

# EPC2000 HMI Demo Application

## User Guide

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**Eurotherm**<sup>®</sup>

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**by Schneider** Electric



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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Eurotherm Limited software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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# Safety Information

## Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

<b>⚠ DANGER</b>
<b>DANGER</b> indicates a hazardous situation which, if not avoided, <b>will result in</b> death or serious injury.

<b>⚠ WARNING</b>
<b>WARNING</b> indicates a hazardous situation which, if not avoided, <b>could result in</b> death or serious injury.

<b>⚠ CAUTION</b>
<b>CAUTION</b> indicates a hazardous situation which, if not avoided, <b>could result in</b> minor or moderate injury.

<b>NOTICE</b>
<b>NOTICE</b> is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

**Note:** Electrical equipment must be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

**Note:** A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment, and has received safety training to recognize and avoid the hazards involved.

# Safety and EMC

## Reasonable Use and Responsibility

The safety of any system incorporating this product is the responsibility of the assembler/installer of the system.

The information contained in this manual is subject to change without notice. While every effort has been made to improve the accuracy of the information, your supplier shall not be held liable for errors contained herein.

Use in other applications, or failure to observe the installation instructions of this manual may compromise safety or EMC. The installer must ensure the safety and EMC of any particular installation.

Failure to use approved software/hardware with our hardware products may result in injury, harm, or improper operating results.

## Please Note

Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.

No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

## Qualification of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product.

The qualified person must be able to detect possible hazards that may arise from parameterization, modifying parameter values and generally from mechanical, electrical, or electronic equipment.

The qualified person must be familiar with the standards, provisions, and regulations for the prevention of industrial accidents, which they must observe when designing and implementing the system.

## Intended Use

The product described or affected by this document, together with software and options, is the EPC2000 HMI Demo Application, intended for industrial use according to the instructions, directions, examples, and safety information contained in the present document and other supporting documentation.

The product may only be used in compliance with all applicable safety regulations and directives, the specified requirements, and the technical data.

Prior to using the product, a risk assessment must be performed in respect of the planned application. Based on the results, the appropriate safety-related measures must be implemented.

Since the product is used as a component within a machine or process, you must ensure the safety of this overall system.

Operate the product only with the specified cables and accessories. Use only genuine accessories and spare parts.

Any use other than the use explicitly permitted is prohibited and can result in unanticipated hazards.

## **WARNING**

### **UNINTENDED EQUIPMENT OPERATION**

Do not use the product for critical control or protection applications where human or equipment safety relies on the operation of the product.

**Failure to follow these instructions can result in death, serious injury or equipment damage.**

## **WARNING**

### **UNINTENDED EQUIPMENT OPERATION**

The application of this product requires expertise in the design and programming of control systems. Only persons with such expertise must be allowed to program, install, alter and commission this product.

**Failure to follow these instructions can result in death, serious injury or equipment damage.**

## **WARNING**

### **UNINTENDED EQUIPMENT OPERATION**

During commissioning ensure that all operating states and potential fault conditions are carefully tested. Carefully consider loss of communications and alarms in this analysis.

**Failure to follow these instructions can result in death, serious injury or equipment damage.**

# Overview

This is a demonstration HMI application that has been developed on Blue v3.1 to work on the Pro-face GP4114T panel in conjunction with a single loop (10 program/24 segment) EPC2000 Programmable Controller.

The application has been designed for use with an EPC2000 Programmable Controller configuration of 10 programs and 24 segments. It has been optimized for use with the Heat Cool Template in iTools v9.79.

Using this HMI, the controller can be controlled in three modes: automatic, manual, and by running a program. Automatic mode allows editing of the setpoint value, manual mode allows editing of the threshold value, and when a program is running, the editing functionality of any parameter is disabled. Programs and segments can be added and edited through the HMI setpoint programmer when in a non-runtime state. The HMI also carries a datalogging and recording functionality, and an alarm view with notification, acknowledgement, and inhibit features. Additionally, the HMI can be used to run an autotune, and edit controller PID variables. The user is expected to carry out initial setup and configuration of the EPC2000 Programmable Controller using iTools, then using the HMI for small scale editing.

Supported languages are English, French, Italian, German, Spanish and Simplified Chinese. See "Settings" on page 16 for information on how to change operating language.

The application has not been optimised for scaling to larger interfaces and should only be used on the 4.3 inch GP4114T Pro-face panel.



# Setup

See "Running a Demo" on page 17 for step-by-step list on demo application setup.

## Controller

The controller should be configured to 10 programs, 24 segments. Software version of the EPC2000 should be V2.03 or higher for compatibility with iTools.

## iTools

The HMI has been optimized for the iTools EPC2000 V2.03 PID Heat Cool Template, in iTools version 9.79.

Controller default configuration password is CFGPASSWORD for access mode.

**Note:** The parameter 'holdback style' must be configured in iTools as 'program' (not segment). Holdback style is therefore editable in the 'program edit' section of the HMI: individual edit of holdback style through the segment is not possible.

See "Common Issues" on page 18 for common setup issues.

