



 United Technologies

D E S I G N I N G I N N O V A T I V E S O L U T I O N S

# CONNECTIVITY, MONITORING AND REMOTE MANAGEMENT SYSTEM

## BOSS supervisor

APRIL 2018

# boss- the product

## The new mobile ready local supervisor

boss



### Plant control on your mobile

- integrated wifi hotspot
- fully mobile compatible from first boot to ordinary maintenance

### Tough for all environment

- rugged HW fanless mounted in a strong case
- secure SW in compliance with advanced standards (https, embedded os, backup on sd card)

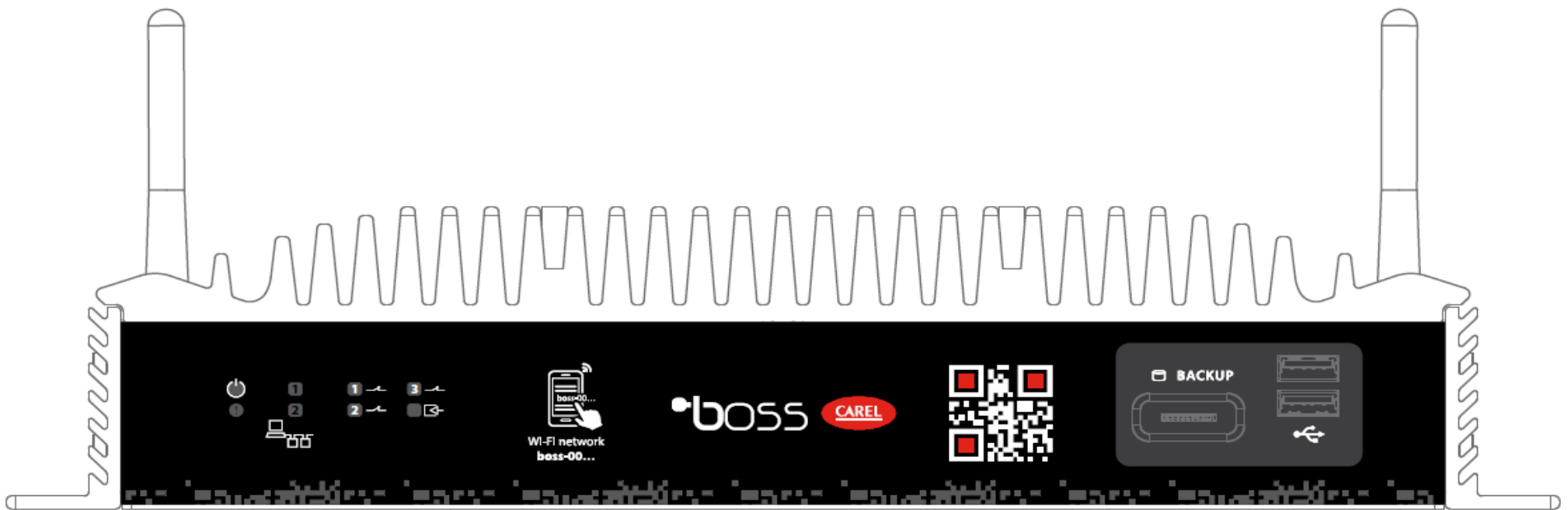
# **boss – news**

Based on PVPRO2 software (same SW/HW features) but empowered thanks to:

- **fully mobile compatible of all its pages from first boot to ordinary maintenance**
- **integrated Wi-Fi hotspot**
- **rugged HW fanless mounted in a strong case**
- **Bacnet protocol**
- **Linux OS**
- **Instant messaging (Telegram)**
- **uSD for backup**

# boss – overview 1/2

Front:

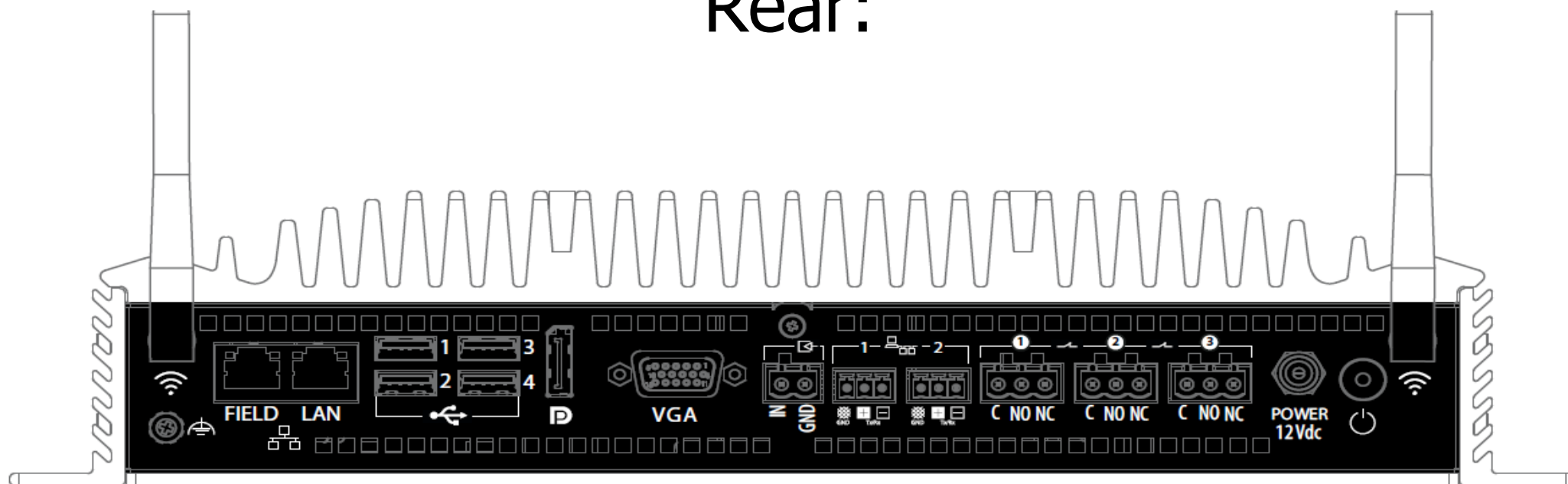


8 status led, uSD slot, 2 USB ports

UTC CCS PROPRIETARY & CONFIDENTIAL

# boss – overview 2/2

Rear:



2 Wi-Fi antennas, 2 Ethernet ports,  
4 USB ports, display and VGA ports, 1 dig. Input, 2 RS485  
port, 3 relays, power connector/button

UTC CCS PROPRIETARY & CONFIDENTIAL

# boss – Installation

## Desk



## Wall



## DIN Rail



Adapter DIN (BMHSTDNA00) not included in the package

- With a strong fanless case, customer has the possibility to install it in different place and in different mode (desktop, wall, din)

UTC CCS PROPRIETARY & CONFIDENTIAL

# boss – Protocols 1/2

- CAREL Master



- MODBUS Master RTU

- MODBUS Master TCP/IP

- MODBUS Slave RTU

- MODBUS Slave TCP/IP



- BACnet Master MS/TP & TCP/IP

- BACnet Slave TCP/IP



# boss – Protocols 2/2

- ◆ With new Bacnet master protocol (IP and MS/TP) , and Modbus master (TCP/IP and RTU) customers can integrate also third party HVAC devices and enlarge the proposal of CAREL supervisor.
- Carel master, Modbus master (RTU and TCP/IP) are always activated on boss
- With new BACnet slave (IP) , and Modbus slave (TCP/IP and RTU) protocols, boss can be integrated also in third party BMS HVAC system, for sharing some data of the boss to other systems.
- Modbus slave (RTU and TCP/IP), BACnet master (MS/TP and IP) and BACNet slave, are not activated as default, they have to been enabled as extra features (plug-in)

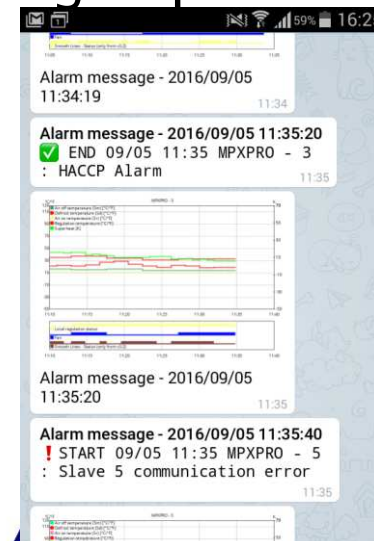


# boss – Instant messaging

boss is the first supervisor system which offers the possibility to send message, in case of alarm, using the and instant messaging APP : “Telegram” (similar to WhatsApp).

The message received, in addition of the alarm info (site name, description, timestamp...), gives also a screen-shot of the last 3 hours trend of the devices in alarm condition.

The same message moreover can be send to a chat group for having a better team coordination / time reaction.



