
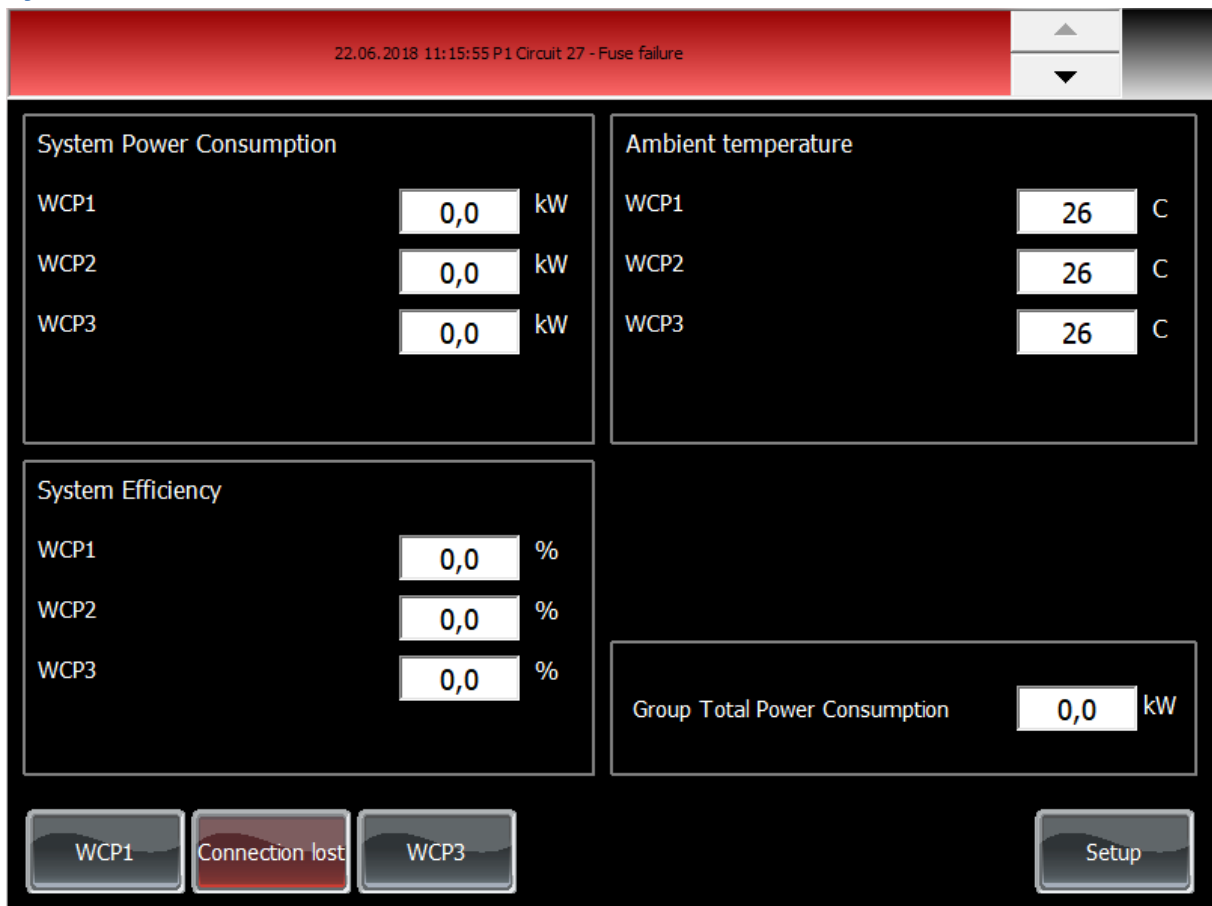


B	16.01.19	Issued for acceptance	FO	SWE	SWE
A	22.06.18	Issued for acceptance	FO	SWE	SWE
Rev.	Issue Date	Reason for Issue	Made by	Chk'd by	Appr. By
Vendor Package No TBA		Package Title TEF TRACE USER GUIDE MULTI HMI FOR WCP V5.3			
Tag Number(s) TBA			Purchase Specification Number(s) TBA		
 Member of the R. STAHL Technology Group			Space reserved for status label (Project use)		
			<input checked="" type="checkbox"/> <b>A</b> 'Accepted' <input type="checkbox"/> <b>B</b> 'Accepted with comments Incorporated' <input type="checkbox"/> <b>C</b> 'Not Accepted, Revise and Resubmit' <input type="checkbox"/> <b>I</b> 'For Information Only' <input type="checkbox"/> <b>V</b> 'Void'		
		Date	Sign. Responsible Engineer		
Purchase Order Number TBA					
Supplier Rev. Code 01		Supplier Document Number TUM6374			
Document Title (must be identical to entry on SMDL)					
SDRL Code(s) TBA					
Sort Code					
Document Number TBA					Page

## System Screens

### System Overview:



This is the startup screen. It contains key information for the connected distribution boards. From this screen navigation to the Main screen of the connected WCP's is possible from the navigation buttons. Up to four WCP's can be connected to one HMI panel.

#### Information on screen:

- System power consumption in kW for Panel 1 to 4.
- Ambient temperature in Celsius for Panel 1 to 4.
- System efficiency in percentage for Panel 1 to 4.

#### Navigation buttons:

- Panel 1 to 4 Main screen.
- Setup screen.

