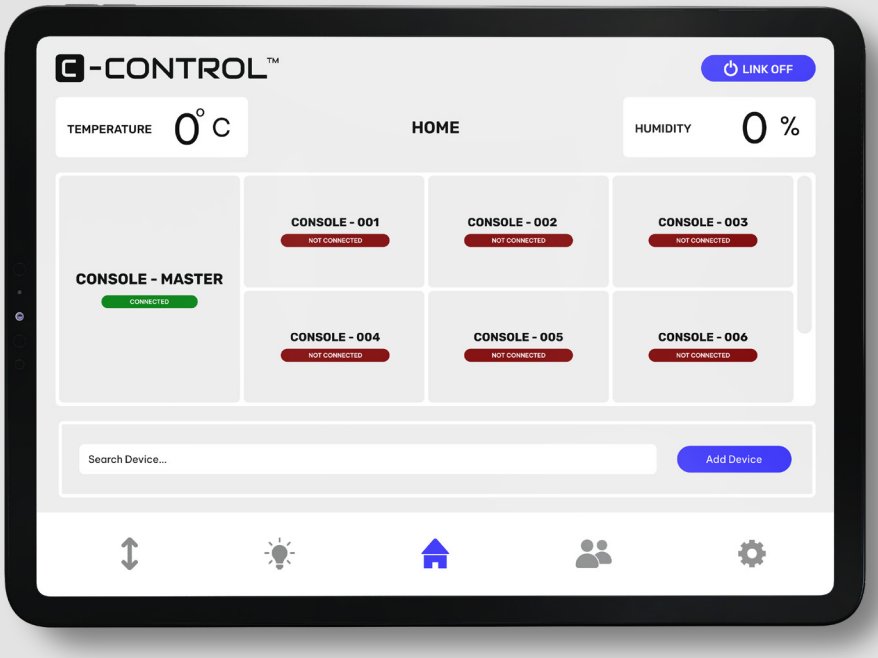
CTF

C-CONTROL™

Smart Control Room Console Management System



CONTROLLER SPECIFICATIONS

www.ctfconsoles.com

TABLE OF CONTENTS

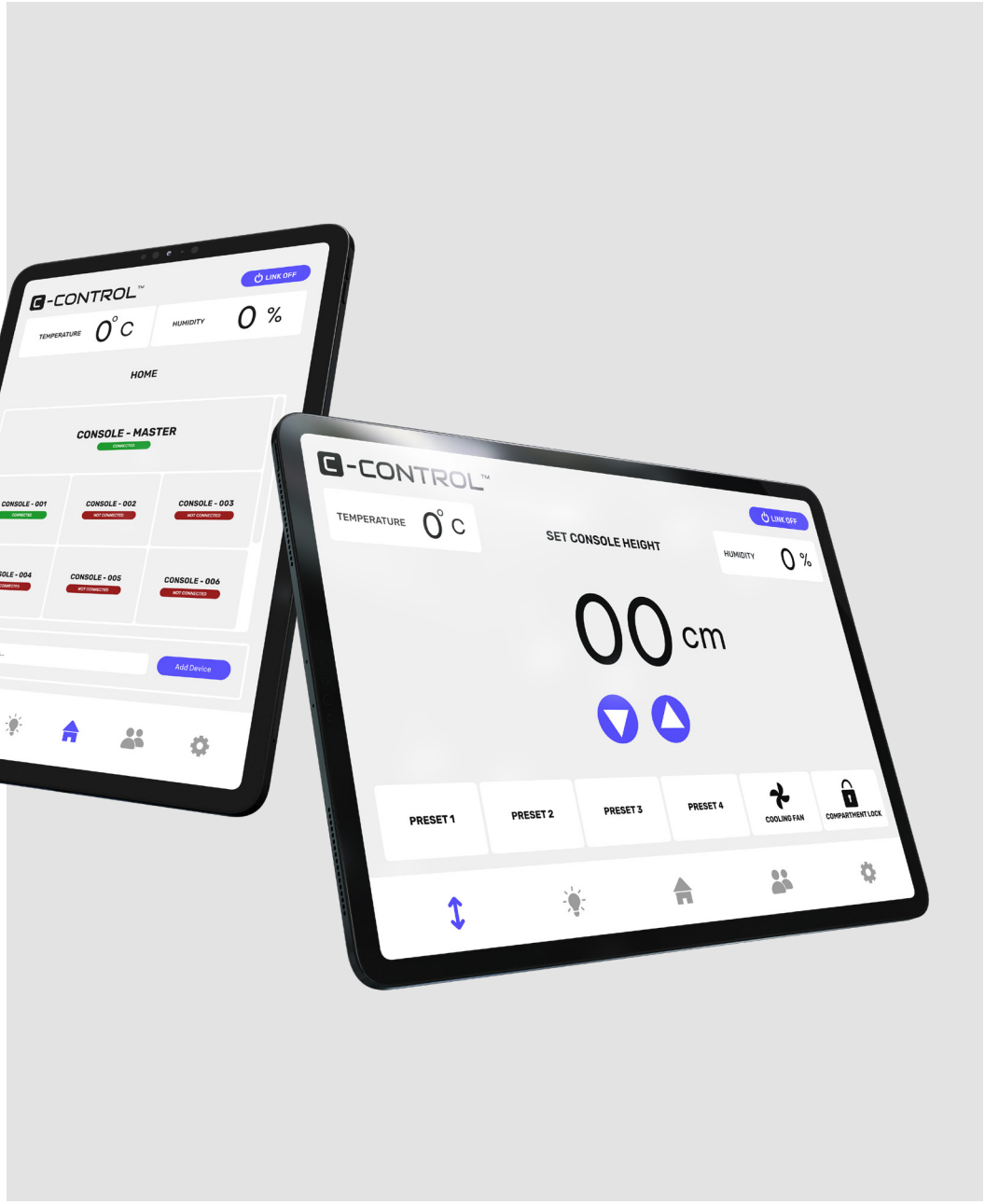
OVERVIEW

C ControlTM is a Smart Control Room Console Management Platform that offers real-time monitoring, preventive maintenance, and reactive response capabilities to optimize user comfort and efficiency.

With its user-friendly interface, scalability, and integration capabilities, our solution takes control room management to the next level, setting the standard for the future of control room technology.

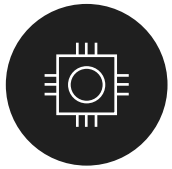
This document highlights the technical specifications of the central controller of the system and connectivity options.

If you are facing any difficulties with the product use, set up or troubleshooting, please contact our technical team at **hello@ctfconsoles.com**



THE CONTROLLER

