Unitary and Terminal Control Solutions with LIOB-585

With LIOB-585 LOYTEC offers one compact controller for all unitary and terminal applications - a solution that means less overall cost to implement your projects. Find out even more reasons why you should get the award-winning LIOB-585 Controller!

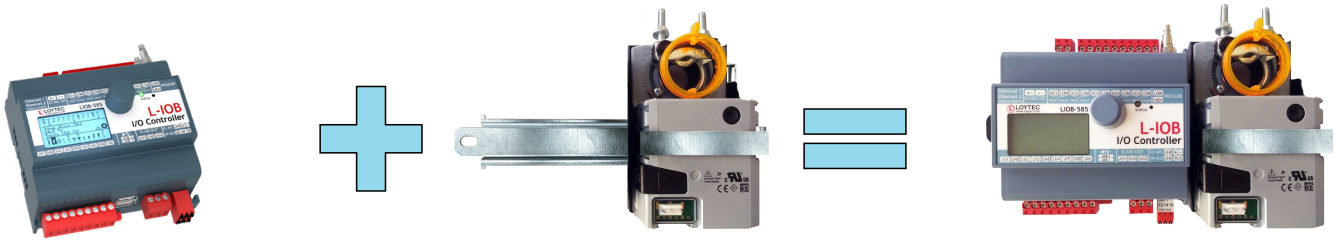
Unitary and Terminal unit controllers historically account for the major portion of a conventional HVAC system, with a choice of many different controller types it is often the first cost of the hardware. Programming effort, installation ease, and device cost are the focus of a customer's overall evaluation. This has become the basis of a new controller from LOYTEC.

Physically imposing, the LIOB-585 contains a differential pressure transducer, 6 universal inputs, 5 digital outputs, 2 analog outputs and a MPBus actuator port. An RS485 port is available for fieldbus. LIOB-585 is multi-protocol with BACnet, LON, Modbus, OPC, SNMP, EnOcean and other simultaneous communication options.

Solving difficult connectivity issues, options for WiFi communication, including WiFi mesh are selectable.

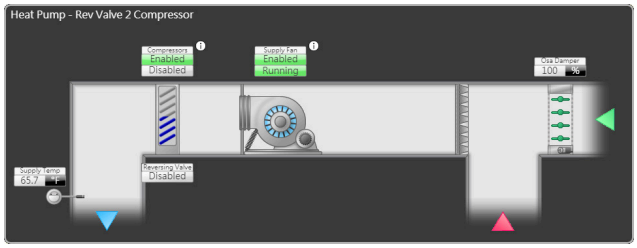
Many controllers have limited processing power and it was not possible to implement many different device configurations. Manufacturers provided various models to solve Terminal and Unitary solutions using fieldbus technologies. Separate devices were required for each protocol, and those devices were designed to be either fully programmable or configurable.

With the advent of more processing power and storage, devices take on a dual programming path, and adding the advantages of IP, devices that operated solely on fieldbus technologies are now more versatile.

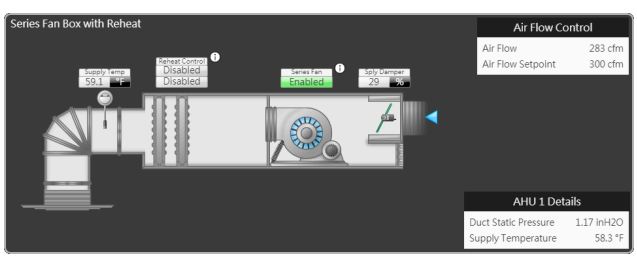


Unitary | Actuator and Frame | Terminal

LIOB-585 covers Terminal and Unitary applications with a single device.



Unitary Control



Terminal Control

Daryl Clasen
LOYTEC electronics GmbH

At LOYTEC, Daryl's area of responsibility is sales. To deliver high quality solutions for his partners and customers is one of his ultimate goals and his primary assignment. A backround in HVAC design, coupled with practical experience grants him decisive advantages, with more than 25 years of experience in mechanical and metal fabrication, including 10 years as a system integrator.