## HMI

### General

Please note the following:

- The character limit for all input fields is 10 characters.
- Temperature units are read from the controller and set through iTools.
- A USB memory stick must be plugged in before the HMI is powered up, for the datalogging feature to correctly function. It is not possible to record data if the USB is not connected prior to powering up the HMI.
- Time Span of the datalogging graph defaults to zero at startup, so must be adjusted on the Datalogging View Settings page to view values on the datalogging graph.
- It is recommended that programs are built using iTools for efficiency, whilst the HMI is used only for editing parameters.

## User Levels

Three access levels have been included; Operator, Engineer, and Service.

Password protection has been assigned across the following functions at these user access levels:

Function	User Level		
	Operator	Engineer	Service
Edit SP of controller	✓	✓	✓
Edit power output of controller	✓	✓	✓
Run, pause, stop a program	✓	✓	✓
Start and stop recording data	✓	✓	✓
Change filename of data being recorded		✓	✓
Choose parameters viewed on datalogging graph	✓	✓	✓
Edit date, time and language	✓	✓	✓
Acknowledge Alarms	✓	✓	✓
Inhibit Alarms	✓	✓	✓
Change the program	✓	✓	✓
Advance a segment	✓	✓	✓
Edit program parameters	✓	✓	✓
Edit segment parameters	✓	✓	✓
Login and logout	✓	✓	✓
Access HMI settings	✓	✓	✓
Access hardware configuration			✓
Access controller settings		✓	✓

Default passwords are:

User	Password
Operator	1111
Engineer	2222
Service	3333

The logout function defaults to the Operator level.

# Screen Overviews

## Green Banner

This banner is available across all screens. Access to user login is available on every screen. The banner contains back/home navigation and heading information when relevant including informational icons to notify alarm and recording states.

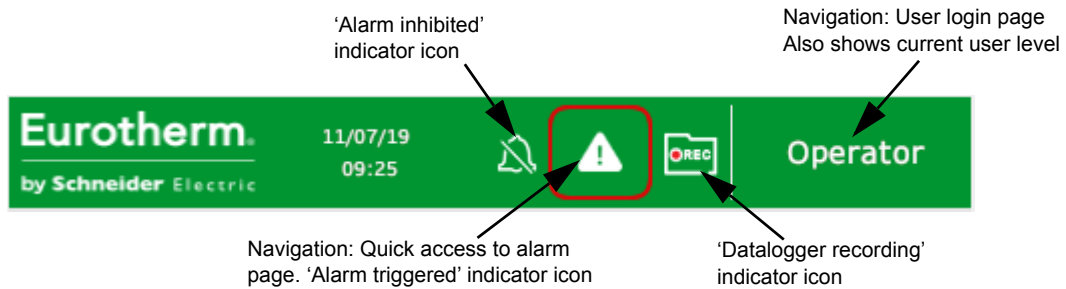


Figure 1 Green banner

## Home Screen

Main View shows the process value, enclosed by a circular bar denoting power output. The power output bar shows as orange when the heat output is being driven, and blue when a cooling output is being driven. Corresponding heater and fan icons are visible for when the process is in heat or cool.

A toggle button allows switching between Manual and Auto modes, enabling editing of Setpoint or Power Output.