At the core of the solution, the C-controller is a 2.4 GHz Wi-Fi and Bluetooth combo chip engineered to provide optimal power efficiency and RF performance. It ensures robustness, versatility, and reliability while managing all control functions and facilitating all communication links within the solution.



PROCESSOR

- CPU: Dual-core Xtensa® 32-bit LX6 microprocessor, up to 240 MHz
- Performance: 600 DMIPS

SECURITY

- Cryptographic Hardware: AES, SHA, RSA, ECC, and RNG
- Secure Boot: Supported
- Flash Encryption: Supported

MEMORY

- RAM: 520 KB SRAM
- ROM: 448 KB ROM
- Flash: 4MB

POWER

- Operating Voltage: 2.2V to 3.6V
- Micro USB port – 5 V , 2 A
- Power Consumption: deep sleep mode consuming around 10 µA, light sleep around 0.8 mA, and active mode typically 160 mA at 240 MHz

WIRELESS CONNECTIVITY

- Wi-Fi: 802.11 b/g/n, 2.4 GHz
- Bluetooth: v4.2 BR/EDR and BLE (Bluetooth Low Energy)

TEMPERATURE RANGE

- -40°C to +125°C

CONNECTIONS AND CONTROLS

1. TEMPERATURE AND HUMIDITY SENSOR

The Controller is linked to a temperature and humidity sensor with the following specifications to continuously monitor the temperature of the workstation cabinets housing the CPUs.

