

# GALaxy IV – Quickstart

## M1000 PMAC Drive Gearless



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.



Every safety precaution, whether or not specifically stated in this document, must be implemented when installing, adjusting or servicing elevator equipment. All safety precautions must be followed to ensure the safety of elevator personnel and the general public.

### 1.0 Requirements for a running platform during initial startup

- 1.1 Wire Motor and Main Line Power as shown in the job connection diagrams.
- 1.2 Install and wire Governor as shown in the job connection diagrams.
- 1.3 Wire the motor encoder cable as shown in the job connection diagrams.
- 1.4 If controller is equipped with dynamic braking resistors, wire the DBR temperature sensor to the temperature sensor board.
- 1.5 Add temporary connections on the GALX-1102 Main I/O Board and Expansion I/O boards as shown in Figures 1, 2, 3, and 4.
- 1.6 Set the toggles switches on the GALX-1102 Main I/O Board as show in Figure 4.
- 1.7 Check/set parameters in the controller LCD user interface. See "GALaxy IV Controller Settings" in Table 1.
- 1.8 Check/set parameters in the M1000 AC Drive. See "M1000 AC Drive Settings" in Table 2.
- 1.9 Verify the PIC and PAL fault LED's are off. See the GALX-1102AN Main I/O Board in Figure 4. If these LED's are on, refer to the GALaxy IV adjustment manual for possible causes of these faults.
- 1.10 Perform the M1000 AC Drive "AUTOTUNE" procedure described on page 4.
- 1.11 Perform the M1000 AC Drive "Initial Pole Estimate Parameters" procedure described on page 4.
- 1.12 Perform the M1000 AC Drive "Pole Position No Rotation" procedure described on page 4.
- 1.13 Verify that the motor rotation direction and speed are correct. If the motor rotation direction and speed are not correct, see page 4 for determining the correct motor rotation direction and speed.



All temporary connections must be removed before placing the elevator in service. Refer to the GALaxy IV Manual for complete adjustment procedures.

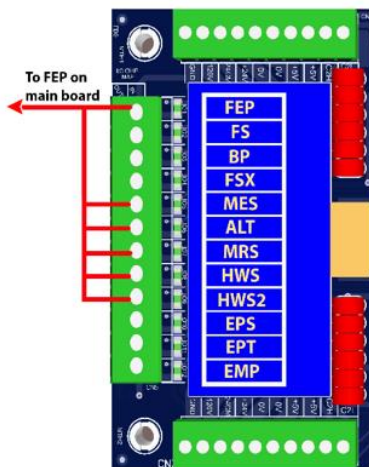


Figure 1: Typical I/O Expansion Board Fire I/O Board



Figure 2: Typical I/O Expansion Board Earthquake I/O Board (if used)

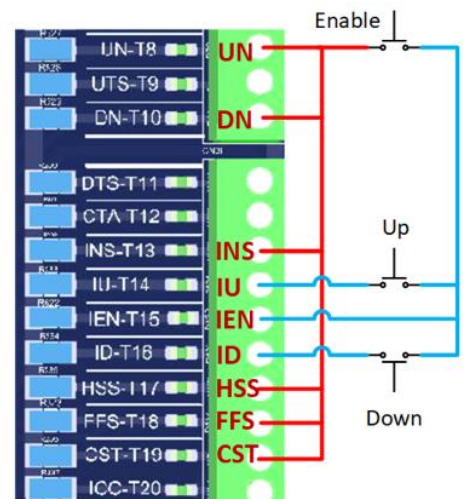


Figure 3: GALX-1102AN Main I/O Board With Run Bug. See Figure 4 For Run Bug Stop Switch