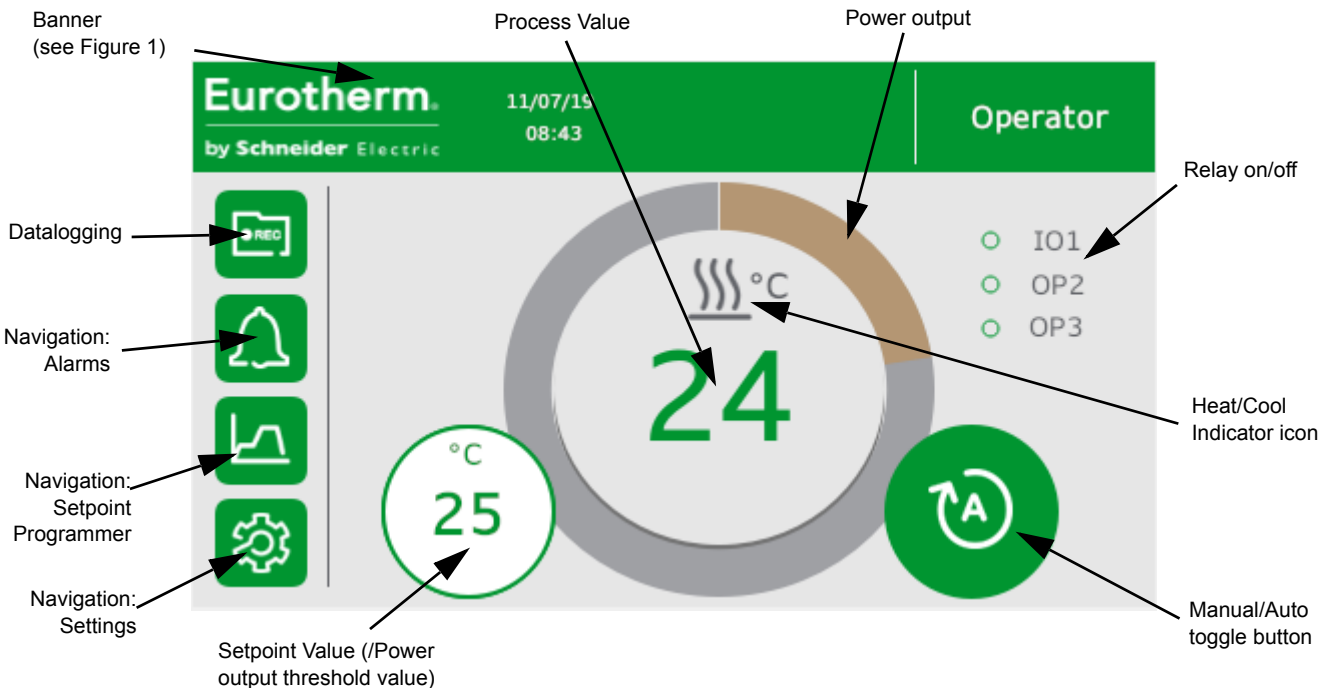


Figure 2 Home Screen (Auto mode)

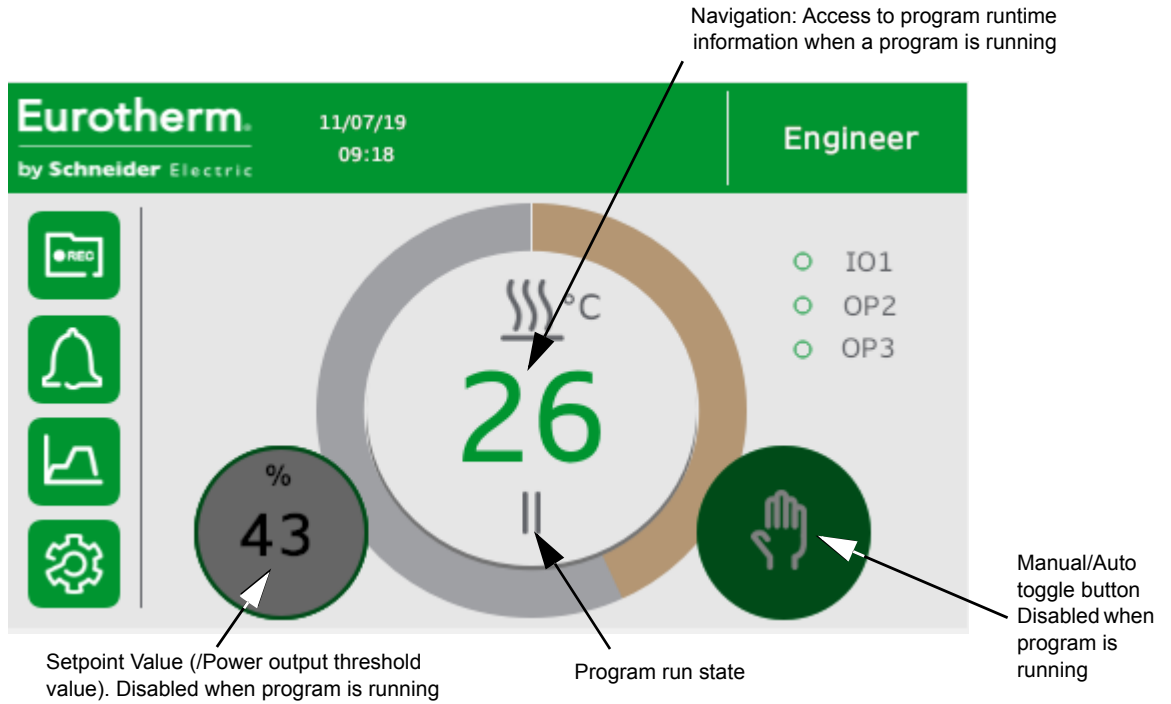


Figure 3 Home Screen (program running mode)

## Datalogging

Variable values can be recorded to a \*.csv file when a USB memory stick is connected at startup. Datalogging settings allow adjustment of values seen on the graph, and the graph time frame.

**Note:** These adjustments are only reflected on the datalogging graph view, and that all data and values will be exported to a \*.csv file regardless of the variables selected.