## Setup - Panel

22.06.2018 11:15:55 P1 Circuit 27 - Fuse failure

Connected Panels		Panel Tag	
WCP1	<input checked="" type="checkbox"/>	Panel 1 Tag	WCP1
WCP2	<input checked="" type="checkbox"/>	Panel 2 Tag	WCP2
WCP3	<input checked="" type="checkbox"/>	Panel 3 Tag	WCP3
Panel 4	<input type="checkbox"/>		

Line to Line Power		Panel Maximum Power Rating	
WCP1	<input checked="" type="checkbox"/>	WCP1	100,0 kW
WCP2	<input checked="" type="checkbox"/>	WCP2	100,0 kW
WCP3	<input checked="" type="checkbox"/>	WCP3	100,0 kW

System Overview   Panel Setup   Network Setup   Power Limiter

This screen contains setup and configuration of Individual Panels.

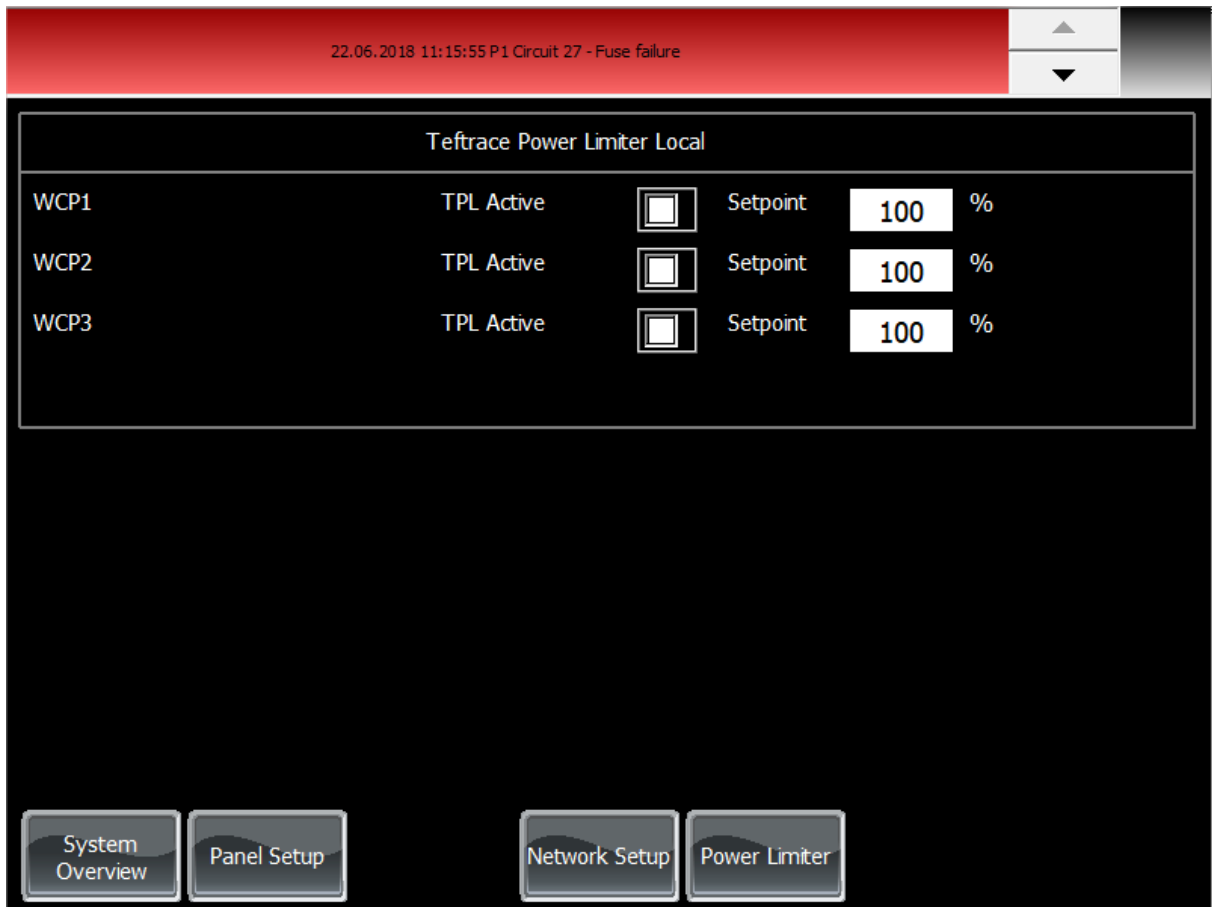
### Information on screen:

- Connected Panels: This selection defines which panels which are connected and to be controlled from the HMI. Default is true.
- Panel Tag: This input lets the user define the System tag for identification of each Panel
- Panel Maximum Power Rating: Define the maximum power rating for each panel; this value is used to calculate system efficiency according to used power. Default Maximum Power Rating is 100kW.
- Line to Line Power: This selection defines if the power supply is a line to line system or line to null system. Default is line to line.

### Navigation buttons:

- Network Setup
- Power Limiter

## Setup – Power Limiter



### Abbreviations:

TefTrace1070300 Power Limiter = TPL

Power Management System = PMS

System Maximum Power Rating = SMPR

PMS Available Power = PAP

Pulse width modulation = PWM

### Description:

The TPL is a function which limits power consumption according to the available power set-point from the ships PMS. This signal is the PAP, or “PMS Available Power” signal.

WCP`s can received the PAP signal by either hardwired signal 4-20mA Analogue Input, as a Register in the Modbus data, or via OPC data.