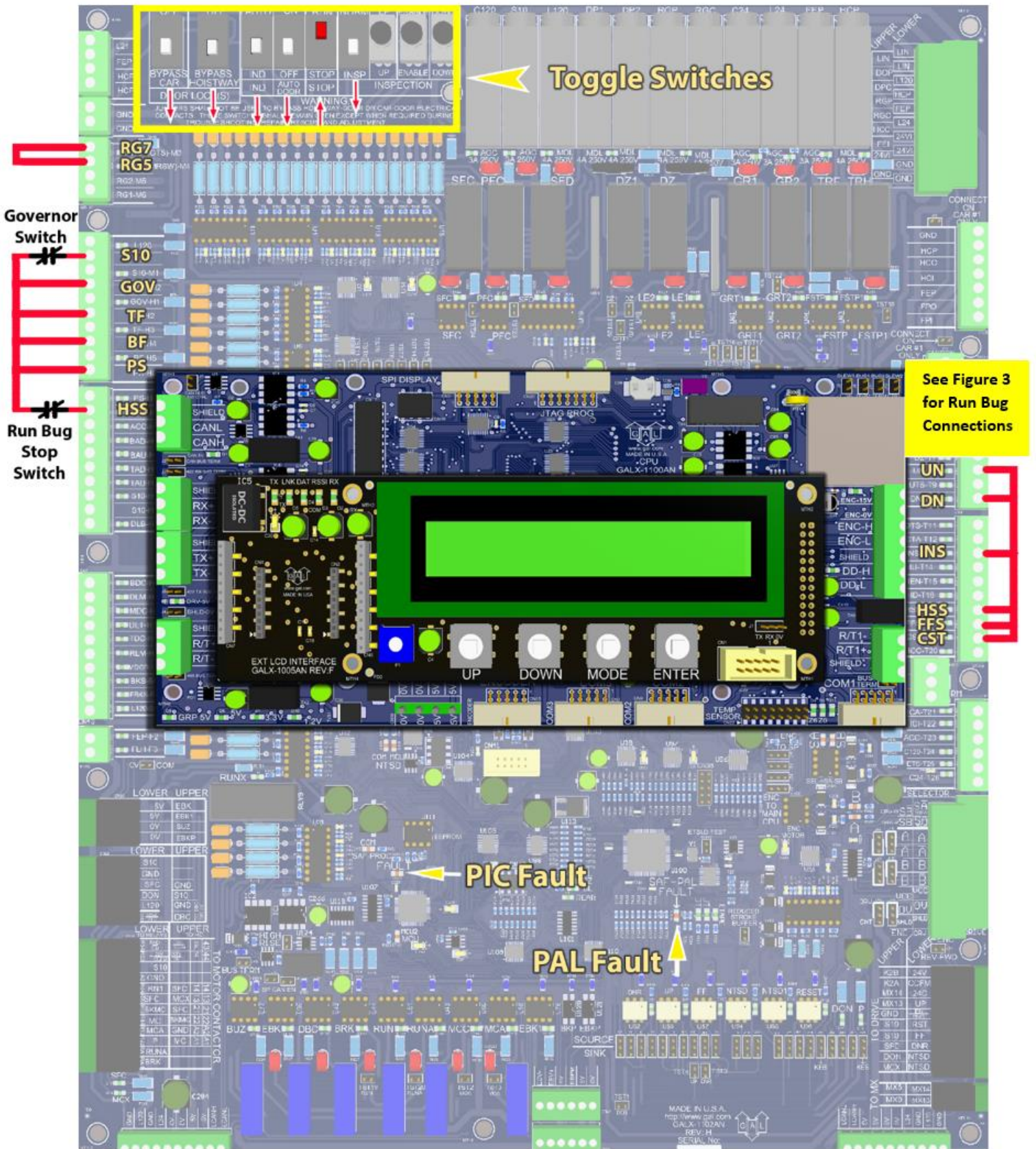


Figure 4: GALX-1102AN Main I/O Board

## Table 1: GALaxy IV Controller Settings

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

<b>Safety Processor Adjustable Variables Submenu</b> (Motor Encoder Speed Feedback):	
Top Speed (contract speed fpm)	INSP Velocity (set to 140)
Encoder RPM (set to value in drive parameter A1-CONTRACT MTR SPD)	Leveling Vel (set to 140)
Encoder PPR (set to value of drive output encoder signal PPR)	ETS UP VEL (set to Top Speed – only used for reduced stroke buffer)
Encoder Type (set to 4 = incremental)	ETS DOWN VEL (set to Top Speed – only used for reduced stroke buffer)
Control Type (set to 2 = Tract DF)	Soft Stop Time (set to 3)
2 Stop (0 = Multi – Stop; 1 = 2 Stop)	PAL ETS UP Vel (set to Top Speed)
Rear Doors (0 = Front Only; 1 = Rear)	PAL ETS DN Vel (set to Top Speed)
UTS Velocity (set to Top Speed)	
DTS Velocity (set to Top Speed)	
<b>NTS Processor Adjustable Variables Submenu</b>	
Top Speed (contract speed fpm)	DT Velocity (set to Top Speed)
Encoder RPM (set to value in drive parameter A1-CONTRACT MTR SPD)	UT1 Velocity (set to Top Speed)
Encoder PPR (set to value of drive output encoder signal PPR)	DT1 Velocity (set to Top Speed)
Encoder Type (set to 0 if using APS; set to 1 if using tapeless selector)	UTn Velocity (set to Top Speed)
UT Velocity (set to Top Speed)	DTn Velocity (set to Top Speed)
<b>Car Motion Submenu</b>	
<b>When Using Tapeless Selector:</b>	<b>When Using APS Selector:</b>
Top Speed (set to Contract Speed)	Top Speed (set to Contract Speed)
Inspect Speed (set to 25 FPM)	Inspect Speed (set to 25 FPM)
Encoder PPR (set to 10,000 PPR)	Encoder PPR (not Used)
Encoder RPM (set to governor RPM)	Encoder RPM (not used)
Motor RPM (set to value in drive parameter A1-CONTRACT MTR SPD)	Motor RPM (set to value in drive parameter A1-CONTRACT MTR SPD)
<b>System Options Submenu</b>	
Drive Baud Rate = 0 (19,200)	
Encoder Type = 0	

## Table 2: M1000 AC Drive Settings

Preset the following parameters from the M1000 AC Drive dual operator.

<b>A1 Drive Submenu</b>	
CONTRACT CAR SPD	= CONTRACT CAR SPEED FT / MIN (OR FPM)
CONTRACT MTR SPD	= MOTOR RPM AT CONTRACT SPEED
ENCODER PULSES	= ENCODER PPR
<b>A4 Power Convert Submenu</b>	