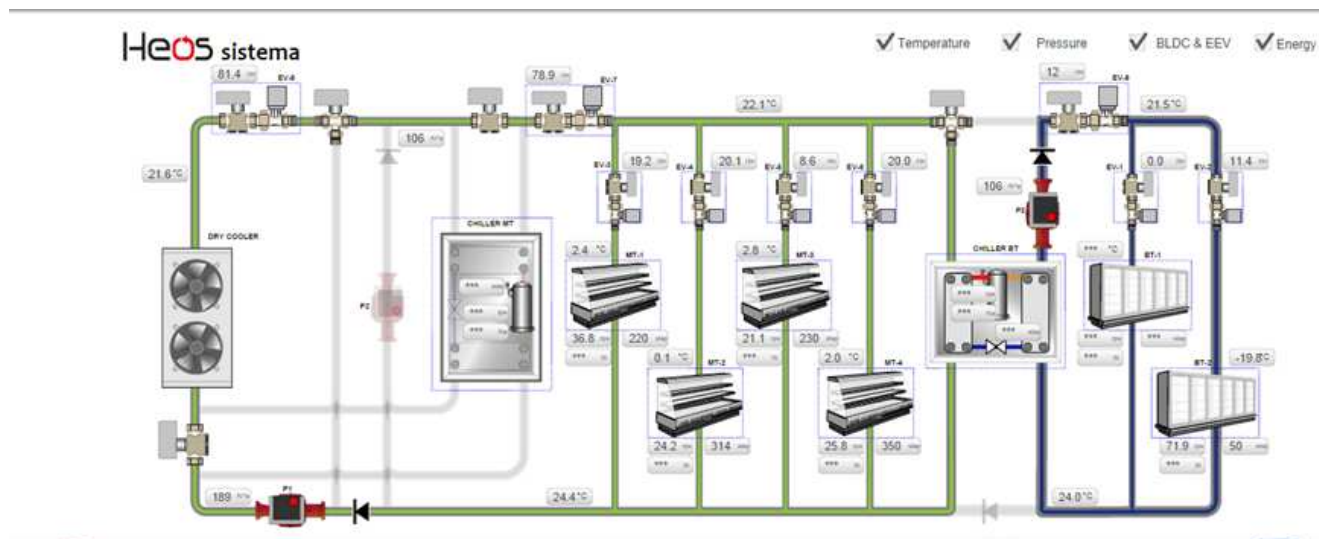
& CONFIDENTIAL

# boss – Other advantages

- ◆ uSD card allows to make backup easily on a standard widespread support
- Unix-derivated OS tailor made increase the security feeling of the system
- New motherboard faster and more power allow to reduce the reaction time, compared with PVPRO

# boss – Graphic Customization

Custom maps made by c.web (new name of site.web), the global Carel editor for creating web interfaces, allow to customer to simplify the user experience of boss



# boss – main differences Vs PVPRO2



Fanless	2 Fans inside
Steel case with aluminum radiator (no air flow required)	Aluminum + plexiglass
External power adapter	Integrated power adapter
VGA + Display Port	VGA + DVI (DP)
Integrated Wi-Fi hot spot	Modem
Touch version not available	Touch version
Linux + full web management + mobile support	Windows + VNC
LAYOUT EDITOR not available (replaced by c.web)	LAYOUT EDITOR available
1 digital input	2 digital inputs
SD (Secure Digital)	CF (Compact Flash)

**CCS PROPRIETARY & CONFIDENTIAL**

# boss – Extra features 1/5



- **Energy**: Table, pie chart, apple chart for analyzing the energy consumption / cost / CO2 by week, by month or by year

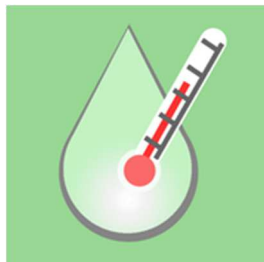


- **KPI management** : For analyzing the performance of the cabinets and identify which ones work outside the optimum conditions so they need check for adjusting the running.

# boss – Extra features 2/5



- **Floating Suction:** For adjusting in real time the rack set-point according to the calculation of the duty cycle and the cool request of the cabinets connected to it.



- **Dew Point Broadcast:** For sharing temperature and humidity read by a serial probe to all the MPXPRO in order to let them calculate the dew point and switch on or off its anti-sweater heater.

# boss – Extra features 3/5



- **Safe Restore**: For managing the restart of the rack, after a fault, in a safe and optimized mode, giving proper status commands to all the refrigeration utilities connected to it.

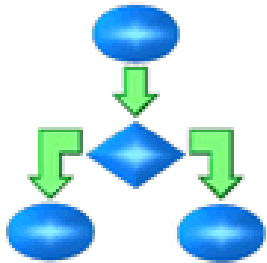


- **Parameters control**: For monitoring and having an alert in case of parameters as set-point change (or other important parameters decided by user) in the controllers.

# boss – Extra Features 4/5



- **Logical variables/devices**: For creating new "virtual" variables and/or devices generated starting from physical variables of the existing network devices



- **Algorithm PRO**: For creating SW logic inside boss using Java language.