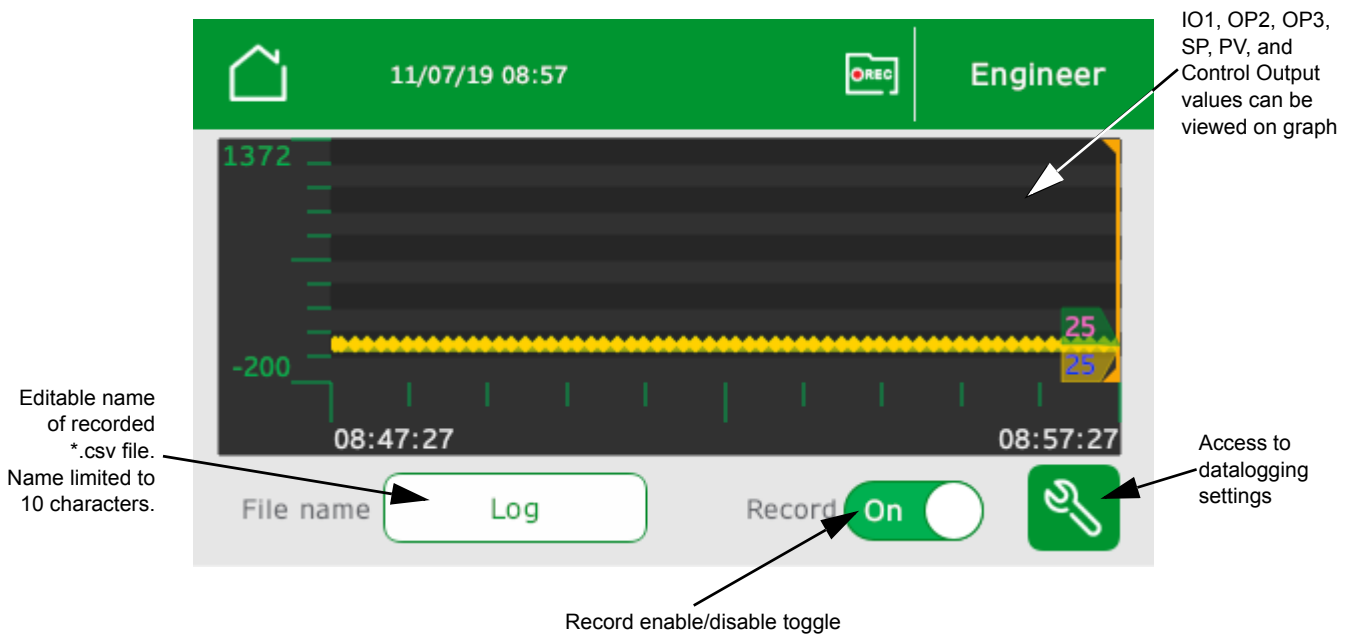


Figure 4 Datalogging

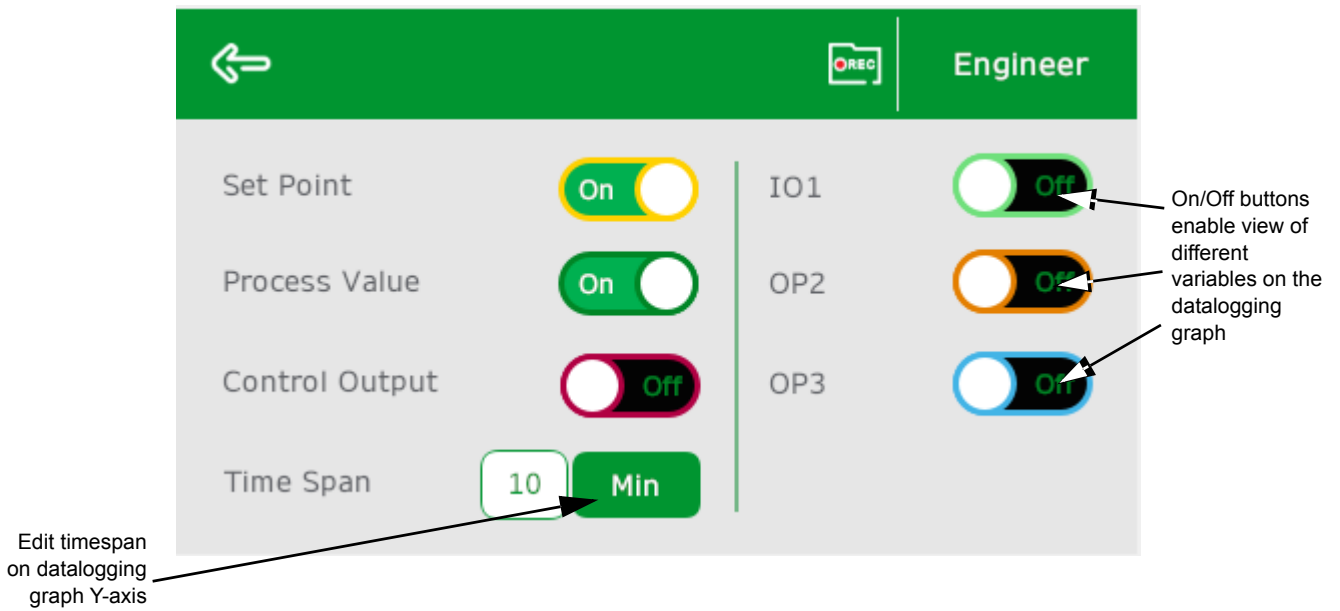


Figure 5 Datalogging View Settings

## Alarms

All six alarm types and threshold values (setup through iTools) will be visible. The following behavior is exhibited:

Table 1: Alarm Behavior

State	Line behavior
No alarm, no acknowledgment required	None (gray text, gray background)
In alarm and unacknowledged	Flash red background, white text
Acknowledged and in alarm	Hold red background, white text
No alarm, previously in alarm and unacknowledged	Red text, gray background

Alarms can be acknowledged using 'checkbox' button. Separately, alarms can be inhibited when alarm behaviour needs to be muted.