TEMPERATURE MEASUREMENT

- Range: -40°C to +80°C (-40°F to +176°F)
- Accuracy: ±0.5°C
- Resolution: 0.1°C

HUMIDITY MEASUREMENT

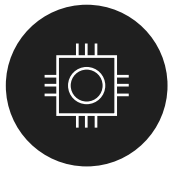
- Range: 0% to 100% RH (Relative Humidity)
- Accuracy: ±2% RH (from 0% to 100% RH)
- Resolution: 0.1% RH

ELECTRICAL CHARACTERISTICS

- Operating Voltage: 3.3V to 5V
- Max Current Consumption: 2.5 mA (during measurement)
- Idle Current: 100 µA (typical)

COMMUNICATION

- Interface: Single-wire digital interface
- Data Output: 40-bit data (16-bit humidity, 16-bit temperature, 8-bit checksum)
- Sampling Rate: 0.5 Hz (one reading every 2 seconds)



PHYSICAL CHARACTERISTICS

- Dimensions: 15.1mm x 25mm x 7.7mm (W x L x H)
- Weight: Approximately 2.4 grams

OPERATING CONDITIONS

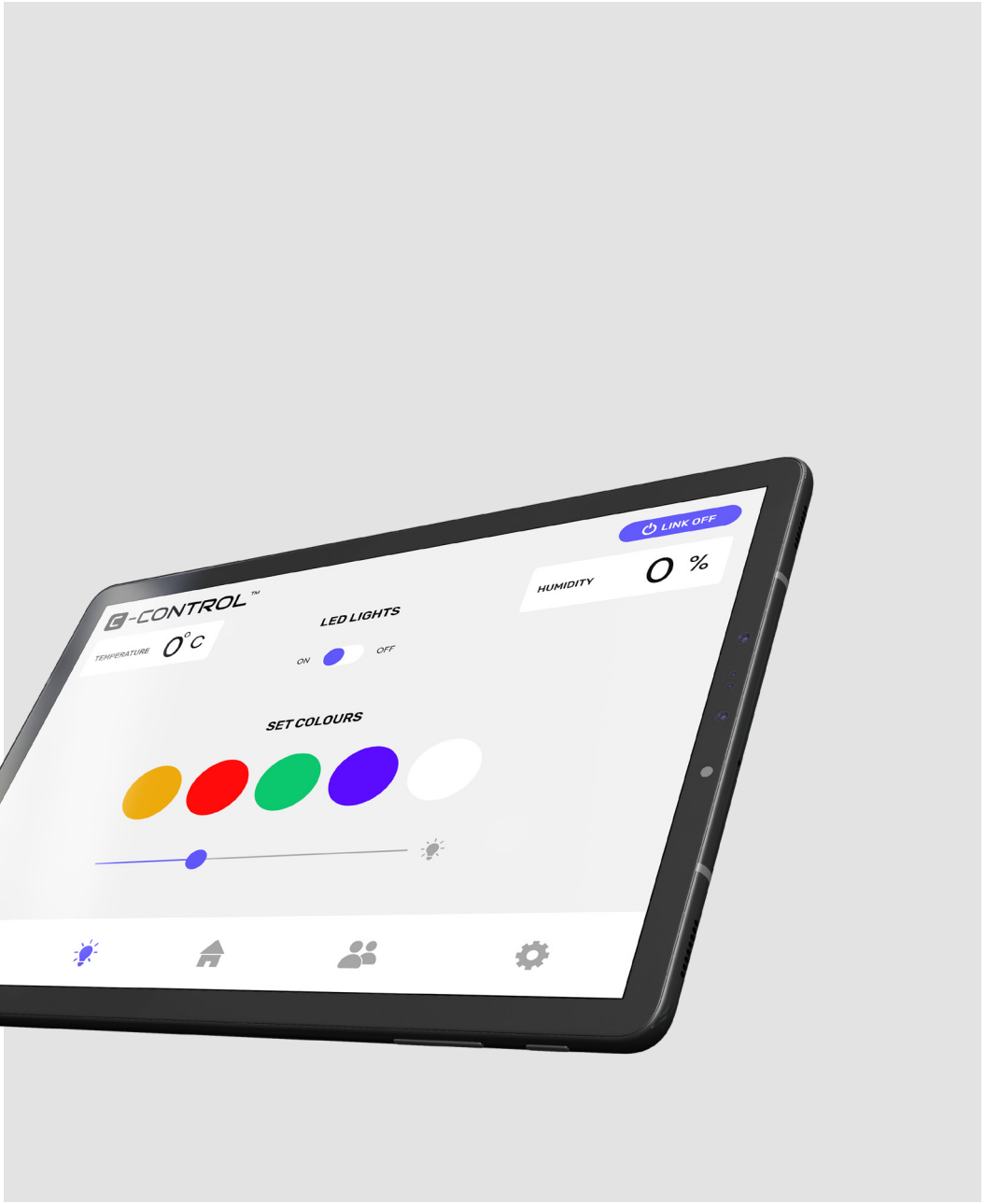
- Operating Temperature: -40°C to +80°C
- Operating Humidity: 0% to 100% RH (non-condensing)