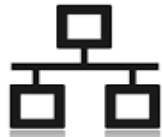
# boss – Extra features 5/5



- **HVAC Smart start:** For optimizing the HVAC units start/stop.
- **Geolighting:** For managing the turning on/off of the outside lights based on latitude and longitude position of the plant
- **HVAC Night purge:** For optimizing the night free-cooling of the HVAC units.

# boss – User Interaction 1/2

LAN



+



Wifi



+



Local



+



UTC CCS PROPRIETARY & CONFIDENTIAL

# boss – User Interaction 2/2

No need  
of mouse  
and  
keyboard

Without connecting monitor, keyboard and mouse, customer can do the whole commissioning of the plant using a browser ([https protocol](#)) from a mobile device (as a tablet), direct connected to its hotspot

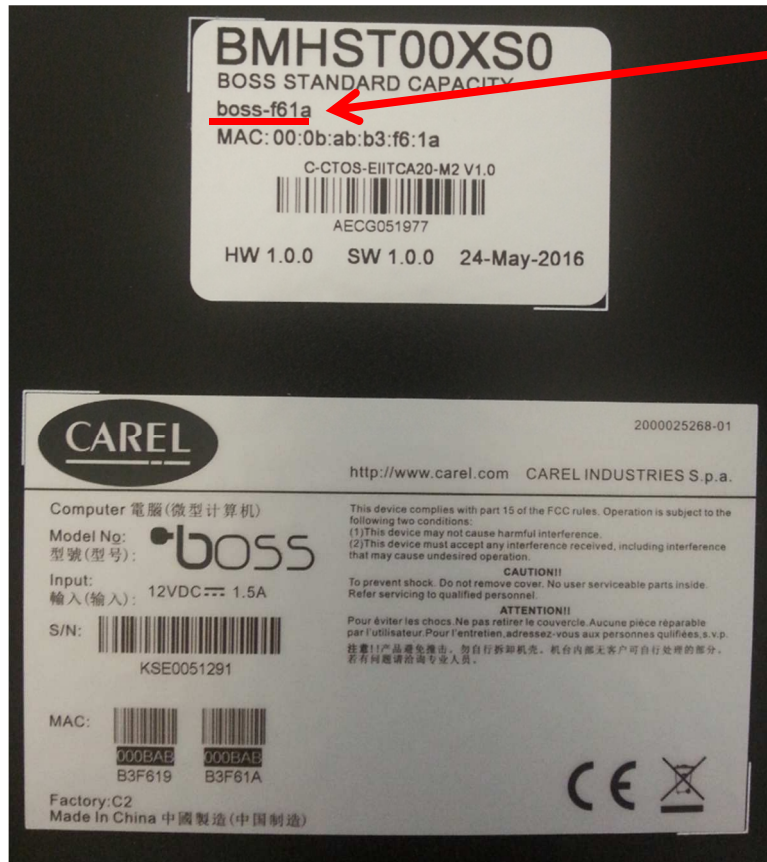
Full  
web  
manage  
ment

With the new web “console” the remote assistance on the OS can be done just using a browser (VNC, teamviewer,... are not required anymore)

Secure  
VPN  
access

Integrated VPN (virtual private network) server that allows CST or authorized technicians to manage boss through internet in secure way

# How to connect to boss



Label on the back of boss

boss name

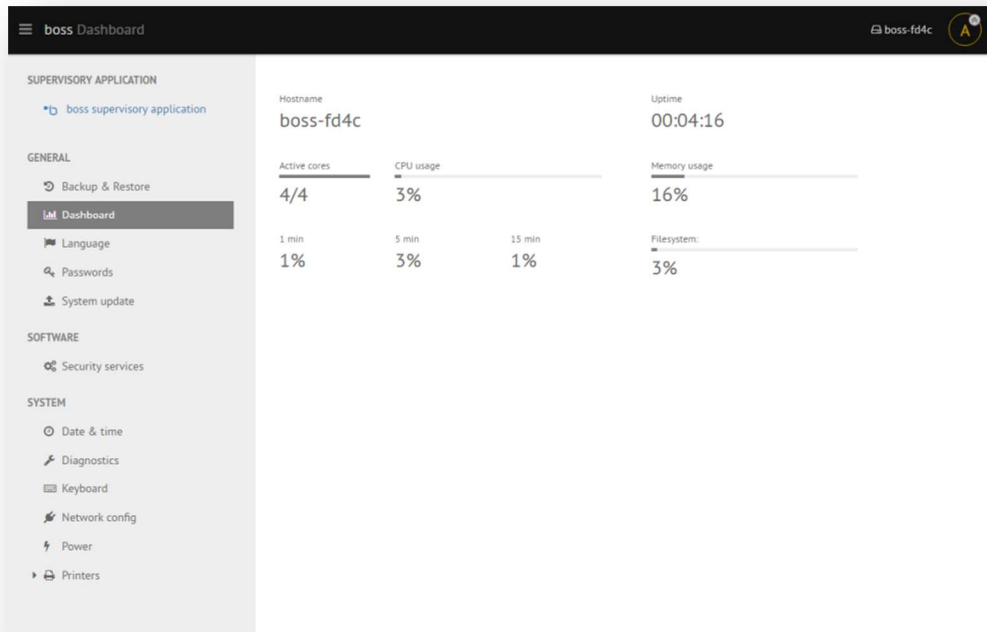
- 1 Connect the ethernet cable (point to point or via switch or LAN infrastructure). Wait few seconds, then open the browser on <https://boss-f61a>
- 2 Connect through the Wi-Fi network “boss-f61” then open the browser on <https://boss-f61a>
- 3 Connect a mouse, keyboard and a monitor to boss