**Note:** If wiring is used (through iTools) on the inhibit of the alarms, HMI input will not be able to overwrite these actions. If the Heat Cool template has been used, Alarm 5 DigHi is permanently inhibited due to the template wiring.

Alarm notification can be seen in the green banner when it is active. The notification symbol appears when an alarm is triggered, and stays visible for as long as an alarm is active, and also if an alarm is no longer active, but unacknowledged.

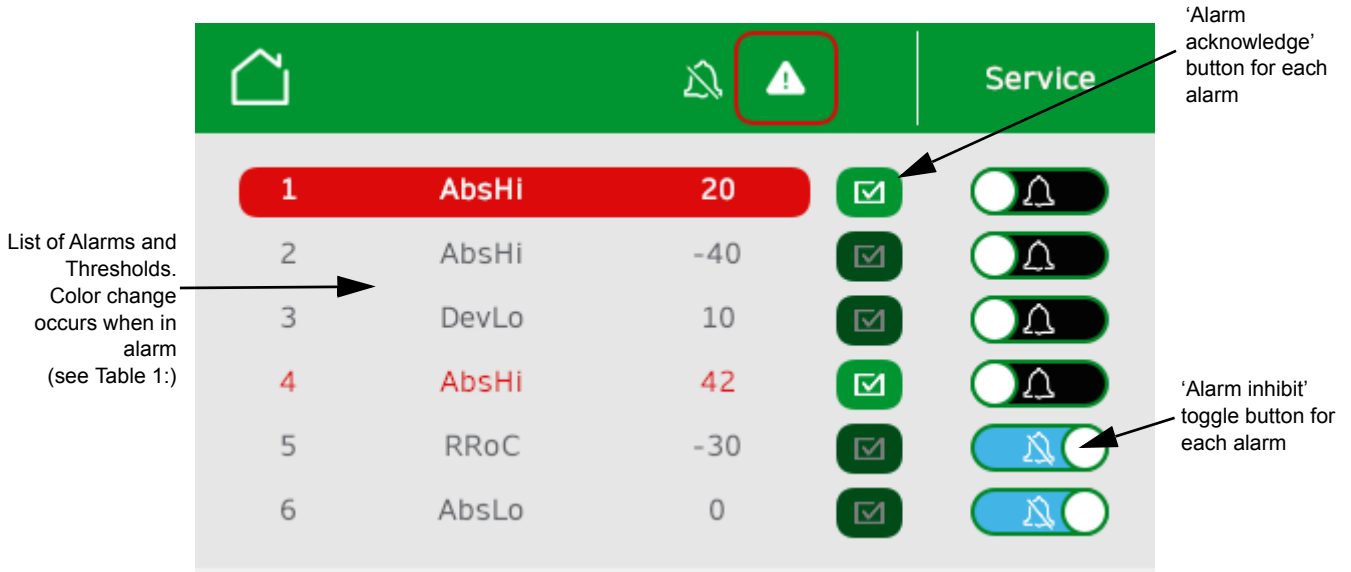


Figure 6 Alarms

### Setpoint Programmer

Ten programs are available for selection and editing. Edits can be made to the overall program via the program edit page, and edits can also be made to individual segments. Segments can only be edited separately, after which, the user must return to the program overview to edit the next segment. When a program is running, runtime information is shown in the place of the editing functionality.

It is recommended that programmes are built using iTools, whilst the HMI is used only for editing or simple programming. See "Running a Demo" on page 17 for steps on how to load and run a program.