Each WCP has a calculated SMPR derived from the load list produced by Tranberg project management tool. Each board has 36 outputs, with a maximum of 20A load per circuit.

If the PAP is below the SMPR, the PWM will be restricted accordingly.

Example:

SMPR = 100kW and PAP = 75kW.

$$75/100*100 = 75\%$$

Each of the 36 PWM outputs will be capped at a maximum of 75%. This ensures that system power do not exceed 75kW as regulated by the PAP.

**Information on screen:**

- TefTrace Power Limiter Local: Activate onboard power limiter with manual setpoint.
- Power Limiter from PMS: Activate external power limiter, setpoint from PMS via 4-20mA signal.

**Navigation buttons:**

- Panel Setup
- Network Setup

## Setup - Network

22.06.2018 11:15:55 P1 Circuit 27 - Fuse failure

WCP1	Master	<input checked="" type="checkbox"/>			
Ambient sensor	Local control	<input checked="" type="checkbox"/>	Air Temp	026	Comm Counter 000
HLS	Local control	<input checked="" type="checkbox"/>	HLS value	000	
WCP2	Master	<input type="checkbox"/>			
Ambient sensor	Local control	<input type="checkbox"/>	Air Temp	026	Comm Counter 096
HLS	Local control	<input checked="" type="checkbox"/>	HLS value	000	
WCP3	Master	<input type="checkbox"/>			
Ambient sensor	Local control	<input type="checkbox"/>	Air Temp	026	Comm Counter 096
HLS	Local control	<input checked="" type="checkbox"/>	HLS value	000	
Panel 4	Master	<input type="checkbox"/>			
Ambient sensor	Local control	<input type="checkbox"/>	Air Temp		Comm Counter
HLS	Local control	<input type="checkbox"/>	HLS value		

System Overview Panel Setup Network Setup Power Limiter

This screen contains setup and configuration of the Panel Network.

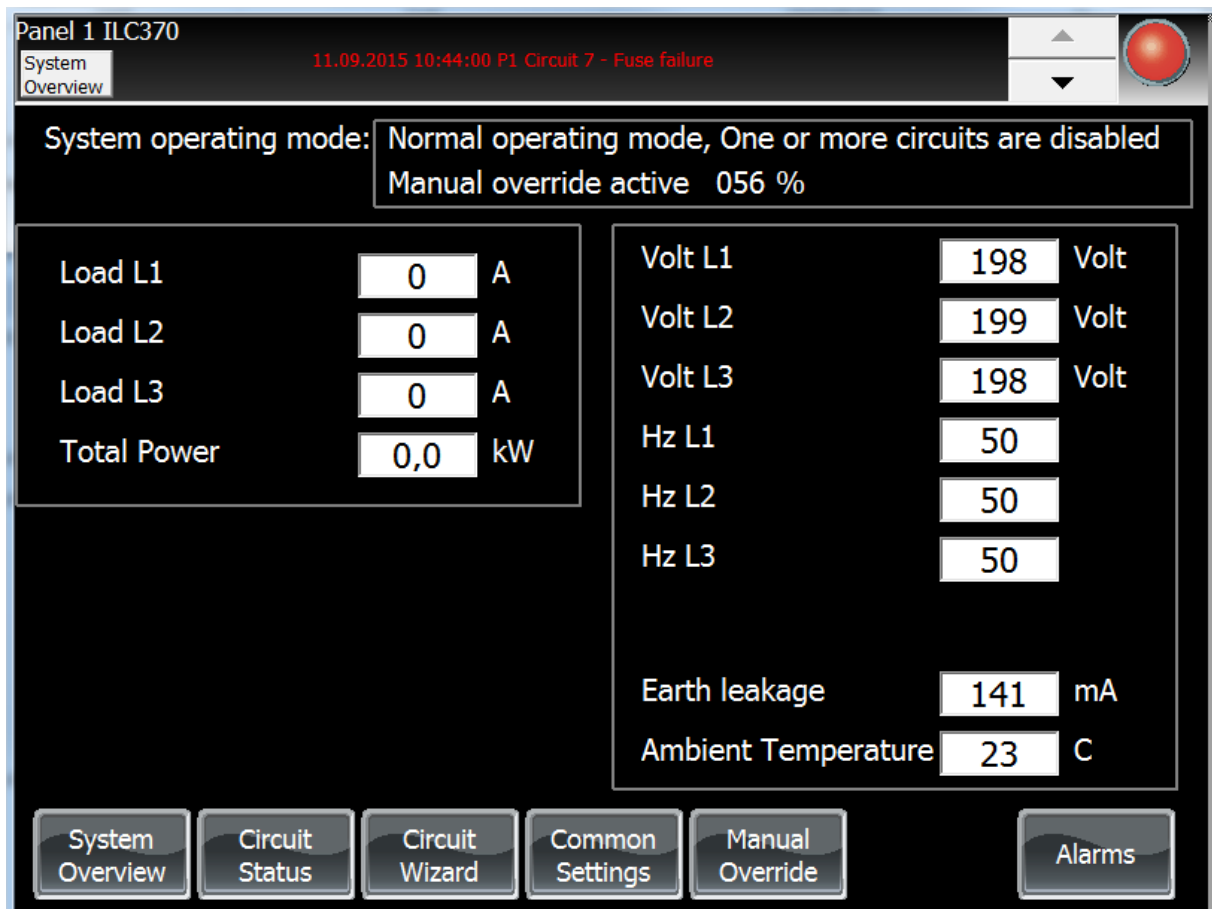
### Information on screen:

- Panel Master checkbox: This checkbox will set the applicable Panel as Network Master. This function allows the sharing of data with the Slave Panels. When a Panel is designated as Master the other Panels are automatically designated as Slaves.
- Ambient Sensor Local control: This checkbox specifies if the applicable Panel uses local sensors or sensor data from the Master.
- Ambient Sensor Air Temperature: This value shows the local sensor temperature or the sensor temperature of the Master.
- Heat Loss Sensor Local Control: This checkbox specifies if the applicable Panel uses local sensors or sensor data from the Master.
- Heat Loss Sensor Value: This value shows the local sensor temperature or the sensor temperature of the Master.
- Comm counter: This value is incremented by one every two seconds. The counter value is sent from the Master to each Slave, it indicates that the Slave communicates with the Master.

### Navigation buttons:

- Panel Setup

## Main screen



This screen contains information on operating mode and system information such as phase load, phase voltage, phase Hz and system power. Total earth leakage and ambient temperature is also displayed.

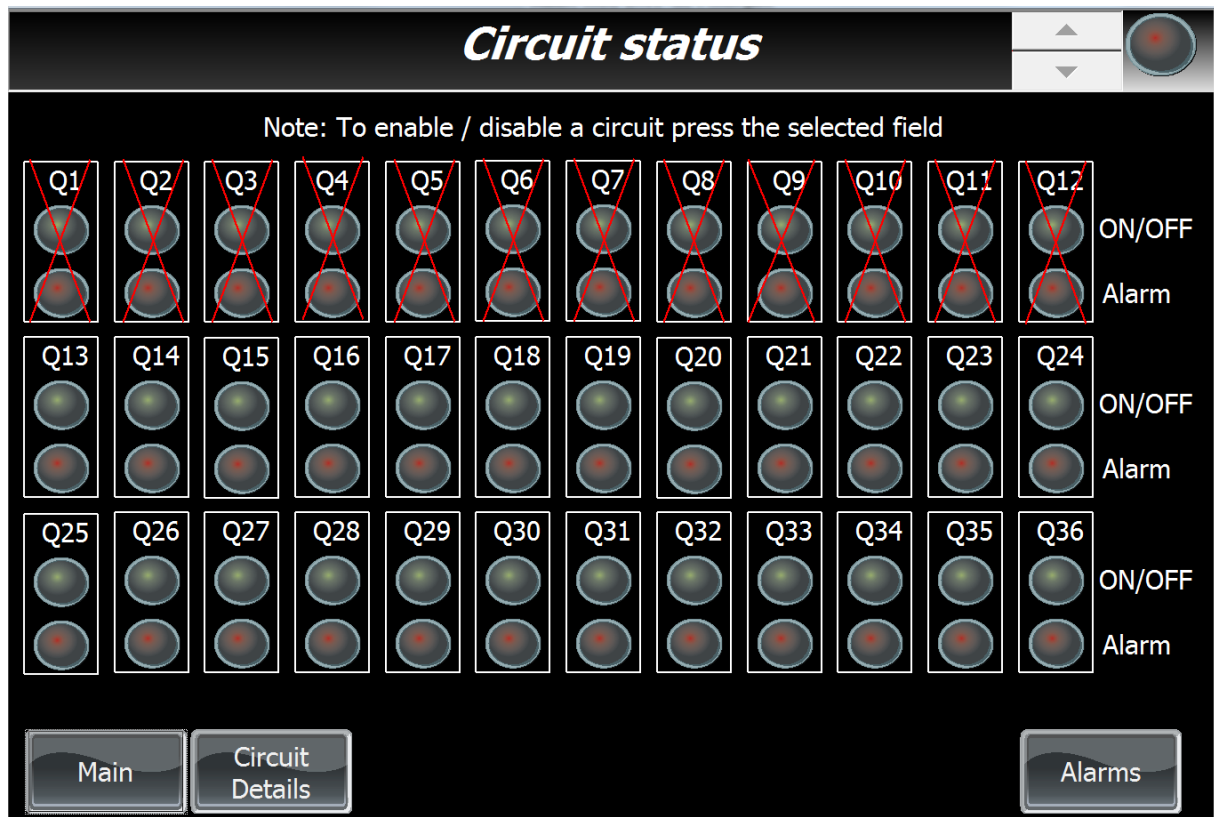
### Information on screen:

- Load in Ampere for Phase 1 to 3.
- Total system power consumption.
- Voltage for Phase 1 to 3.
- Hz for Phase 1 to 3.
- Earth leakage in mA for the entire system.
- Ambient temperature in Celsius which is the parameter for proportional control.

### Navigation buttons:

- System overview
- Circuit Status
- Circuit Wizard
- Common Settings
- Manual override
- Alarms screen.

## Circuit Status



This screen displays information for each of the 36 circuits.

### Information on screen:

- A red cross indicates that the circuit is disabled.
- The operating lamp is green if the circuit is energized.
- The alarm lamp is red if there is an alarm present. Refer to the Alarms screen for additional information.