In any case you can connect to the boss using the IP address

<https://w.x.y.z> UTC CCS PROPRIETARY & CONFIDENTIAL

# Web console



## Full web management

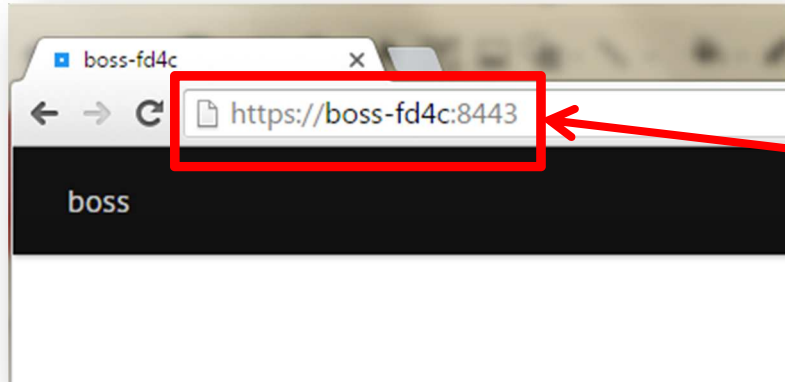
- Resources usage monitoring
- Switch ON and OFF
- Wi-Fi and network configuration
- Scheduled and manual backup and restore
- Firewall and VPN access
- Date, time and timezone setting
- Printers configuration
- Diagnostic logs
- Keyboard configuration
- Users password setting



## Features

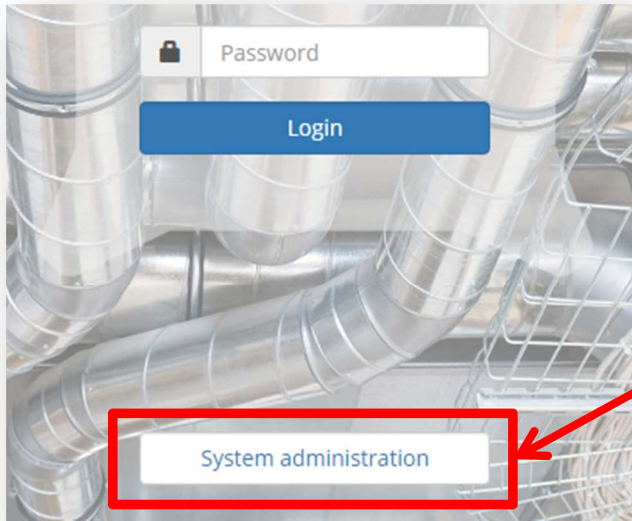
- Mobile compliant user interface
- Dedicated lightweight web server on 8443 port