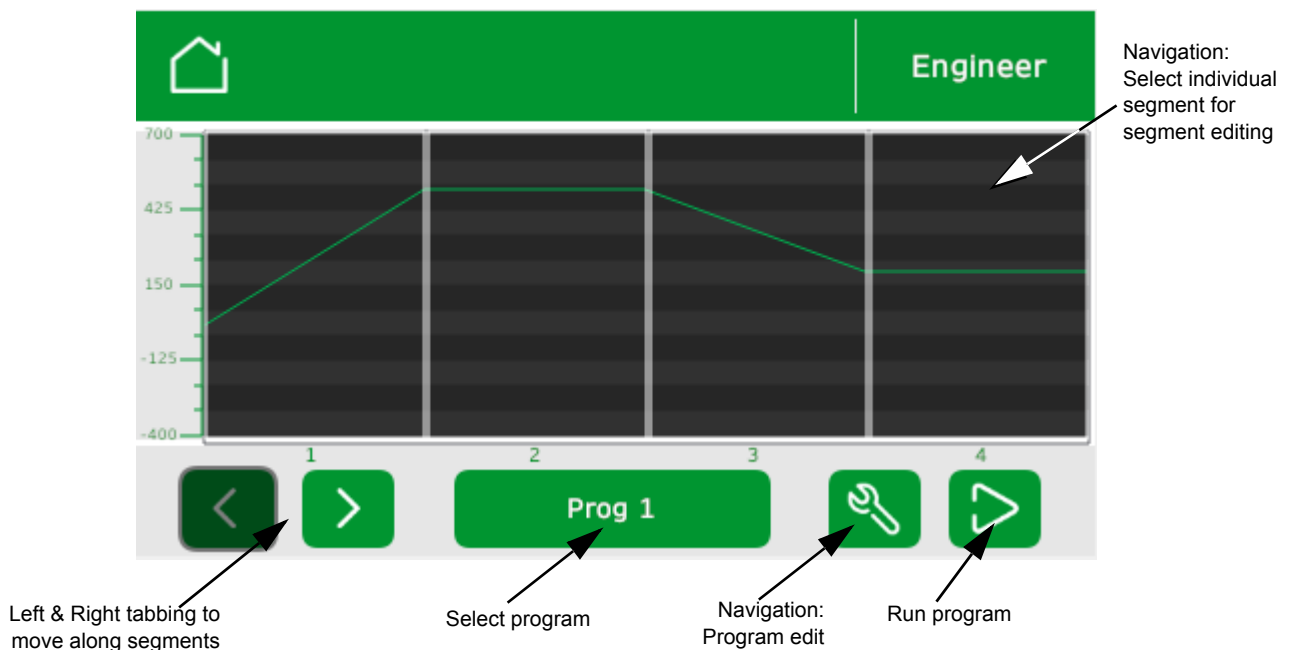


Figure 7 Setpoint Programmer

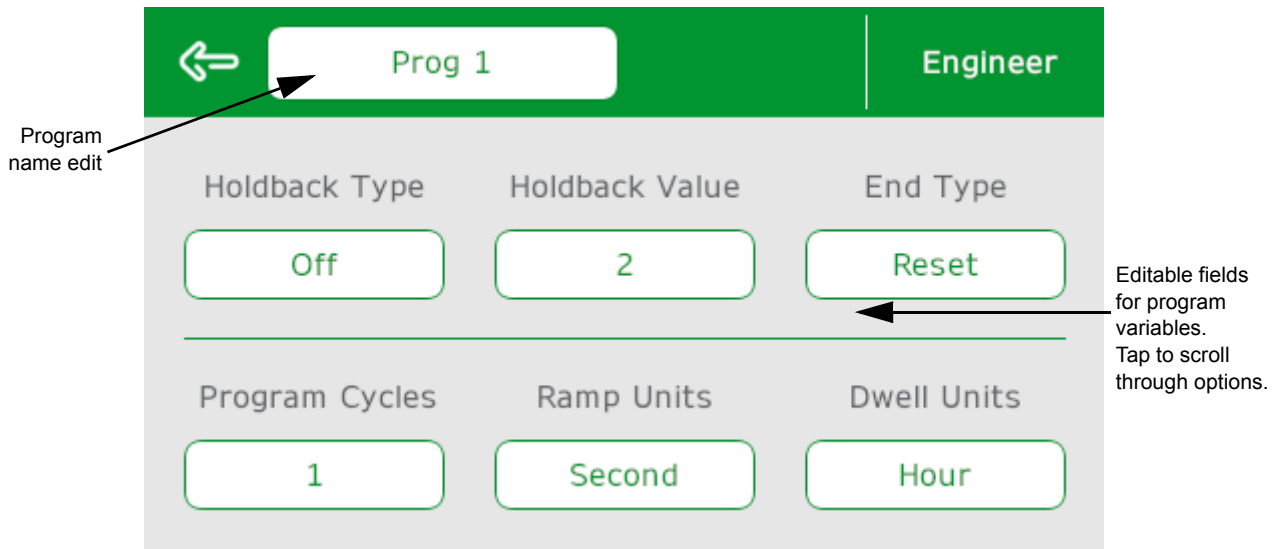


Figure 8 Program Edit

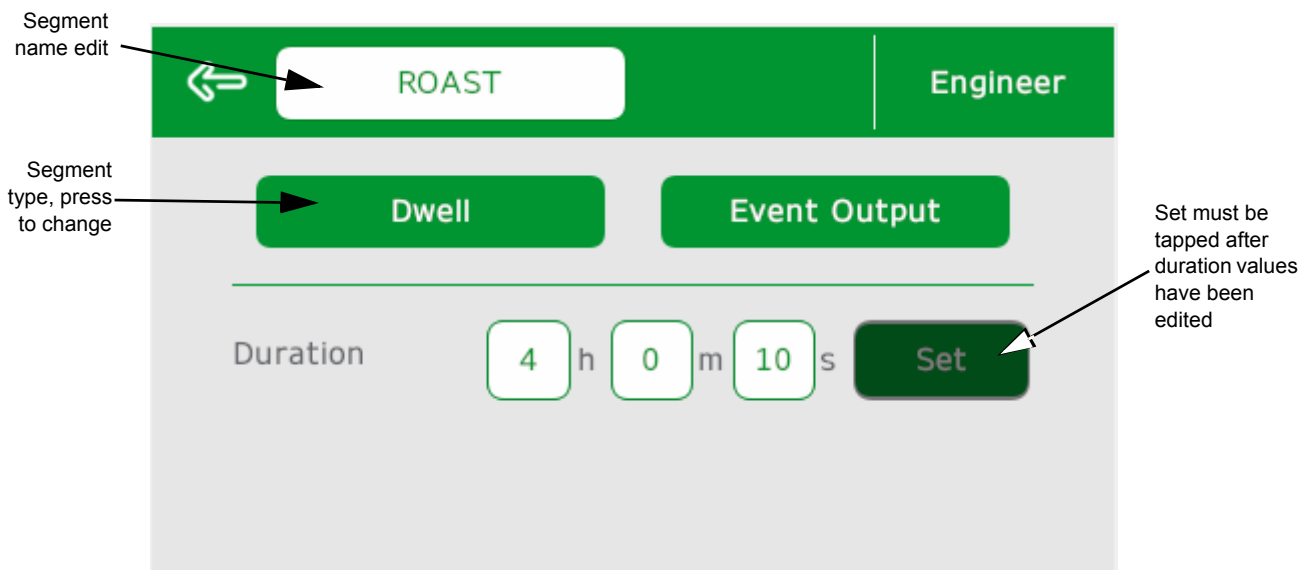


Figure 9 Segment Edit

# Settings

The expected use of this section is in a commissioning capacity, and that access to, and editing of items in this section will not be required once initial setup has taken place. HMI settings allow editing of the time and date format and changing of language. Panel hardware configuration settings can also be accessed from here. Controller settings enable autotune to be run, and PID variables to be edited.

