SEL is looking to produce a relay emulation tool to help the “Product Hospital” perform troubleshooting and fault diagnosis on 4xx relays.

The PBE is a tool that emulates the hardware behavior and status of a fully configured relay. It consists of a module to interface with a mainboard and a software suite to aid an operator.

Team Mozart was to improve upon the work of past teams and closeout the PBE project for SEL.

**Problem Abstraction**

- Emulate any relay peripheral for mainboard to boot
- Behave as any valid, 4xx relay configuration
- Transparency between GUI and relay
- Displays LCD, LEDs, and I/O status through GUI
- Intuitive GUI and connectivity

**Design Objectives**

- Emulate any relay peripheral for mainboard to boot
- Behave as any valid, 4xx relay configuration
- Transparency between GUI and relay
- Displays LCD, LEDs, and I/O status through GUI
- Intuitive GUI and connectivity

**Software Design**

- Chassis protects PBE
- Scripting, automation
- Flexible power supplies
- Additional EEPROM for future functionality
- Quick-start manual
- Interfaces with current and future SEL test gear

**Additional Features**

- Chassis protects PBE
- Scripting, automation
- Flexible power supplies
- Additional EEPROM for future functionality
- Quick-start manual
- Interfaces with current and future SEL test gear

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**Glossary**

- 4xx: Line of transmission system protection relays
- PBE: Peripheral board emulator
- EEPROM: Electrically Erasable Programmable Memory
- Mainboard: The main circuit board of the 4xx relay.
- GUI: Graphical User Interface
- HMI: Human-Machine Interface
- INT: Interface Board

**Team Mozart**