
1200 RPM Motors	= 6 Poles		
900 RPM Motors	= 8 Poles		

The Number of Poles if You are Using One of the Following PM Motors:			
MAG05	= 66 Poles	Imperial 474	= 20 Poles
MAG10	= 66 Poles	Imperial 475	= 24 Poles
MAG15	= 66 Poles	Imperial 522	= 20 Poles
		Imperial 525	= 20 Poles
		Imperial 805	= 44 Poles
Leroy Somer Z2	= 16 Poles	Hollister – Whitney GL-100	= 28 Poles
Leroy Somer Z3	= 16 Poles	Hollister – Whitney GL-115	= 28 Poles
Leroy Somer Z4	= 16 Poles	Hollister – Whitney GL-130	= 28 Poles
Leroy Somer Z6	= 32 Poles	Hollister – Whitney GL-170	= 28 Poles
Leroy Somer Z10	= 32 Poles	Hollister – Whitney GL-171	= 28 Poles
Leroy Somer Z20	= 32 Poles	Hollister – Whitney GL-130A	= 40 Poles
		Hollister – Whitney GL-185	= 40 Poles
		Hollister – Whitney GL-260	= 40 Poles

FOR FURTHER DETAILS ON AUTO TUNING AND POLE POSITIONING

- **Auto-Tune Induction Motor (IM)** – See Section 3.3.4.1 in the GALaxy IV Manual.
- **Auto-Tune Permanent Magnet (PM) Motor** – See Section 3.3.4.2 in the GALaxy IV Manual.
- **Initial Pole Position Estimate** – See Section 3.3.4.2.2 in the GALaxy IV Manual.
- **Pole Position No Rotation** – See Section 3.3.4.2.3 in the GALaxy IV Manual.

All temporary connections must be removed before allowing the elevator to run on automatic operation. Refer to the GALaxy IV Manual for complete adjustment procedures.

Useful Formulas:

- **Torque in lb./ft. = HP x 5250 /RPM**
- **HP = Torque x PM /5250**
- **RPM = 120 x Frequency / # of Poles**
- **RPM = 5250 x HP /Torque**
- **Freq = # of Poles x RPM /120**
- **Poles = 120 x Freq /RPM**