GALaxy IV – Quickstart Quattro AC PM Drive

⚠️ **CAUTION**

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.

⚠️ **CAUTION**

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   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.
1.5   Set the toggles switches on the GALX-1102 Main I/O Board as show in Figure 4.
1.6   Check/set parameters in the controller LCD user interface. See "GALaxy IV Controller Settings" in Table 1.
1.7   Check/set parameters in the Quattro AC PM Drive. See "Quattro AC PM Drive Settings" in Table 2.
1.8   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.
1.9   Perform the Quattro AC PM Drive "Absolute Encoder Alignment Procedure" described on page 4.
1.10   Perform the Quattro AC PM Drive "Auto Tune Procedure" described on page 4.
1.11   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.

⚠️ **CAUTION**

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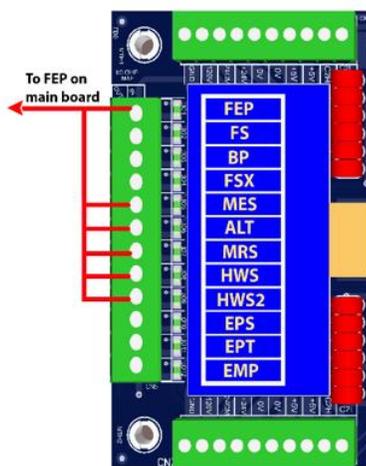

Figure 1: Typical I/O Expansion Board
Fire I/O Board

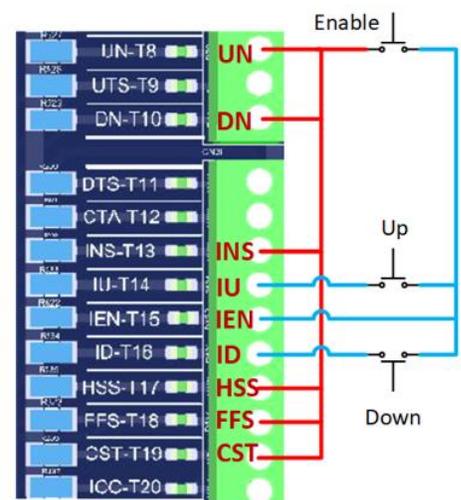Figure 2: Typical I/O Expansion Board
Earthquake I/O Board
(if used)

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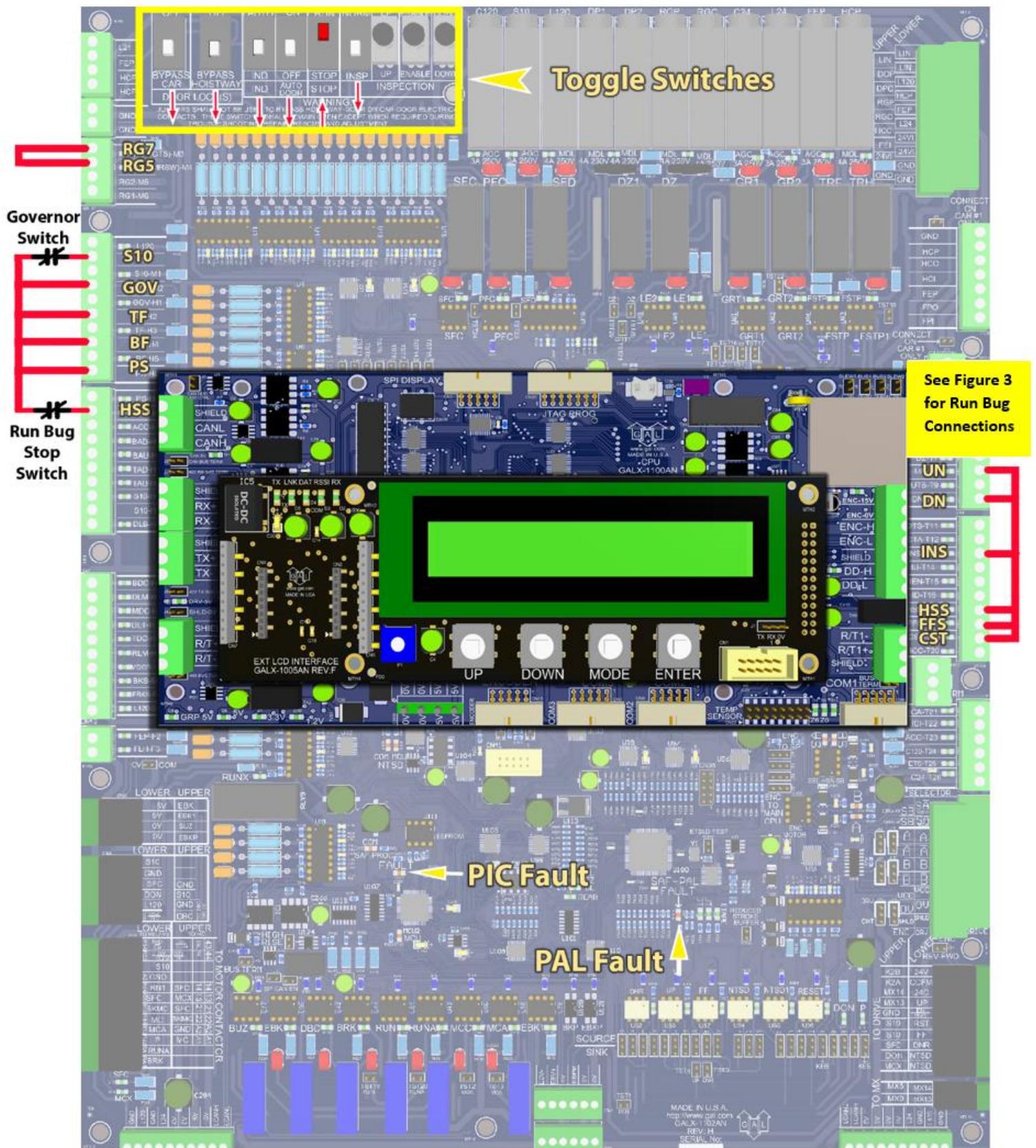With Run Bug. See Figure 4
For Run Bug Stop Switch

