

TILT WALL CONTROL SYSTEM

Datasheet and Electrical Overview

Manufacturer: FrictionWalls AS

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This document describes the electrical control system for a tilting climbing wall using two RE803GH linear actuators and an ESP32-S3 4.3 inch touch display.

1. System Overview

Parameter	Specification
Input voltage	100-240 VAC, 50/60 Hz
Recommended supply circuit	10A AC
Recommended emergency stop	Customer supplied, AC mains side, upstream of IEC C14 input
Control cabinet inlet	IEC C14 appliance inlet
Power supply	Mean Well HRPG-600-24
System voltage	24 VDC
Motor control	Motor Control PCB
Display	ESP32-S3 4.3 inch touch display
Display interface	RJ45 display bus
Actuators	2 x RE803GH linear actuators
Actuator connection	Single integrated cable per actuator
Actuator protection	Dedicated 20A fuse per actuator inside the control cabinet

The emergency stop is recommended as an external installation component. It should disconnect the incoming AC mains supply before power enters the control cabinet.

Updated Block Diagram

Emergency stop is installed on the AC mains side before the IEC C14 input. Display is ESP32-S3.

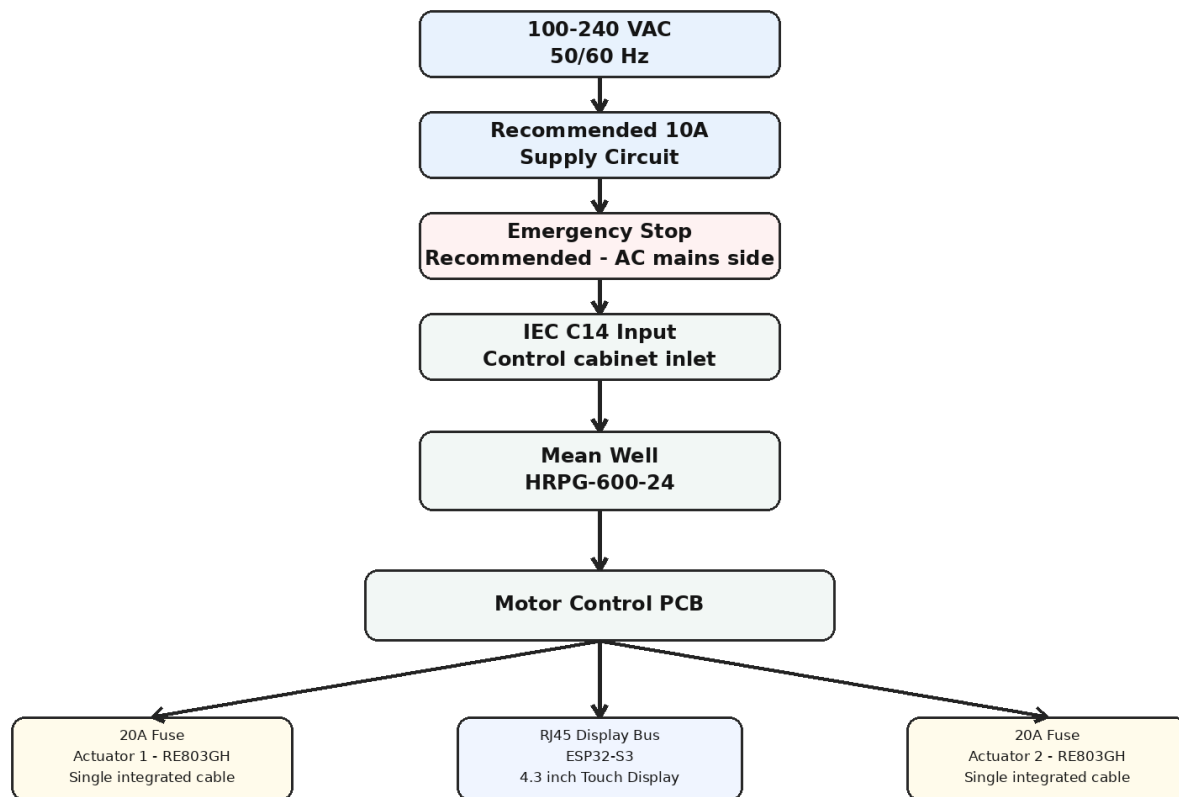


Figure 1.