INPUT L-L VOLTS	RMS L-L Applied to Drive
<b>A5 MOTOR Submenu</b>	
PM MTR POWER	= NAMEPLATE (HP)
MTR RATED VOLTAGE	= NAMEPLATE (VOLTS)
MAX FREQUENCY	=NAMEPLATE (HZ)
PM MOTOR RATED FLA	= NAMEPLATE (AMPS)
PM MOTOR POLES	= NAMEPLATE VALUE or calculate using the following: number of poles = $[2 * 60 * (\text{excitation frequency in hz}) / (\text{rated motor speed in rpm})]$
MTR RATED SPEED	= NAMEPLATE (RPM)
<b>U8 Basics Submenu</b>	
CONTROL METHOD	=PM CLOSEDLOOP VCT

**M1000 AC Drive AUTOTUNE procedure:**

- 1) Set "Inspect Speed" in the "Adjustable Variables Car Motion" submenu to 0.
- 2) Prevent the main machine brake from lifting.
- 3) Navigate to the C2-LOGIC INPUT submenu, in the M1000 AC drive dual operator, and set "Term S3 Func Sel" to "Term Not Used", and set "Term S4 Func Sel" to "Term Not Used".
- 4) Navigate to the U9-AUTOTUNE submenu and press "ENTER" on the dual operator.
- 5) Navigate to "Tuning Mode Select" and press "ENTER" on the dual operator.
- 6) Navigate to "Tune-No Rotate" and press "ENTER" on the dual operator.
- 7) Press the down arrow key on the dual operator and enter the following motor data.
  - Enter the Motor Nameplate Horsepower and press the down arrow key.
  - Enter the Motor Nameplate Voltage and press the down arrow key.
  - Enter the Motor Nameplate Current and press the down arrow key.
  - Enter the number of Motor Poles and press the down arrow key.
  - Enter the Nameplate Speed (full load rpm) and press the down arrow key.
  - Enter the Encoder Pulses Per Revolution and press the down arrow key.
- 8) After entering the parameters above, the dual operator will display "Tuning Ready ?".
- 9) Initiate an up or down inspection command until the procedure is complete.
- 10) While commanding up or down inspection, press "ENTER" on the dual operator.
- 11) When the procedure is complete, the dual operator will display "END" and "Tune Successful".
- 12) Navigate to the C2-LOGIC INPUT submenu and set "Term S3 Func Sel" to "Drive Enable", and set "Term S4 Func Sel" to "Motor Cont Fdbk".
- 13) Set "Inspect Speed" in the "Adjustable Variables Car Motion" submenu to the desired value.
- 14) Return the main machine brake to its proper operating state.