### Navigation buttons:

- Main
- Circuit details
- Alarms



## Circuit Details

Panel 1 ILC370

System Overview

Select circuit nr:  Control type  0 = No data, 1 = Off, 2 = Air, 3 = Pipe, 4 = Heatloss 5 = On  
If system fail  %

Ambient Sensor Control		Alarm setpoints:			
Start Temp	<input type="text" value="5"/> °C	Over current	<input type="text" value="10"/> A	Under current	<input type="text" value="5"/> A
Full Power Temp	<input type="text" value="-15"/> °C	Leakage high	<input type="text" value="0"/> mA	Leakage low	<input type="text" value="0"/> mA
		Plus dev	<input type="text" value="3"/> A	Minus dev	<input type="text" value="2"/> A
		Plus dev leak	<input type="text" value="0"/> mA	Minus dev leak	<input type="text" value="0"/> mA

Initial test values		Current	<input type="text" value="0"/> A	Earth leakage	<input type="text" value="0"/> mA
Periodic test values		Running time	<input type="text" value="0"/> Hours		
Hours since last test	<input type="text" value="28"/>	Current	<input type="text" value="0"/> A	Earth leakage	<input type="text" value="0"/> mA

◀ ▶

Main Circuit Alarm Info Alarms

The Circuit details screen displays the operating information for each circuit.

### Information on screen:

- "Select circuit nr:" This is an editable field where the operator can enter a number between 1 and 36 to display information for the desired circuit.
- "Control type:" This number indicates the control method for the selected circuit. 0 = non chosen, 1 = Off, 2 = Air sensor, 3 = Pipe sensing, 4 = Heatloss sensor and 5 = always on.
- "If system fail" Circuit output if critical error is present.
- "Alarm setpoints" for each Circuit.
- "Initial test values" These are the cable values from the initial test.
- "Periodic test values" These are the cable values from subsequent tests which are compared to the initial test values.

### Navigation buttons:

- Main
- Back" to circuit status
- Circuit Alarm Info
- Alarms

## Common Settings

WCP1 22.06.2018 11:15:55 P1 Circuit 27 - Fuse failure

**Startup type**

- Deactivated
- Auto start with periodic test
- Start with initial test

**Cable measurement test settings:**

Delay between cables during periodic test:  Hours

Cable on time initial test:  Minutes

Cable on time periodic test:  Minutes

**RTD channels in use:**

- RTD 1
- RTD 2
- RTD 3
- RTD 4
- RTD 5

**Alarm settings:**

Alarm max earth leakage:  mA

Alarm max power:  kW

**Distribution panel interior settings:**

Current read temperature:  °C

Alarm max temperature:  °C

Fan start temperature >:  °C

Main Circuit Status Common Settings Alarms

The common settings screen contains system operating parameters.

### Information on screen:

#### “Startup type”

- “Deactivated” - leaves the system in a deactivated state.
- “Auto start with periodic test” –Each circuit is tested in x amount of minutes with “Cable on time periodic test” setting and x amount of hours between each of the 36 cables based on “Delay between cables during periodic test”.
- “Start with initial test” Read in base values which will serve as a baseline for subsequent periodic tests.

#### “Cable measurement test settings”

- “Delay between cables during periodic test” in hours.
- “Cable on time initial test” in minutes.
- “Cable on time periodic test” in minutes.

#### “Distribution panel interior settings:”

- “Current read temperature” -The interior panel temperature reading.
- “Alarm max temperature” –Interior panel temperature alarm set point.
- “Fan start temperature” –Temperature set point for starting panel cooling fan.

## Manual Override:



**Important! Always deactivate manual control before changing % setpoint. After new setpoint is entered, then activate manual control again.**

Activate Manual Control allows the circuits to be controlled to a specific set point thereby overriding the proportional control. Please note that this function only works for the circuits that have ambient proportional control or heatloss proportional control selected as control method. The other options for control method are always on or always off. Note that Manual Override will render all other control methods inactive as long as it is activated.

### Information on screen:

- “Activate manual control” button –activate manual override with power output according to slider for all circuits.

### Navigation buttons:

- Main
- Alarms

## Circuit Wizard

03.03.2015 09:06:44 P1 Circuit 36 - Fuse failure

### *Circuit settings wizard*

Please select a circuit no. to continue  
If you select '0' then a option to copy the settings  
to all the circuit will be available