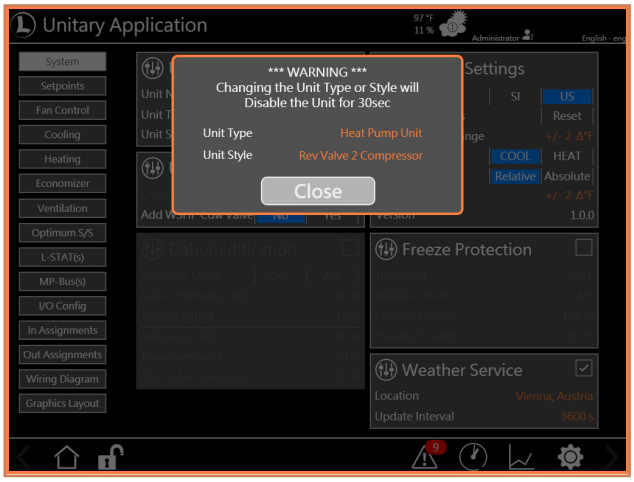
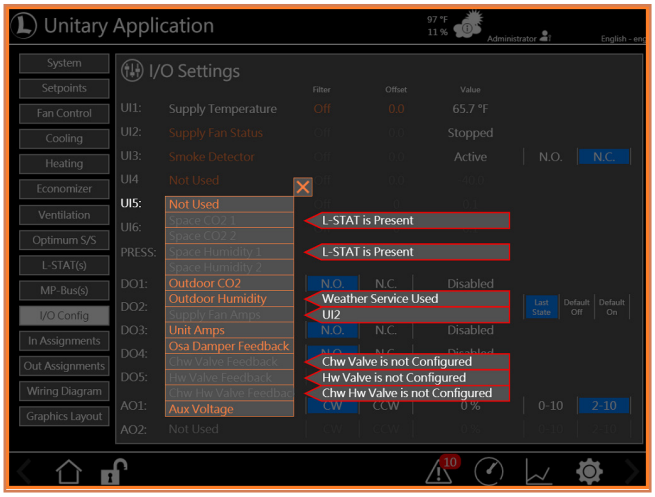


Figure 3: A button menu system can be used for navigation to specific subsections in the configuration.

Visualization takes on a new dimension. Historically, utilizing a mid-level embedded server or "front end" software platform to setup and configure devices was necessary. LOYTEC mitigates the requirement to use additional hardware and software to configure devices with the onboard HTML-5 based graphical user interface. All configuration is via a standard web browser.

The LOYTEC solution addresses all the main areas for implementation. With the graphical project, users can completely configure all major Terminal and Unitary applications. The basis of the design is a LOYTEC L-STUDIO application leveraging the IEC standards 61131 and 61499 for a powerful solution. The result is a fully configurable interface of a fully programmable controller.



The application provides all the major items necessary to configure and document operation:

- Configuration of I/O and operational characteristics
- Auto-generated graphics (Fig. 6)
- Full alarming, scheduling and trending
- Runtime, energy and comfort information
- Creation of a wiring diagram based on unit configuration (Fig. 8)
- Multiple languages supported (Fig. 9)

For unitary, LIOB-585 contains over 90 base configurable applications. All applications allow for a custom mode available for the user to select the input and output options as desired, without the need to use any software. When configuring I/O options, notifications displayed inform the user of any item currently configured or dependencies. At completion of the I/O configuration, generation of a wiring diagram is available based on the configuration.

The first step in the process is selecting the base unit style. It is then possible to move on to setting more detailed I/O characteristics such as relay default positions (normally open or closed), ranges and other general I/O data. At this point it is also possible to change the unit type to custom and manually assign all I/O rather than use the unit type configuration defaults. The interface notifies the user which functionality is covered from attached LOYTEC L-STAT wall modules and which outputs are configured.