2. Technical Specifications

Parameter	Specification
Input voltage	100-240 VAC, 50/60 Hz
Recommended supply circuit	10A AC
Emergency stop	Recommended, customer supplied, installed on AC mains side
Emergency stop function	Disconnects AC supply upstream of IEC C14 input
Power supply	Mean Well HRPG-600-24
DC output voltage	24 VDC
Maximum PSU current	27A
Actuator model	RE803GH
Actuator quantity	2
Actuator stroke	1350 mm
Dynamic load	10000 N
Static load	12000 N
Speed	14 mm/s
Actuator cable	Single integrated actuator cable
Actuator protection	20A fuse per actuator inside the control cabinet
Display	ESP32-S3 4.3 inch touch display
Display connection	RJ45 display bus
Enclosure	Metal control cabinet, protective earth bonded

3. Control Cabinet and Connections

Control Cabinet Overview

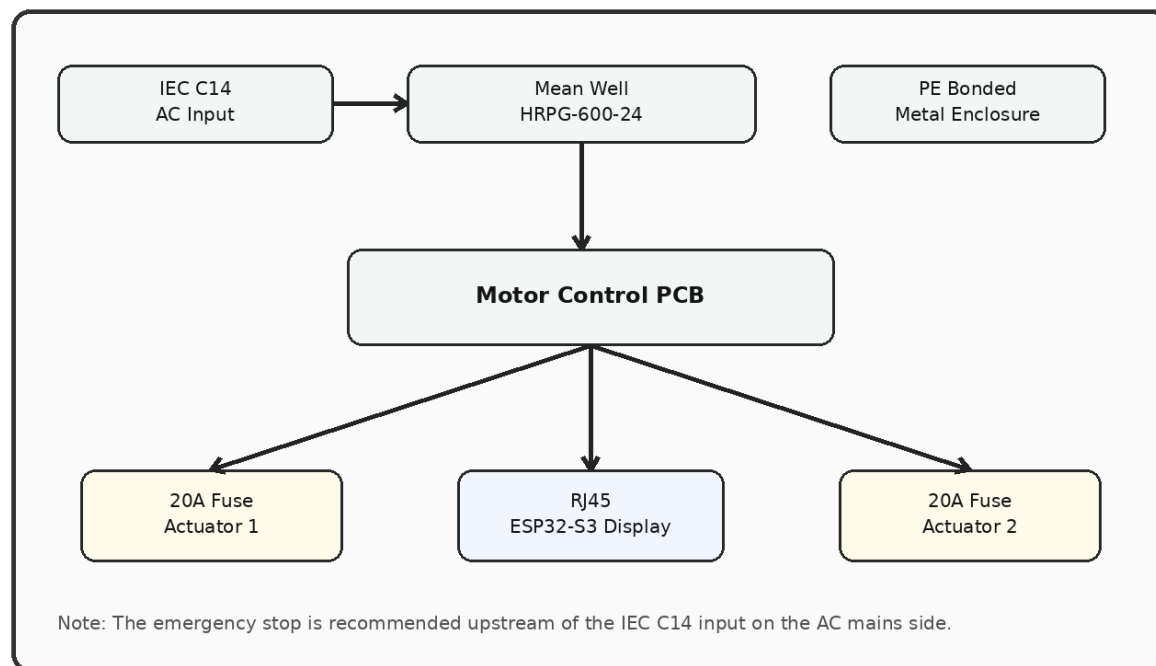


Figure 2. Simplified control cabinet overview. The 20A actuator fuses are inside the cabinet.

