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## Introduction

L-ION series products are advanced digital controllers designed for heating, ventilating, air-conditioning (HVAC) systems. They have the capability to control process variables using PI control, cascade, compensation, low and high limit functions.

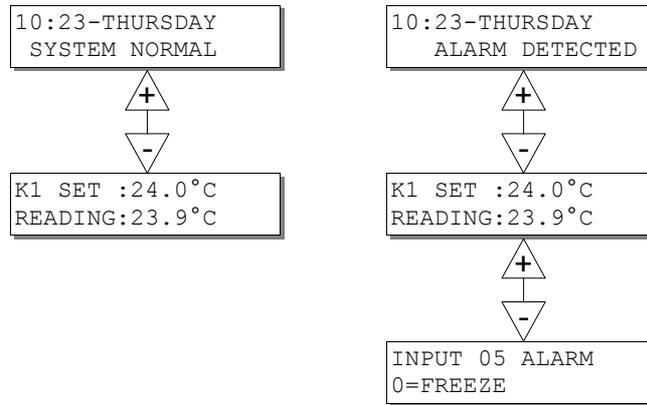
The controllers can be configured either by setting a series of parameters or by selecting from a set of predefined templates. This procedure is explained in detail in the Engineering Manual.

Once the system is configured, basic settings can be changed, input output values monitored and time schedules programmed by the user. This document explains in detail the user interface and setting procedures.

Please refer to the engineering manual for the configuration menu.

## Basics

- General** The L-ION controller has a practical user interface in English. Refer to the engineering manual for other languages.
- Leds** Red P led : Shows that the panel is energized.  
Blue S led : Heartbeat. Blips during normal operation.  
Red Rx and Tx leds : Blips when the controller is communication on the Modbus port. (Available only on models with Modbus option.)
- Display** LCD 16 chars x 2 rows, with back-light
- Default screen** The default screen will show the status of the controller. In addition, models with timers will show the time and day. The + / - buttons will toggle the screen showing the main sensor reading and set-point. If there is an alarm, the source can be displayed with the same buttons.
- The display will revert to the default screen if no buttons are pressed for some time. To revert back manually from any menu, press the cancel button a few times.



Sample default screens for the EP44-M, with and without alarm condition.

- Keys** All the parameters can be set using the four buttons. Functions are as follows:



- Browse among menu items
- Change settings



- Enter the main menu from the default screen
- Enter the sub menus
- Confirm the changed settings