A button menu system can be used for navigation to specific subsections in the configuration (Fig. 3).

Figure 4: General system settings

General system settings for default runtime mode and system units are accessible (Fig.4).

"LIOB-585 contains more than 90 unitary applications with the additional option to go custom and configure your own I/O"

Configure L-STAT Room Operator Panels

Easily configure L-STAT wall modules from the interface for various display settings or calculations such as temperature averaging. Users can toggle between SI and Imperial units to display on the L-STAT independently from the default system settings for units. Configured L-STAT display options are displayed in the graphical window so the user can see the results. There are three modes of L-STAT, simple, full, and then customizable where a user selects all options manually. (Fig.5).

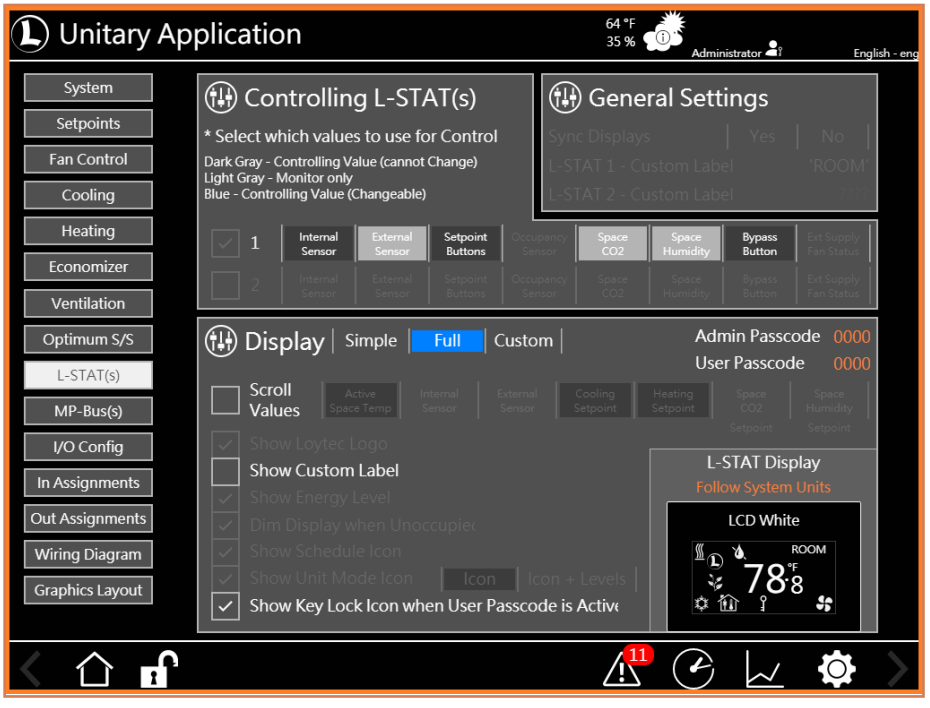


Figure 5: Easily configure L-STAT Room Operator Panels

The LIOB-585 I/O Controller impressed the voters of the “ControlTrends Awards" and was honored with the award "Building Automation Plant/Equipment Controller of the Year" in 2019. The CTA is organized by the renowned BA professional website ControlTrends.org.

LIOB-585
I/O Controller
"Building Automation Plant / Equipment Controller of the Year"
CTA

Auto-generated graphics

Automatically generated monitor and control graphics are immediately available for users (Fig. 6). In custom mode, the user can reposition components such as fan and coil positions for custom renderings (Fig. 6a).