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.

Safety Processor Adjustable Variables Submenu (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 8 times the motor encoder nameplate 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)	
NTS Processor Adjustable Variables Submenu	
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 8 times the motor encoder name plate 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)
Car Motion Submenu	
When Using Tapeless Selector:	When Using APS Selector:
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)
System Options Submenu	
Drive Baud Rate = 0 (19,200)	
Encoder Type = 0	

Table 2: Drive Settings Quattro AC PM Drive

Preset the following parameters from the Quattro AC PM digital operator

A1 Drive Submenu	
CONTRACT CAR SPD	= CONTRACT CAR SPEED FT / MIN (OR FPM)
CONTRACT MTR SPD	= MOTOR RPM AT CONTRACT SPEED
ENCODER PULSES	= ENCODER NAMEPLATE
A5 LS PWR CONVRT Submenu	
INPUT L-L VOLTS	RMS L-L Applied to Drive
A6 MOTOR Submenu	
MOTOR ID	= PM DFLT
RATED MTR POWER	= NAMEPLATE (HP)
RATED MTR VOLTS	= NAMEPLATE (VOLTS)
RATED MOTOR CURR	= NAMEPLATE (AMPS)
MOTOR POLES	= NAMEPLATE VALUE or calculate using the following: number of poles = [2 * 60 *(excitation frequency in hz) / (rated motor speed in rpm)]
RATED MTR SPEED	= NAMEPLATE (RPM)

Quattro AC PM Drive Absolute Encoder Alignment 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 Logic Outputs C3 menu and temporarily set Relay Coil 2 to "CLOSE CONTACT"
4) Navigate to the ROTOR ALIGN U10 menu, on the Quattro drive digital operator, and press the "ENTER" button.
5) Navigate to the ALIGNMENT METHOD menu and set to AUTO ALIGN.
6) Navigate to the ALIGNMENT menu and set to ENABLE.
7) Navigate to the BEGIN ALIGNMENT ? menu and set to ON RUN.
8) Initiate an up or down inspection command until the procedure is completed.
9) When the procedure is complete, the drive will turn off the RUN LED, and the MC contactor will de-energize.
10) Verify that the value of parameter A6-ENCODER ANG OFST is not set to 30000. If the value is 30000, the encoder alignment procedure was not successful, and the procedure must be performed again.
11) Navigate to the Logic Outputs C3 menu and set Relay Coil 2 to "Speed REG RLS".
12) Set "Inspect Speed" in the "Adjustable Variables Car Motion" submenu to the desired value.
13) Return the main machine brake to its proper operating state.

Quattro AC PM Drive Auto Tune 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 Logic Outputs C3 menu and temporarily set Relay Coil 2 to "CLOSE CONTACT".
4) Navigate to the AUTOTUNE SEL U12 menu, on the Quattro drive digital operator, and press the "ENTER" button.
5) The digital operator will display DISABLE.
6) Press the down arrow key to select ON RUN.
7) Initiate an up or down inspection command until the procedure is completed.
8) When the procedure is complete, the digital operator will display AUTOTUNE FINISHED.
9) Navigate to the Logic Outputs C3 menu and set Relay Coil 2 to "Speed REG RLS".
10) Set "Inspect Speed" in the "Adjustable Variables Car Motion" submenu to the desired value.
11) Return the main machine brake to its proper operating state.

Determining the correct motor rotation direction and speed:
1) Run the elevator on inspection.
2) If the elevator runs in the wrong direction, set the C1-MOTOR ROTATION parameter to the opposite setting in the Quattro drive.
3) Run the elevator on inspection and verify that the motor rotation direction and speed are correct.