# How to access to web console



1

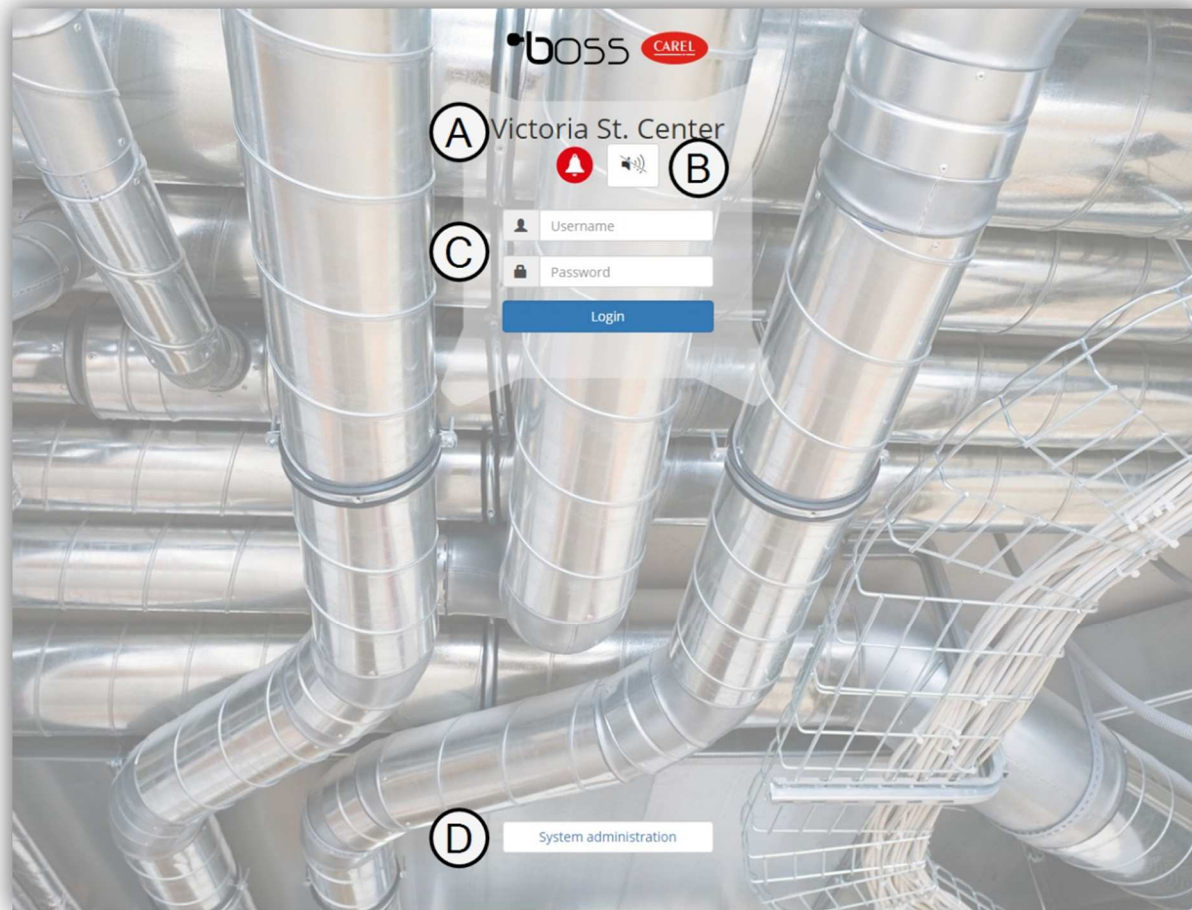
Write the address <https://boss-xxxx:8443> on your browser