Figure 6: Automatically generated monitor and control graphics

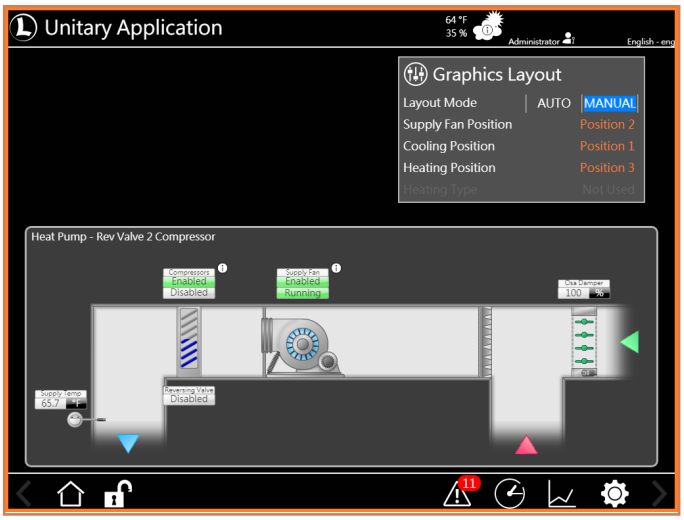


Figure 6a: Custom mode - reposition components such as fan and coil positions for custom renderings

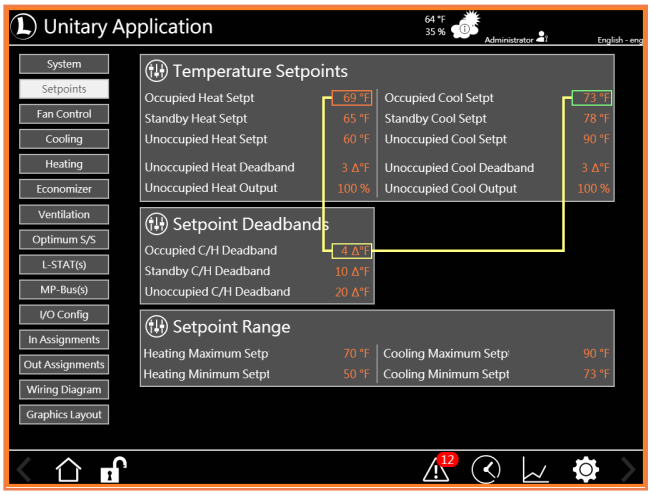


Figure 7: Space comfort conditions

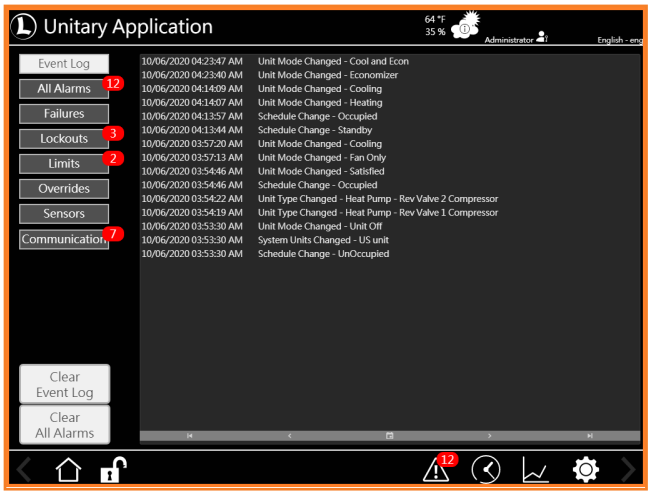


Figure 7a: Alarming categories

Full alarming, scheduling and trending

Organized alarms divided into subsections assist in identifying the types of device issues. Scheduling can be standalone or part of a larger scheduling system. Trends exist for all configurations. Trends become active based on the selected equipment configuration. 4 million trend entries are available per device. Historical filters assist in reducing the amount of data necessary for analytics software. Outputs have runtime logs.

Device diagnostics show the user if a set point change is acceptable or not, providing identification of related set points so the user can be aware of any issues resulting from the action. Monitoring of inputs is constant for operational integrity. Space comfort conditions are quantified based on ASHRAE standards for user indoor comfort (Fig.7).