**M1000 AC Drive Initial Pole Estimate procedure:**

- 1) Set "Inspect Speed" in the "Adjustable Variables Car Motion" submenu to 0.
- 2) Prevent the main machine brake from lifting.
- 3) Navigate to the C2-LOGIC INPUT submenu, in the M1000 AC drive dual operator, and set "Term S3 Func Sel" to "Term Not Used", and set "Term S4 Func Sel" to "Term Not Used".
- 4) Navigate to the U9-AUTOTUNE submenu and press "ENTER" on the dual operator.
- 5) Navigate to "InitPoleEstPrms" and press "ENTER" on the dual operator.
- 6) Press the down arrow key on the dual operator, and the dual operator will display "Tuning Ready ?"
- 7) Initiate an up or down inspection command until the procedure is complete.
- 8) While commanding up or down inspection, press "ENTER" on the dual operator.
- 9) When the procedure is complete, the dual operator will display "END" and "Tune Successful".
- 10) Navigate to the C2-LOGIC INPUT submenu and set "Term S3 Func Sel" to "Drive Enable", and set "Term S4 Func Sel" to "Motor Cont Fdbk".
- 11) Set "Inspect Speed" in the "Adjustable Variables Car Motion" submenu to the desired value.
- 12) Return the main machine brake to its proper operating state.
- 13) After completing a successful "Initial Pole Estimate" procedure, perform the "Pole Position No Rotation" procedure described below.

**M1000 AC Drive Pole Position No Rotation procedure:**

- 1) Set "Inspect Speed" in the "Adjustable Variables Car Motion" submenu to 0.
- 2) Prevent the main machine brake from lifting.
- 3) Navigate to the C2-LOGIC INPUT submenu, in the M1000 AC drive dual operator, and set "Term S3 Func Sel" to "Term Not Used", and set "Term S4 Func Sel" to "Term Not Used".
- 4) Navigate to the U9-AUTOTUNE submenu and press "ENTER" on the dual operator.
- 5) Navigate to "PolePos-norotate" and press "ENTER" on the dual operator.
- 6) Press the down arrow key on the dual operator, and the dual operator will display "Tuning Ready ?"
- 7) Initiate an up or down inspection command until the procedure is complete.
- 8) While commanding up or down inspection, press "ENTER" on the dual operator.
- 9) When the procedure is complete, the dual operator will display "END" and "Tune Successful".
- 10) Navigate to the C2-LOGIC INPUT submenu and set "Term S3 Func Sel" to "Drive Enable", and set "Term S4 Func Sel" to "Motor Cont Fdbk".
- 11) Set "Inspect Speed" in the "Adjustable Variables Car Motion" submenu to the desired value.
- 12) Return the main machine brake to its proper operating state.

**Determining the correct motor rotation direction and speed:**

- 1) Initiate an up or down inspection command.
- 2) If the motor runs slowly or uncontrolled and draws high current, change parameter C1-ENC 1 ROT DIRECT in the M1000 AC drive to the opposite setting, and perform the "M1000 AC Drive Pole Position No Rotation procedure" again. Verify that the motor rotation direction and speed are correct.
- 3) If the motor speed is correct, but the motor rotates in the wrong direction, change parameter C1-ENC 1 ROT DIRECT in the M1000 AC drive to the opposite setting, change C1-MOTOR ROTATION to the opposite setting, and perform the "M1000 AC Drive Pole Position No Rotation procedure" again. Verify that the motor rotation direction and speed are correct.