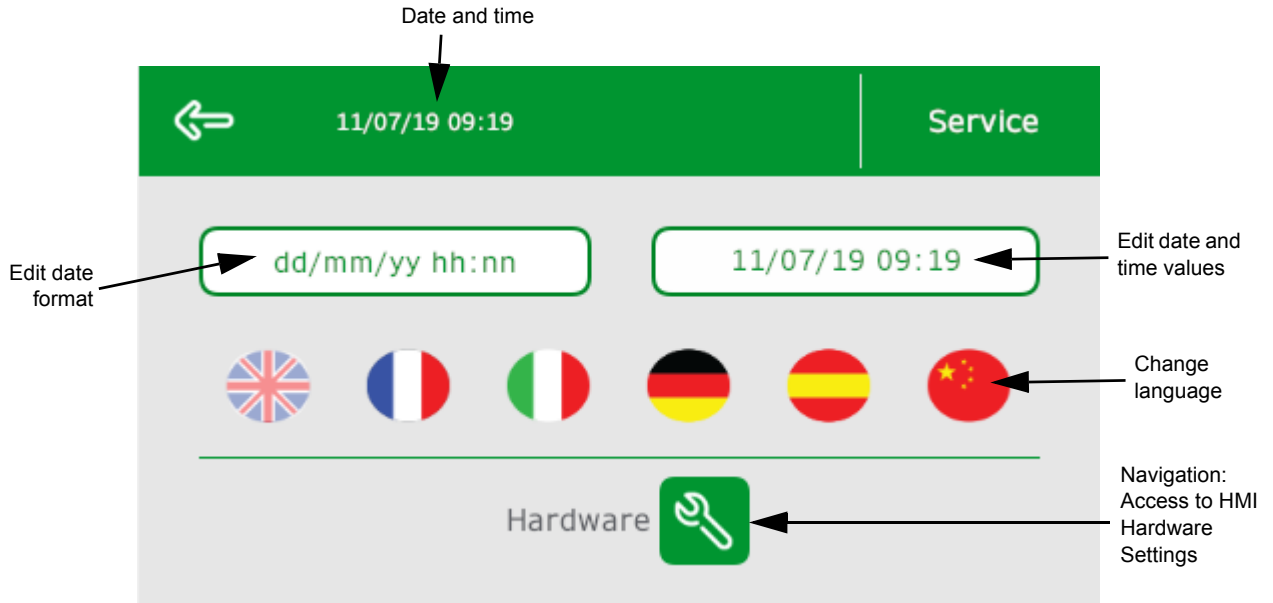


Figure 10 HMI Settings

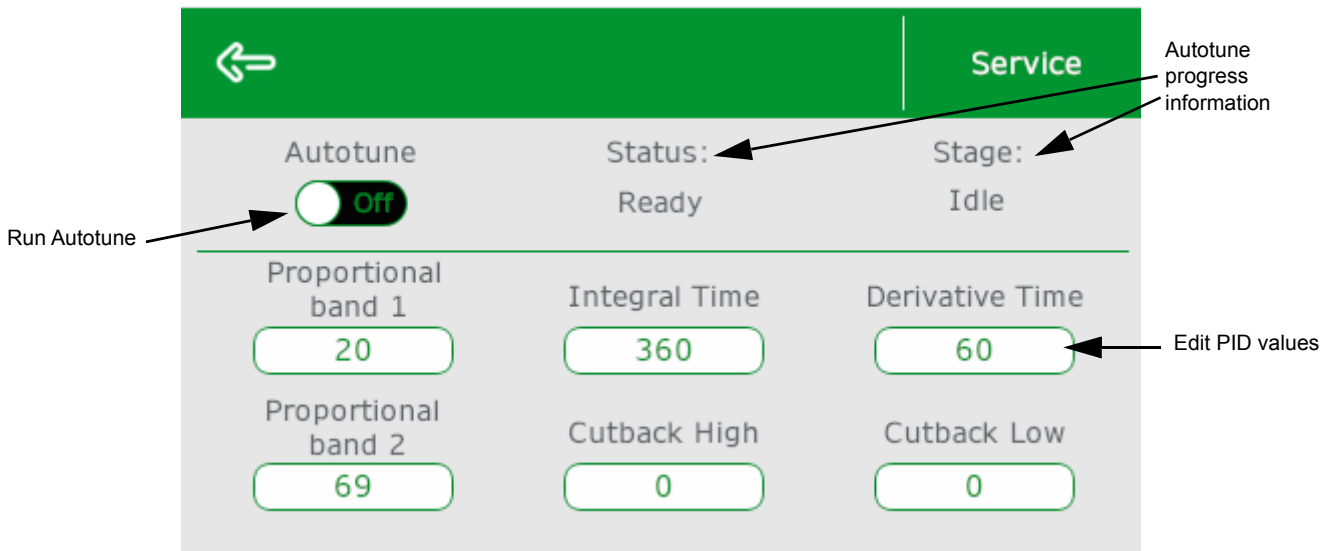


Figure 11 Controller Settings



## Running a Demo

The procedures described here detail how to:

- Download software
- Select a program
- Edit a program
- Run a program

Refer to the following sections for more details.

Refer to "Screen Overviews" on page 11 for details of the relevant buttons and icons.

## Downloading the Software

To download the software:

1. Connect Proface panel to Blue software via USB cable.
2. Open program file and press the "download to device" button.
3. Connect controller to iTools via Ethernet cable.
4. Open new EPC2000 Heat Cool template and download to device.
5. Bring out of manual mode.

Before proceeding, press the "setpoint programmer" icon on the HMI screen.

## Selecting a Program

To select a program:

1. Press the "select program" button to change the selected program.  
Any programs created in iTools can be selected from here.

## Editing a Program

If required, edit the program as follows

1. Press the "program edit (spanner)" button to edit variables of whole program.
2. Press in a segment area to edit that segment.
3. Within segment edit press the "type" button to change type.
4. To edit another segment, press the "back" icon then select a new segment.