- Go back to the upper menu
- Exit without saving changes

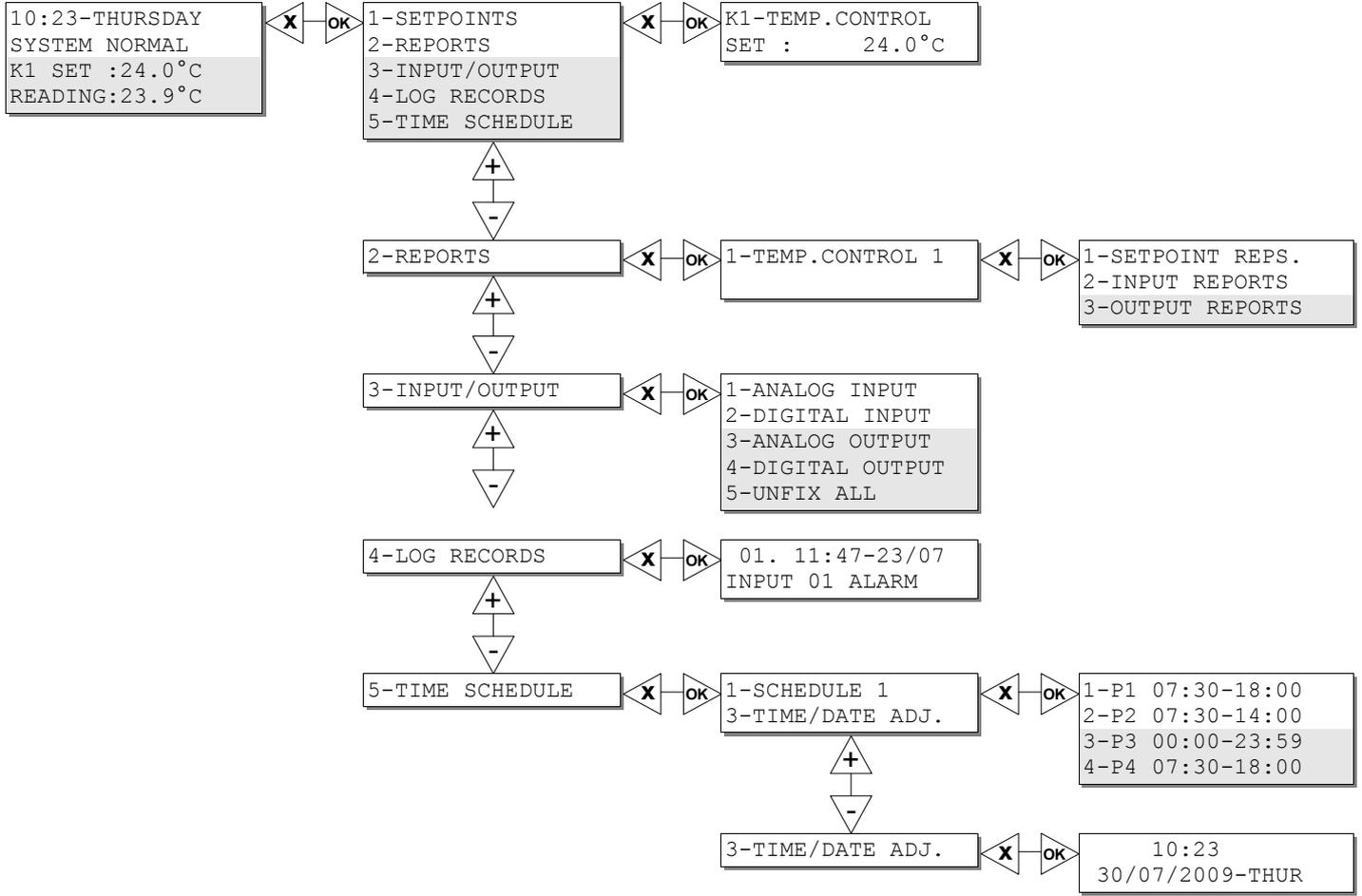
The main menu is accessed by pressing the OK button in the default screen. The menu items are browsed using the up/down buttons. OK enters the menu indicated on the upper line, cancel goes back one level.

If the selected item has a configurable parameter, press OK to enter edit mode. The flashing value can be changed using the up/down buttons. Press OK to save, cancel to discard changes. (Holding down the up/down arrows accelerates the change.)

**CAUTION** : Pressing the cancel and up arrows simultaneously in the default screen enters the configuration menu. This item is intended for installers and advanced users. Changing these values may result in misoperation, and even damage to the equipment. (Details of these parameters are explained in the engineering manual.)

## Menu structure

The menu structure is shown below. Details of each item is explained in the following pages.



## Set-points menu

The first item on the main menu is the “Set-points” menu. From the default screen press OK to enter main menu and OK once more to enter this menu.

Set-points for each control loop is displayed. If the panel is configured to control more than one process, the up/down buttons will toggle between different controlled items.

To change the setting shown on the display, press the OK button. The flashing value can be changed with the up/down buttons. Press OK to save, cancel to discard the changes.

## Reports menu

**Set-points Reports**

The second item on the main menu is "Reports." All items under this menu are readonly.

A list of process variables controlled by the panel will be displayed. Number of items on this list may range from one to four, depending on the model and configuration. Select the control scenario to be observed.

Values of the variables used for the calculation of the set-point will be displayed in this menu. Some of the values might not be available, depending on the system configuration.

**Main Set-point Value**

The set-point entered by the user from the display on the controller. If a remote potentiometer is used as the set-point input, this value is not displayed.

**Effective Set-point Value**

The calculated set-point, used in the control loop. This value might be different from the user input value. The compensation function will shift the set-point based on the reading at the compensation input, usually the outside temperature.