2

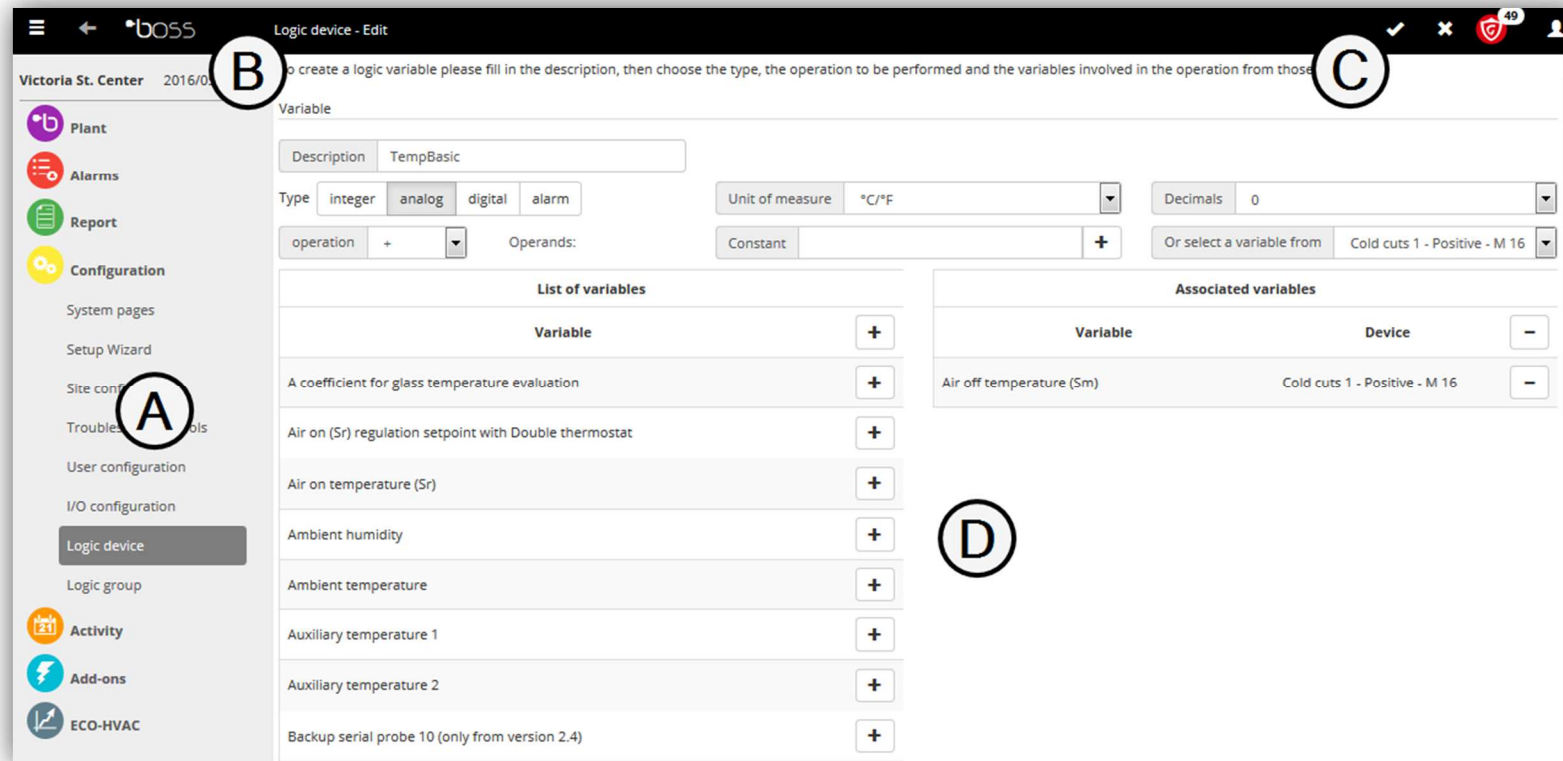
Connect to <https://boss-xxxx> and use System administration link on the login page

# boss – Login page



Area	Description
<b>A</b>	Site identification
<b>B</b>	Alarms or Guardian notifications warning and snooze button
<b>C</b>	Login information
<b>D</b>	Access to system administration functions

# boss – Layout



Area	Description	Area	Description
<b>A</b>	Responsive side navigation, showing all available menus	<b>B</b>	Buttons to show/hide menus and go back to the previous page. Customized home page link and navigation path.
<b>C</b>	Command bar including buttons specific for the active page, alarm notification and user's functions	<b>D</b>	Active page



# boss – Device list page

Quick search (textual)