## Running a Program

To run a program:

1. Press the "play" icon to run program.

**Note:** Editing is not possible when program is running.

2. Press the "home" icon to return to controller view.
3. Press the central process value to return to program information overview.

# Common Issues

## iTools and Controller Issues

### Clone file download unsuccessful: Hardware mismatch

In iTools, navigate to: Browse > Instrument > Modules to change the expected IO or Comms to match actual hardware listed on the side label of the EPC2000 device.

### Wire connections between blocks disappear in the clone file

Controller version is likely not supported or is incompatible with latest iTools. Upgrade the EPC2000 software version for use of iTools clone file. To upgrade, refer to firmware management upgrade tool.

## HMI Issues

HMI panel shows red boxes in the place of values and is not communicating with the controller.

Possible IP address mismatch. The controller will be shipped with a default IP address of 192.168.111.222. The HMI IP address needs to be on the same domain (i.e. 192.168.111.223).

This can be set by:

1. Navigate to Settings > HMI > Hardware > Down (until Ethernet1 is reached).
2. Enter new IP address.
3. Reboot.

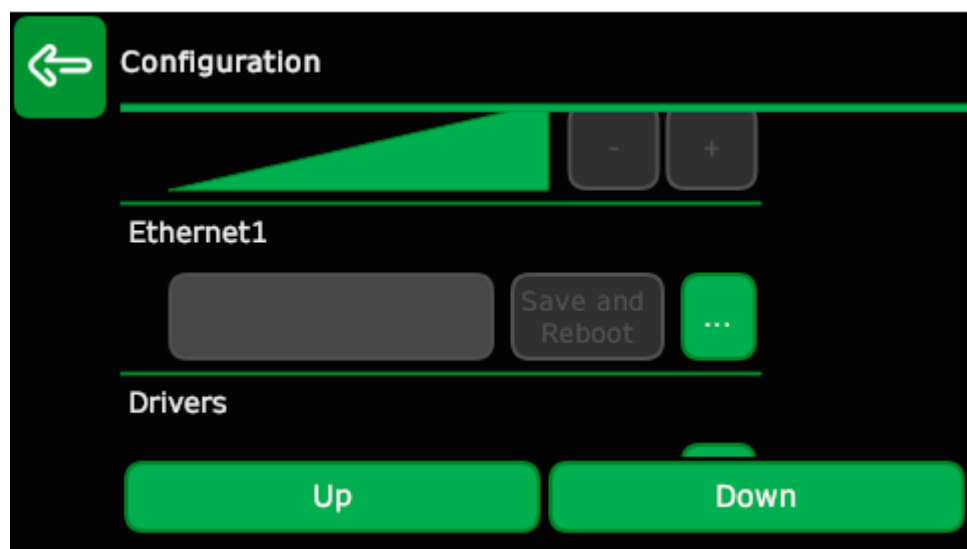


Figure 12 Target Screen