**Calculated Set-point Value**

This value is displayed only for systems with a secondary input. Cascade control function determines a second set-point value, using the reading at the primary input. This line displays the secondary set-point value. The control signals are calculated by comparing this set-point against the secondary input.

**Compensation Value**

The positive or negative shift applied on the main set-point by the compensation function. Only available if the compensation function is enabled.

**Low Limit Value**

The low limit value for the secondary input

**High Limit Value**

The high limit value for the secondary input

**Room Potentiometer Value**

The value from the remote set-point potentiometer. Not available if the controller display is used for set-point entry.

**Input Reports** Measured values at the inputs related to the selected control loop are displayed in this menu. Some of the items might not be available, based on the systems configuration. The physical terminal numbers of the defined inputs are also displayed.

**Main Input**

Shows the value measured at the main input. This value is compared against the main set-point in the controls calculations.

**Cascade Input**

The value measured at the cascade input. Only displayed if the cascade function is enabled.

**Limit Input**

The value measured at the limit input. Only displayed if the limit function is enabled.

**Difference Input**

The value measured at the differential input. Only displayed if the differential function is enabled.

**Compensation Input**

The value measured at the compensation input. Only displayed if either the summer or winter compensation function is enabled.

**Outside Temperature Input**

Shows the outside temperature value. Only displayed if the compensation functions are not enabled.

**Enable Input**

The status of the systems enable input. Only displayed if defined in the configuration menu. If this value is inactive, all the outputs assigned to this control loop are closed.

**Fire Input**

The status of the fire input. Only displayed if defined in the configuration menu. If this value is active, all the outputs take their per-assigned values.

**Emergency Input**

The status of the emergency stop input. Only displayed if defined in the configuration menu. If this value is active, all the outputs take their pre-assigned values.

**Freeze Input**

The status of the freeze-stat input. Only displayed if defined in the configuration menu. If this value is active, all the outputs take their pre-assigned values.

**Output Reports** Output signals at the outputs assigned to the selected control loop are displayed in this menu. Analog outputs are displayed with defined units, digitals are displayed with defined status definitions.

## Records menu

Fourth item on the main menu is the Records menu. The log records for past events are displayed in this menu. Latest 200 records are stored in L-ION panels. Alarms, power failures, manual overrides are recorded.

Models with timers display actual date and time for each record. Others record each event with a time tag from latest power-up.

## Input / Output menu

The input / output menu, third item on the main menu, offers direct access to all the inputs and outputs of the system. Their names, current measurement and physical terminal connection number are displayed.

All the values may be overwritten for test purposes. Select the item to be fixed, press OK to enter edit mode. Use up / down buttons to set the desired value and press OK to save. An exclamation mark (!) appears next to items overwritten. To release an overwritten item enter the edit menu by pressing OK and press the X button to exit. To release all overwritten values, use the Unfix All sub menu.

If there is an overwritten point, the default screen will display "fixed value".

All activity in this menu is logged.

CAUTION: All the other functions of the controller continue to run normally when one or more points are overwritten. Only advances users should use this option.

<b>Analog inputs</b>	All inputs defined as analog in the configuration menu.
<b>Digital inputs</b>	All inputs defined as digital in the configuration menu.
<b>Analog outputs</b>	All outputs defined as analog in the configuration menu.
<b>Digital outputs</b>	All outputs defined as digital in the configuration menu.
<b>Unfix all</b>	All overwritten points are released using this sub menu. Press OK to enter and select 1=Unfix All. Press OK to release all points and resume automatic operation.

## Time schedule menu

The time schedule menu, fifth item on the main menu, is only available on items with timer function. Time schedules are configured using this menu. The last sub item is used to set the current date and time.

A + sign next to the schedule name indicates that the output is active at the moment.

Four time periods can be defined for each time schedule. Each period, labeled P1..P4, has a start time, a stop time and list of active days. A period can be disabled by changing all of its days to inactive. The list of days start from Monday as 1 to Sunday as 7. A plus sign below the day number indicates that the period will be active on that day..

