



Střední průmyslová škola
na Proseku



SCHRACK TECHNIK LED PANEL

MANUAL-EN

PROJECT NAME: SchrackPanel

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1. DESCRIPTION

The Schrack Technik LED Panel is a project developed by students at SPŠ na Proseku. The panel consists of two primary components: the main frame and the controller box. The main frame is provided by ARODEM, featuring blue and red LEDs from Schrack Technik. The rear side of the panel houses sensitive wiring, which must be handled with care. The controlling unit is enclosed within a separate box.

2. INTRODUCTION

FRAME: The panel, which includes pre-drilled holes, was supplied by ARODEM. It is a metal panel measuring 1850x600 mm, typically used for hanging tools and parts. The panel is mounted on an ARODEM table.

CONTROLLING UNIT: The controlling unit is a custom PCB featuring an ESP32 as its primary microcontroller, utilizing shift registers as the main logic driver. The PCB operates with a VCC of 5V and a VDD of 3.3V. A DC-DC buck converter is used to ensure stable and efficient conversion from 24V to 5V with minimal losses.

POWER SOURCE: The system is powered by a single output switching power supply, which inputs 230V from a wall socket and outputs 24V. A Schrack Technik circuit breaker is installed between the wall socket and the power supply to provide protection against overcurrent and short circuits.

WIRING: The primary wiring is located at the back of the panel. The LEDs operate using a visual perception technique, flickering at high speeds beyond the detection of the human eye. To smooth out this flickering and make LEDs brighter, 10uF capacitors are connected at each LED terminal.

We used Ethernet CAT6 cables for wiring, which were crimped and connected to the PCB.

3. SAFETY PRECAUTIONS

- Handle the main frame with care as the wiring is fragile and may disconnect.
- The electrical box houses the controlling unit, where MOSFETs may heat up while the panel is in operation. Ensure the installed 5V fan is functioning to cool the (silver-coloured) MOSFETs.
- The electrical box also contains the main power supply, which operates at 230V. DO NOT TOUCH the power terminals when the panel is powered on.
- The blue and red LED shields are prone to scratching. Use protective materials, such as textiles, to prevent scratches during transportation.

4. FUNCTIONS

Universal button control:

- **GREEN**: Start/confirmation
- **YELLOW**: Pause/other
- **BLUE**: Other
- **RED**: Stop/cancellation

TIME Function:

The TIME function includes both a “Predefined Timer” and a “Custom Timer.” The predefined timer allows you to select from preset countdowns. The custom timer lets you set a countdown down to the second, with a maximum duration of 99 hours, 59 minutes, and 59 seconds.

Operating instructions for TIME Function: After booting up press the **GREEN** button to open main menu then press **YELLOW** to enter the TIME menu.

- To enter “Predefined timer” press **GREEN**, to select predefined time use **YELLOW** button, **GREEN** to start the countdown. To pause the predefined timer press **YELLOW**.
- Pressing **YELLOW** after opening the TIME menu opens “Custom timer”, digit selection is **YELLOW**, every **BLUE** press increases the time (0-9), **GREEN** starts the custom countdown. To pause the custom timer press **YELLOW**.

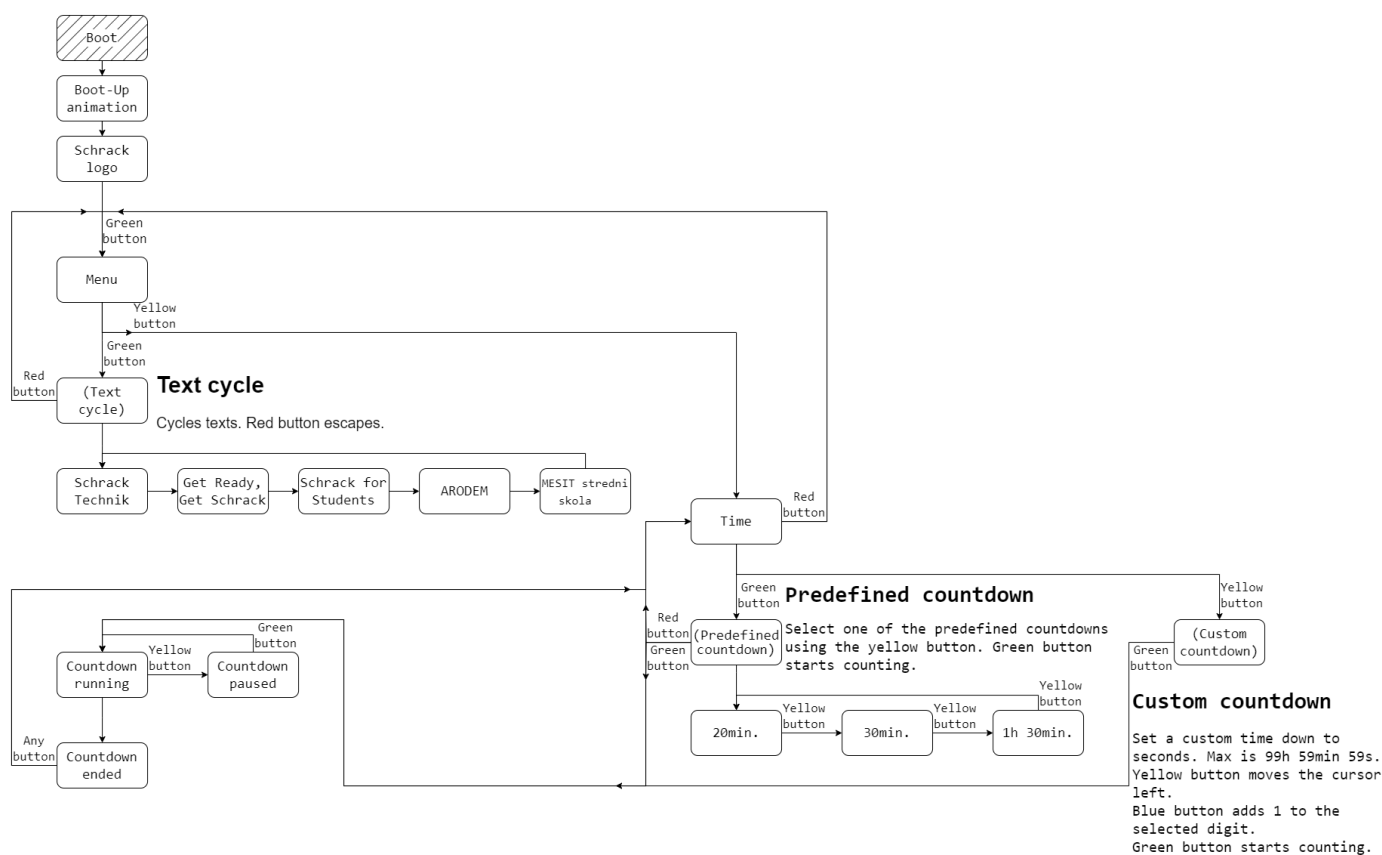
TEXT CYCLING Function:

The TEXT CYCLING function cycles through predefined texts (Schrack Technik, Get Ready - Get Schrack, Schrack for Students, ARODEM, MESIT stredni skola). The text slides one time before moving on to the next.

Operating instructions for TEXT CYCLING Function:

- Pressing **GREEN** in main menu will enter “Text cycling”. **RED** stops text cycling and returns to menu

5. SCHRACKPANEL FUNCTION BLOCK DIAGRAM



6. TECHNICAL SUPPORT

For any issues or questions, please contact:

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