Circuit no

Main Next Alarms

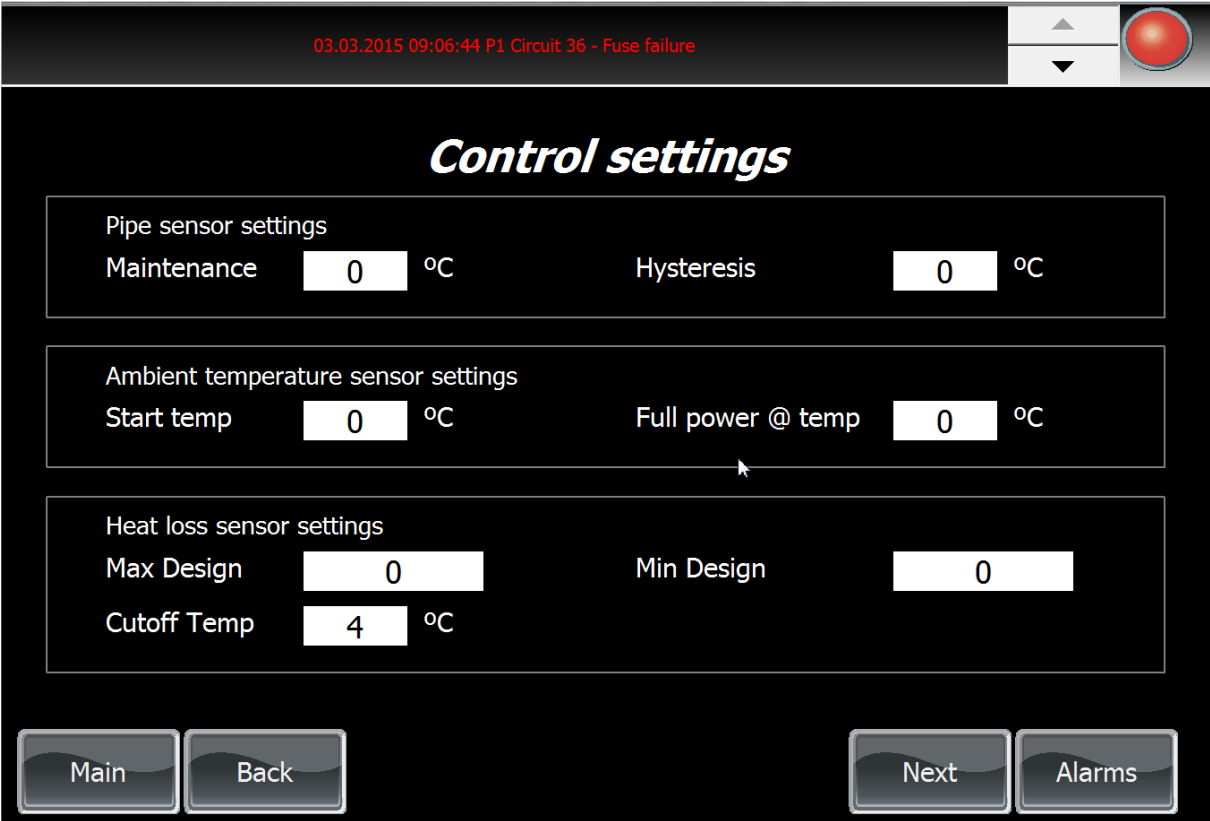
**Important! Always deactivate system in “Common Settings screen – Startup type” Before using Circuit Wizard and saving new setpoints. After Circuit Wizard is aborted or new setpoints saved set to “Autostart with periodic test in – Common Settings screen”.**

The Circuit Wizard allows the operator to configure each circuit with the required settings for optimal functionality.

The first screen contains an input field where the operator can specify the circuit by number or choose 0 to apply the settings to all circuits simultaneously.

Select circuit nr or 0 then, press “next” to continue.

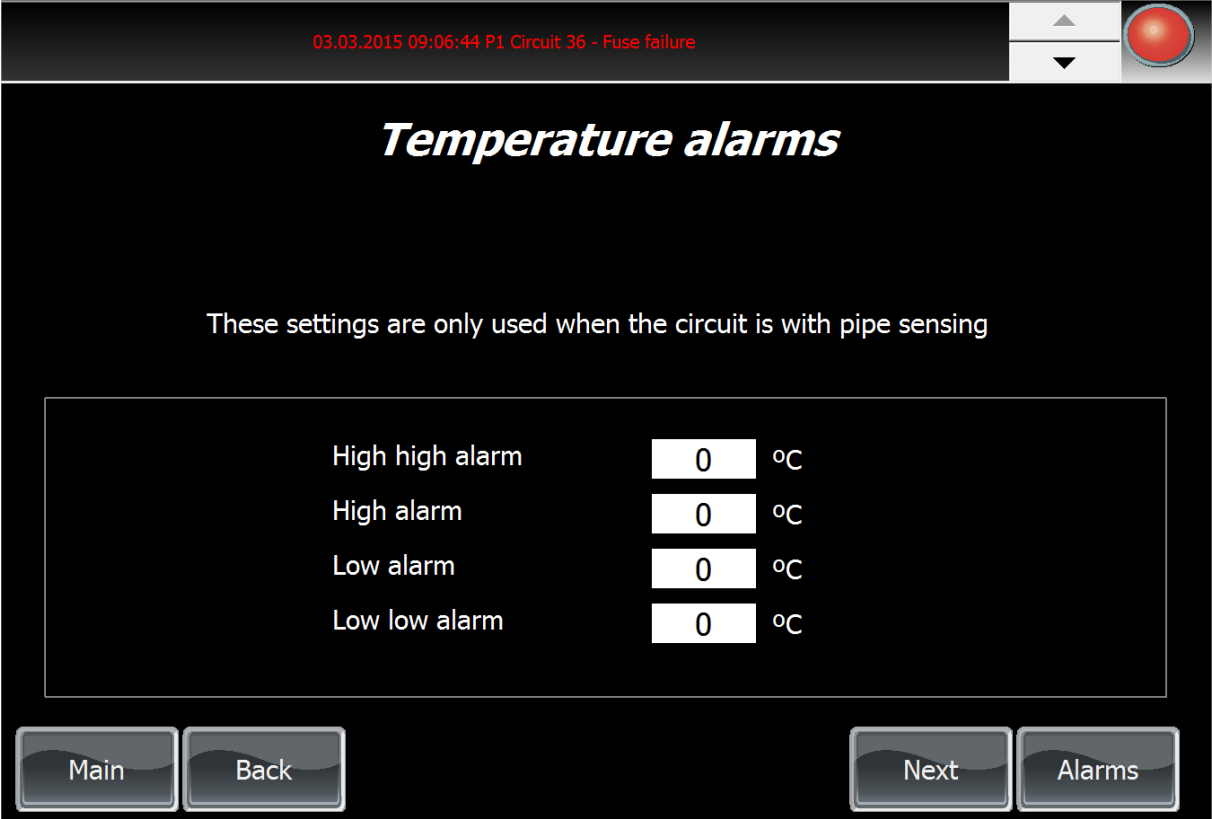
# Circuit Wizard – Control settings



The second screen contains set points for control algorithm. If the circuit is to be configured as always on, or always off, these settings do not apply. Control settings are available for pipe sensing, ambient sensor and heat loss sensor.