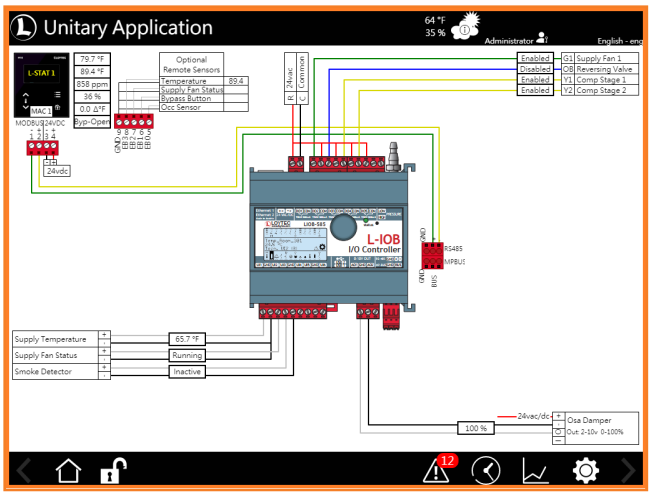


Figure 8: Wiring Diagram

Creation of a wiring diagram based on unit configuration

The wiring diagram (Fig.8) for the unit configuration is displayed with the most recent device values. Since the wiring diagram is part of the graphical project, it never gets lost or removed from a control cabinet. The active wiring diagram with values can be part of the commissioning agent documentation for each device.

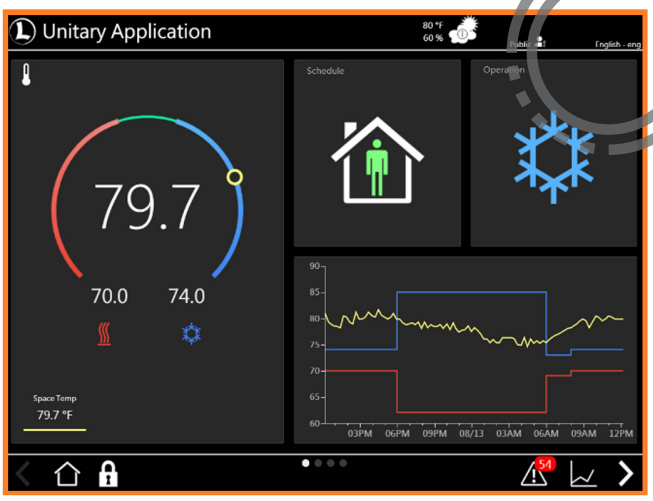


Figure 9: Multiple languages supported

Multiple languages supported

Several languages are supported and immediately changeable. Via dropdown menu at the top right corner you can select between the menu languages: English, German, Traditional Chinese, Spanish, Dutch, and Italian. Any other languages can be added.

All system data, alarms, scheduling, trending, and device configuration are stored at the backup interval required for utilizing the LWEB-900 building management system.

Similar functionality exists for Terminal applications. Additionally, provisions for setup of duct and balancing of airflows with calibration are all built into the graphical user experience (Fig.10).