2. LED LIGHT AND HEIGHT CONTROL

The controller is also connected to the LED lights controller, allowing for the selection of specific colors to illuminate the side panels of the console or for status lighting in case of emergencies.
Additionally, the controller is linked to the table lifter for height adjustability, enabling the operator to adjust the height as preferred or to preset levels.

3. THE TABLET

The C-Control solution includes a tablet for inputting commands to control the various features mentioned above. Please refer to section 5 for a detailed description of the tablet and the available inputs.



USAGE MODES

1. STANDALONE MODE (BLE MODE)

The standalone mode operates via BLE (Bluetooth Low Energy) communications. In this mode, the controller and tablet communicate exclusively via BLE, creating a standalone connection for each controller and tablet pair within a given console. For example, Controller 1 communicates only with Tablet 1 of Console 1.

2. CLIENT / SERVER MODE (WiFi MODE)

In this mode, communication between the tablet and the controller occurs via Wi-Fi. It enables the master controller of the master console to control all consoles connected to the C-Control Gateway, i.e: In this mode, the master controller can control LED lights, console height, cooling fan and cabinet locking of all the consoles connected to it.

⚠ EMERGENCY MODE

This mode is available within the Client/Server Mode. Any third-party application can send TCP/IP messages here and a specific command can be sent to the C-Control Gateway using a third-party system to control all consoles in emergency scenarios. This can be used to set all consoles to specific default settings, such as turning the LED lights to red and automatically adjusting all consoles to their minimum height.

TCP/IP Listener Details for Emergency Console Settings:

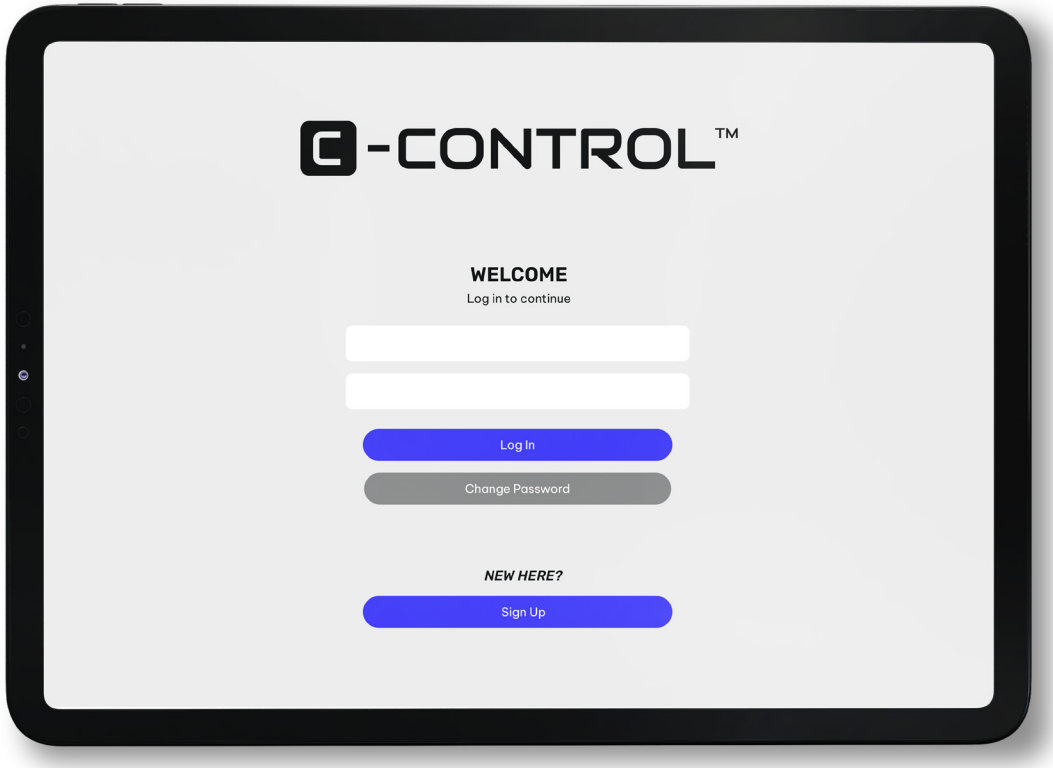
IP Address: cControl Gateway IP
Port: 1234

1. **Reset Table to Preset-01:**
   Command: ext_Event#TDH,1
   Description: Resets the table to preset-01.

2. **Set RGB LED Color:**
   Command: ext_Event#Color,255,0,0
   Description: Sets the RGB LED color.
   Format: ext_Event#Color,<R>,<G>,<B>
   Example: ext_Event#Color,0,255,0 (sets the color to Green)
   Example: ext_Event#Color,0,0,255 (sets the color to Blue)

THE TABLET

The C-Control solution features a tablet for seamless console control. The tablet communicates with the controller and executes commands based on user input. A tablet can function as either a master or an individual user interface. A master tablet can issue commands to any device connected to the same Gateway, and these commands will be followed by all connected devices.



LOGIN PAGE

Operators can log in using the default username and password: admin, and update password for future logins.