4. Connection Overview

Reference	Signal	Description
AC SUPPLY	100-240 VAC	Incoming mains supply, 50/60 Hz
SUPPLY CIRCUIT	10A AC	Recommended customer supply circuit
E-STOP	AC mains disconnect	Recommended customer supplied emergency stop upstream of IEC C14 input
J1	IEC C14 input	Control cabinet AC appliance inlet
PSU1	HRPG-600-24	Mean Well 24 VDC power supply
PCB1	Motor Control PCB	Controls actuator movement and display communication
F2	20A DC fuse	Actuator 1 branch protection
A1	Actuator 1	RE803GH, single integrated actuator connection
F3	20A DC fuse	Actuator 2 branch protection
A2	Actuator 2	RE803GH, single integrated actuator connection
J-DISP	RJ45 display bus	Communication to ESP32-S3 touch display
DISP1	ESP32-S3 display	4.3 inch touch display
PE	Protective earth	Bonded to metal enclosure

Connection Topology

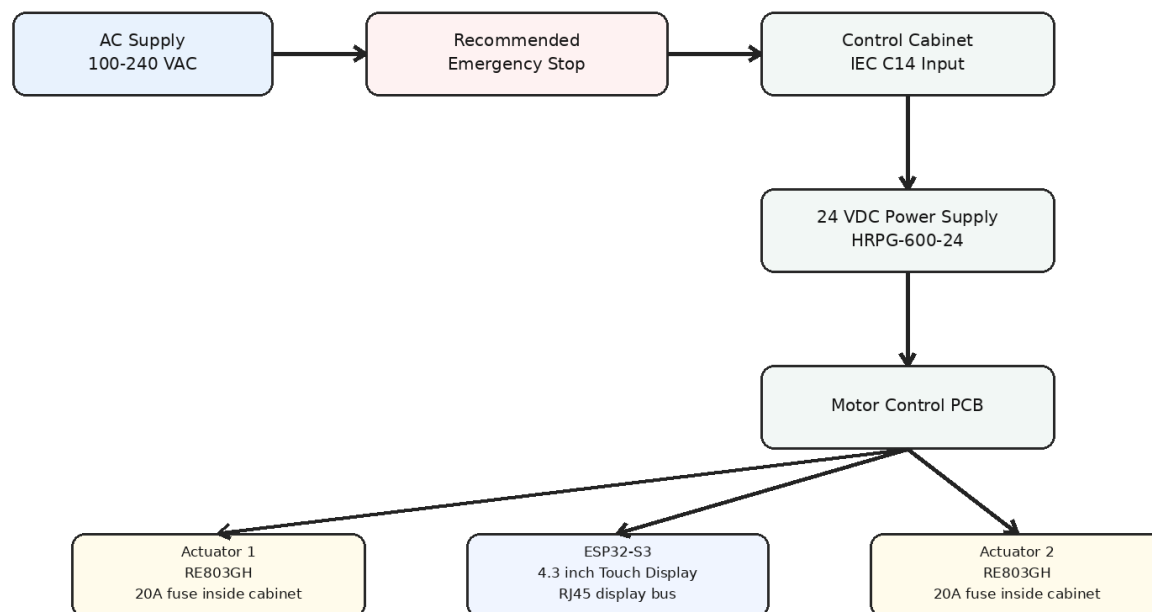


Figure 3. Connection topology showing the customer side AC components and internal 24 VDC system branches.

5. Installation Notes

- The recommended emergency stop is installed on the AC mains side before the IEC C14 input.
- The emergency stop should disconnect the incoming mains supply feeding the power supply.
- Each RE803GH actuator uses one integrated cable for the actuator connection.
- Each actuator has a dedicated 20A fuse located inside the control cabinet.
- The touch display shall be specified as an ESP32-S3 4.3 inch touch display connected via RJ45 display bus.