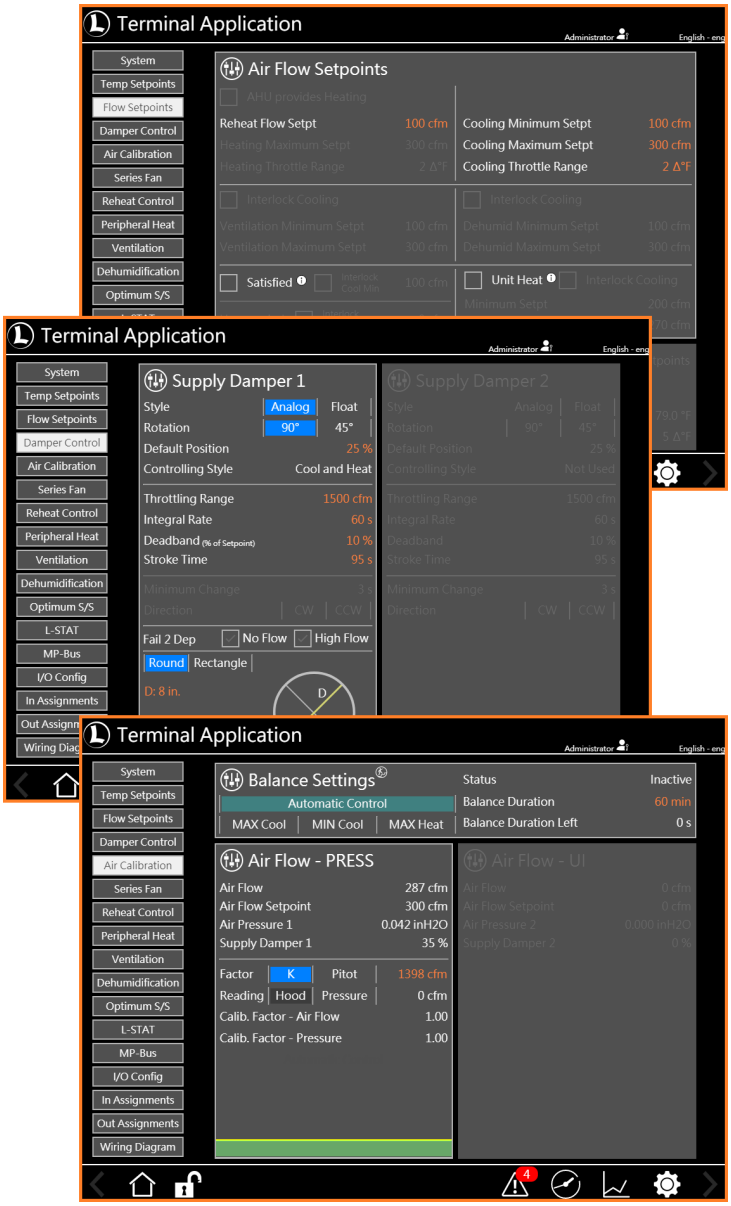


Figure 10: Calibration

Another level for building automation devices is connectivity and interaction for IoT (internet of things). LOYTEC answers the call with a built-in Javascript engine. Obtaining services for weather, booking and other scheduling systems makes each LOYTEC device a point of connection. A LIOB-585 Terminal or Unitary configuration can easily be part of the board, conference, resort or other integrated solution. Whether uploading data to cloud services or connecting to A/V and other consumer products such as Sonos®, Philips Hue®, Alexa® and friends, LOYTEC controllers deliver a solution.

"If you can control it via app, you can integrate it into the building automation system or touch panel interface."

LOYTEC Terminal and Unitary solutions provide easy configuration for users with one device model for all applications without using software or dependencies on other embedded devices or "front end" software packages for visualization and control. For scalability, parameters provide migration to the LWEB-900 building automation solution to configure large quantities of controllers simultaneously. Reporting and periodic device backups become available locally or across many building sites.

One controller for all Terminal and Unitary applications:

- Rooftop Unit (RTU)
- Unit Ventilator (UV)
- Water Source Heat Pump (WSHP)
- Fan Coil Unit (FCU)
- Heat Pump (HP)
- Heat Recovery Ventilation (HRV)
- Portable Terminal Air Conditioning (PTAC)
- Air Handling Unit (AHU)
- Variable Air Volume (VAV)
- Variable Volume and Temperature (VVT)
- Others.

Conclusion:

With LIOB-585 LOYTEC offers what the market was longing for! Instead of using multiple controllers the LOYTEC solution offers one compact controller for all unitary and terminal applications. LIOB-585 not only saves overall costs for your projects, but also delivers all the major items necessary to configure and document operation with ease. Watch our LIOB-585 video for further details.

LIOB-585 Video on Youtube