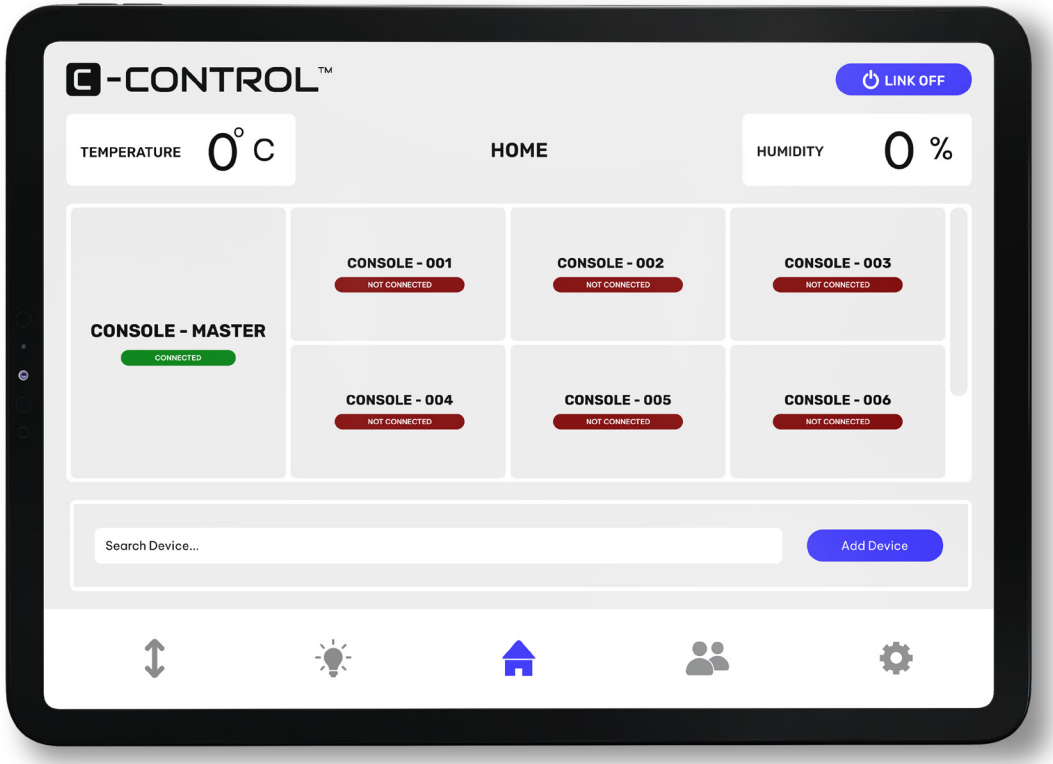
THE TABLET

HOME PAGE

Displays all available devices for establishing a connection. Connected devices will be highlighted in green. To add a new device, simply type the device name and click "Add Device." The new device will then be shown as connected.

The temperature and humidity of the connected device will always be displayed in the left and right corners of each screen.

For the master console, the console name will appear in white (or the default color) when the link is active, and in red if the connection is not established.



Link On/Off - Shows the connection status between the tablet and the controller, a Link On status reflects that the system is active and that communication is established.

In BLE standalone mode, a Bluetooth icon along with the connected device name is displayed when the link is active. **In Client/Server mode**, a tablet icon is shown when the link is active, and a tablet with a cross is displayed when not connected to the gateway.

THE TABLET

SET CONSOLE HEIGHT PAGE

Allows operator to input preferred height or select preset height options based on previously set levels.

Cooling Fan – Controls the switching on and off of the cooling fans inside the CPU cabinet for heat and ventilation control.

Compartment Locking- Controls the locking and unlocking of the CPU cabinets.