Input the set points if applicable, then press “next” to continue.

# Circuit Wizard – Temperature alarms



The third screen contains set points for temperature alarms if the circuit has pipe sensing control.

Input the set points if applicable, then press “next” to continue.

# Circuit Wizard – Electrical alarms

03.03.2015 09:06:44 P1 Circuit 36 - Fuse failure

***Electrical alarms***

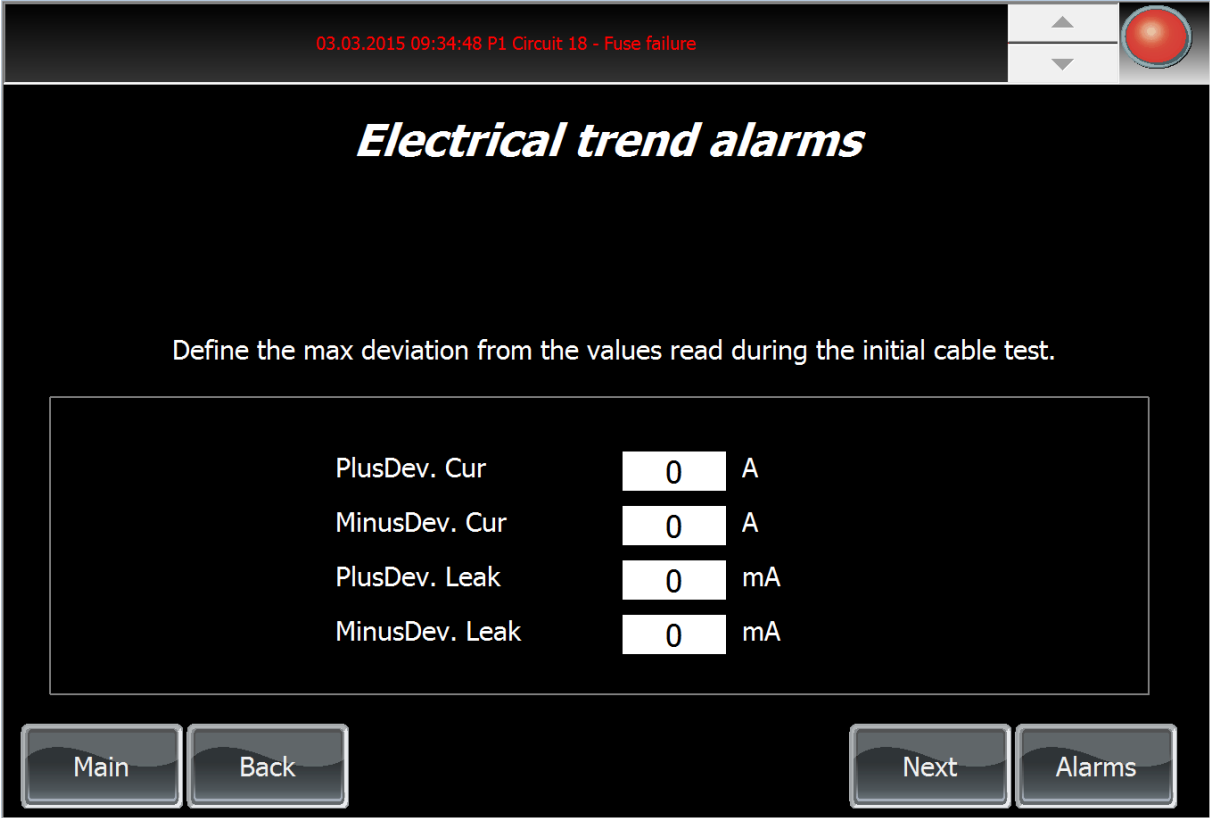
Define the outer limits for the electric properties.

Over current	<input type="text" value="0"/>	A
Under current	<input type="text" value="0"/>	A
Leakage high high	<input type="text" value="0"/>	mA
Leakage low	<input type="text" value="0"/>	mA

Main Back Next Alarms

The fourth screen contains set points for electrical alarms. Input set points to define the limits for the electrical alarms, then press “next” to continue.

# Circuit Wizard – Electric trend alarms



The fifth screen contains set points for electrical trend alarms. Use this page to define the max deviation from the values read during the initial cable test\*, then Press «next» to continue.

\*(The initial test is started from “Common Settings” after the circuit wizard has been completed for all circuits.)



## Circuit Wizard - Control type

03.03.2015 09:34:47 P1 Circuit 18 - Fuse failure

Select the control type you want for this circuit the options are as follows

- (1) This will leave the circuit in a permanent off position
- (2) Use this if the circuit is controlled with a air sensor
- (3) Use this if the circuit has its own pipe sensor
- (4) Use this if the circuit is controlled with a heat loss sensor
- (5) This will put the circuit in a always on state

"If System failure" this setting is only used if control type is 2 or 3 and it determines the duty cycle that will be used if the temperature sensors fail.