THE TABLET

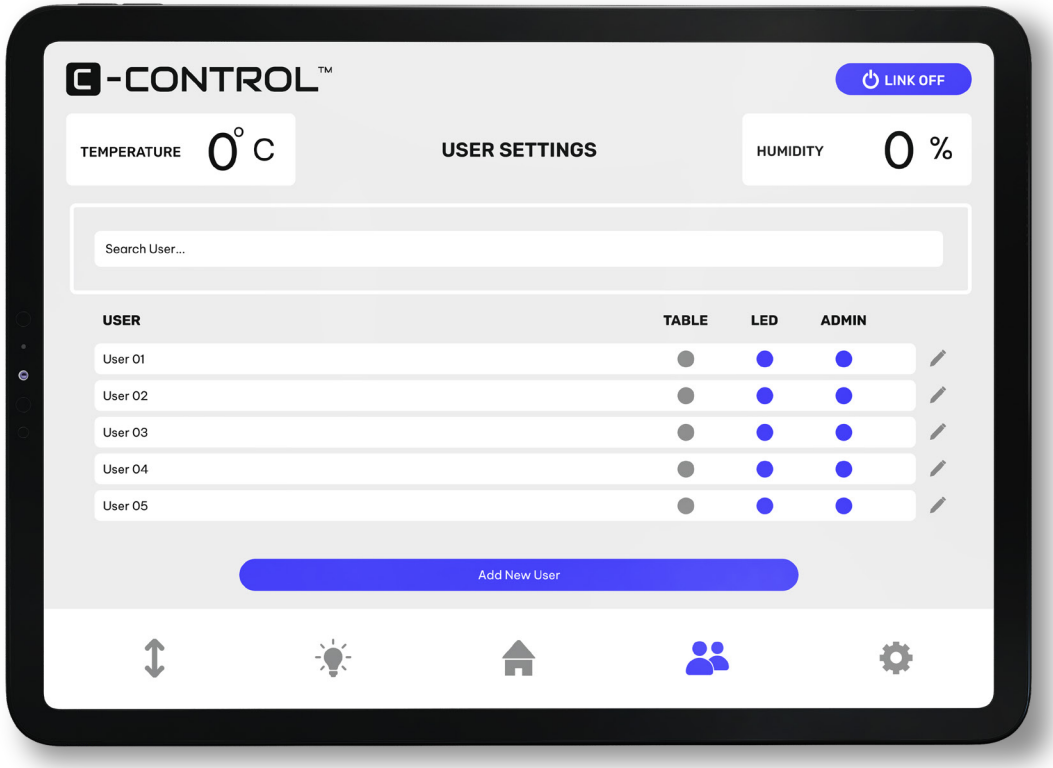
LED LIGHTS PAGE

Controls the switch on/ off of LED lights on the console side panel and the selection of preferred LED light color along with light intensity.

THE TABLET

USER SETTINGS PAGE

In standalone mode, each user has visibility of their own device and can control the LED lights and table height.
In Client/Server mode, the master console has visibility of all other users connected to the Gateway and can assign access rights to them.
There are three levels of access:

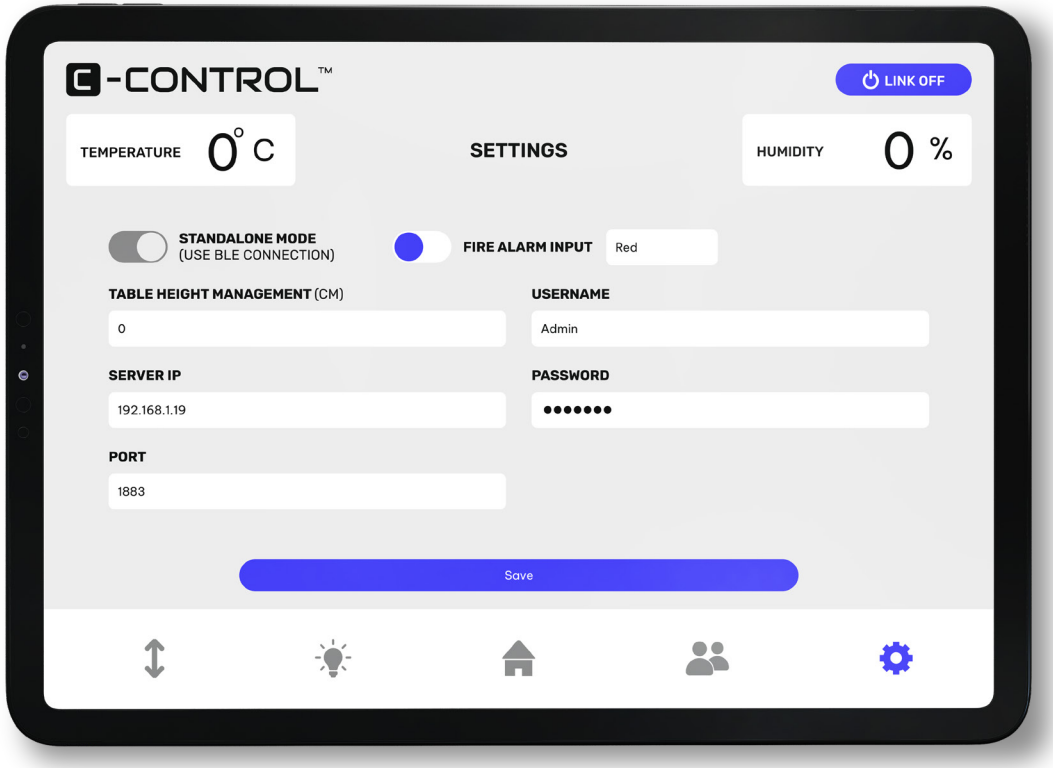


- **Admin:** Has the ability to configure settings, add and remove devices, and manage users.
- **LED:** Users with this access can change and control the LED lights.
- **Table:** Users with this access can control the table height adjustability.

THE TABLET

SETTINGS PAGE

Shows user details such as set username, password, default table height, IP address of device and the port.
The page also reflects the usage modes as described before.



CTF

CONNECTED TECHNICAL FURNITURE

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