Control Type	<input type="text" value="0"/>
If control type is set to 3 chose RTD module to use	<input type="text" value="0"/>
If System Failure	<input type="text" value="0"/> %

Main Back Next Alarms

The sixth screen contains set points for control type. There are five options available as method for controlling the circuits.

"Control type"

1. Always off. This will leave the circuit in a permanent off position.
2. Air sensor. Use this if the circuit is controlled with an air sensor.
3. Pipe sensing. Use this if the circuit has its own pipe sensor.
4. Heat loss sensor. Use this if the circuit is controlled with a heat loss sensor.
5. Always on. This will put the circuit in an always on state.

"RTD Module" is the number of the RTD module to be used.

"If system failure" this settings is only used if control type 2, 3 or 4 and it determines the duty cycle that will be used if the sensors fail.

# Circuit Wizard - Alarm configuration

03.03.2015 09:34:47 P1 Circuit 18 - Fuse failure

**Alarm configuration**

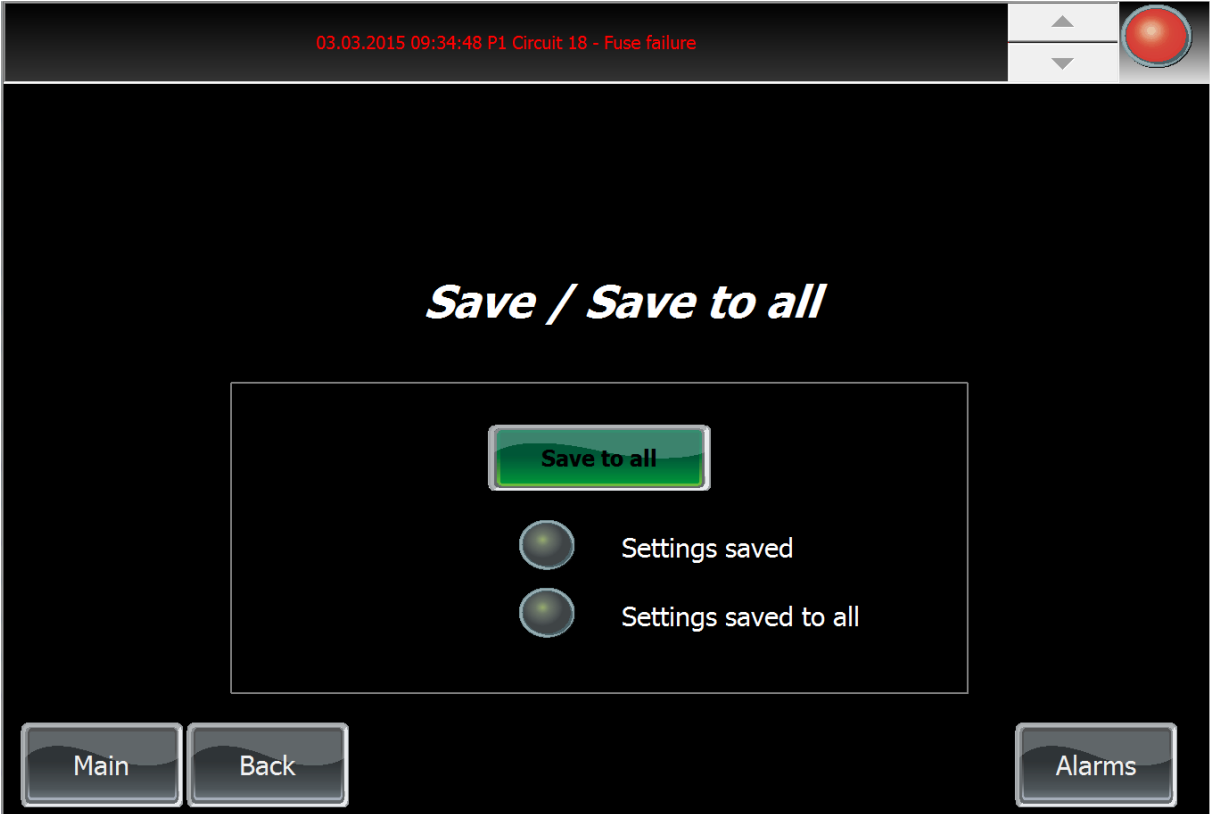
Define the alarms to be active for this circuit

Common alarms	Critical alarms
<input checked="" type="checkbox"/> Temp alarms	<input type="checkbox"/> Temp alarms
<input type="checkbox"/> Fuse alarms	<input checked="" type="checkbox"/> Fuse alarms
<input checked="" type="checkbox"/> Power limits	<input type="checkbox"/> Power limits
<input type="checkbox"/> Trend alarms	<input checked="" type="checkbox"/> Trend alarms

Main Back Next Alarms

The seventh screen contains check boxes for alarms that will be monitored and reported by the control system. Common alarms show up in the alarm banner and alarm page, whereas critical alarms also trigger a digital output which, when used, is an ESD signal to external control systems.

### Circuit Wizard – Save settings.



The eighth and final screen saves the settings of the circuit or circuits.

“Save to all” button is visible if configuration of all circuits was selected.

“Save” button is visible if configuration of one circuit was selected.