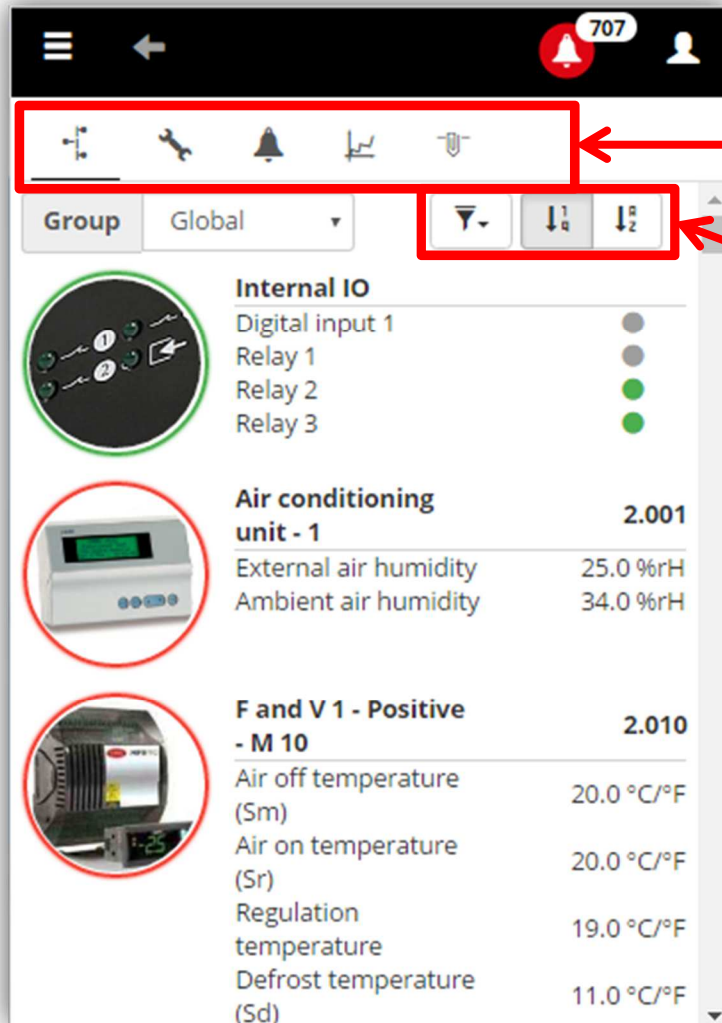
Status filter

Sort by name/address

The screenshot shows the BOSS supervisor interface for the 'Devices' page. The top navigation bar includes a menu icon, a back arrow, the 'boss' logo, the title 'Devices', and a notification badge with '708' and a user profile icon. Below the navigation bar is a toolbar with tabs for 'Devices', 'Parameters', 'Alarms', 'Trend', and 'Notes'. The main content area features a 'Group' dropdown set to 'Global', a search input field, and a status filter section with buttons for 'All', 'Online', 'Alarm', 'Offline', and 'Disabled'. The status filter is currently set to 'All'. To the right of the status filter are sort options: 'Address' and 'A-Z'. The device list is displayed in a grid format, with each device entry including a circular icon, a title, a numerical address, and a list of parameters with their current values. The devices shown are: 'Internal IO' (address 2.001), 'Air conditioning unit - 1' (address 2.001), 'F and V 1 - Positive - M 10' (address 2.010), 'F and V 2 - Positive - S 11' (address 2.011), 'Dairy 1 - Positive - M 12' (address 2.012), 'Dairy 2 - Positive - S 13' (address 2.013), 'Dairy 3 - Positive' (address 2.013), 'Dairy 4 - Positive' (address 2.013), and 'Cold cuts 1 -' (address 2.013). Red arrows point from the text labels above to the search field, the status filter buttons, and the sort options. Red circles highlight the device icons in the list.

Group	Device Name	Address	Status	Parameters
Global	Internal IO	2.001	Online	Digital input 1, Relay 1, Relay 2, Relay 3
Global	Air conditioning unit - 1	2.001	Online	External air humidity: 36.0 %rH, Ambient air humidity: 20.0 %rH
Global	F and V 1 - Positive - M 10	2.010	Online	Air off temperature (Sm): 12.0 °C/°F, Air on temperature (Sr): 34.0 °C/°F, Regulation temperature: 18.0 °C/°F, Defrost temperature (Sd): 24.0 °C/°F
Global	F and V 2 - Positive - S 11	2.011	Online	Air off temperature (Sm): 13.0 °C/°F, Air on temperature (Sr): 13.0 °C/°F, Regulation temperature: 14.0 °C/°F, Defrost temperature (Sd): 17.0 °C/°F
Global	Dairy 1 - Positive - M 12	2.012	Online	Air off temperature (Sm): 26.0 °C/°F, Air on temperature (Sr): 24.0 °C/°F, Regulation temperature: 32.0 °C/°F, Defrost temperature (Sd): 22.0 °C/°F
Global	Dairy 2 - Positive - S 13	2.013	Online	Air off temperature (Sm): 30.0 °C/°F, Air on temperature (Sr): 13.0 °C/°F, Regulation temperature: 22.0 °C/°F, Defrost temperature (Sd): 30.0 °C/°F
Global	Dairy 3 - Positive	2.013	Online	
Global	Dairy 4 - Positive	2.013	Online	
Global	Cold cuts 1 -	2.013	Online	

# boss – Responsive page



Navigation tabs

Filter and sort buttons

UTC CCS PROPRIETARY & CONFIDENTIAL

# boss – Device detail page

The screenshot displays the BOSS supervisor interface for the 'Device detail' page. The top navigation bar includes 'Main', 'Parameters', 'Variables', 'Alarms', 'Trend', and 'Notes'. The device selected is 'F and V 1 - Positive - M 10'. A photo of the device is shown with a tooltip containing the following data:

Air off temperature (Sm)	32.0°C/°F
Air on temperature (Sr)	14.0°C/°F
Regulation temperature	19.0°C/°F
Defrost temperature (Sd)	18.0°C/°F

Below the photo, there are sections for 'Active alarms' and 'Read-only variables'. The 'Active alarms' section includes: Unit Off, Regulation, dEF, Fan, Status Smooth Lines, AUX activation command, Light activation command, Night/Day status, Continuous cycle command, LAN defrost command, Unit ON/OFF command, and ALARM. The 'Read-only variables' section is a table with the following data:

Value	Short desc	Description
37.0 K	SH	Superheat
16.0 °C/°F	StU	Working setpoint

# boss – Parameter Page

Quick search (textual)

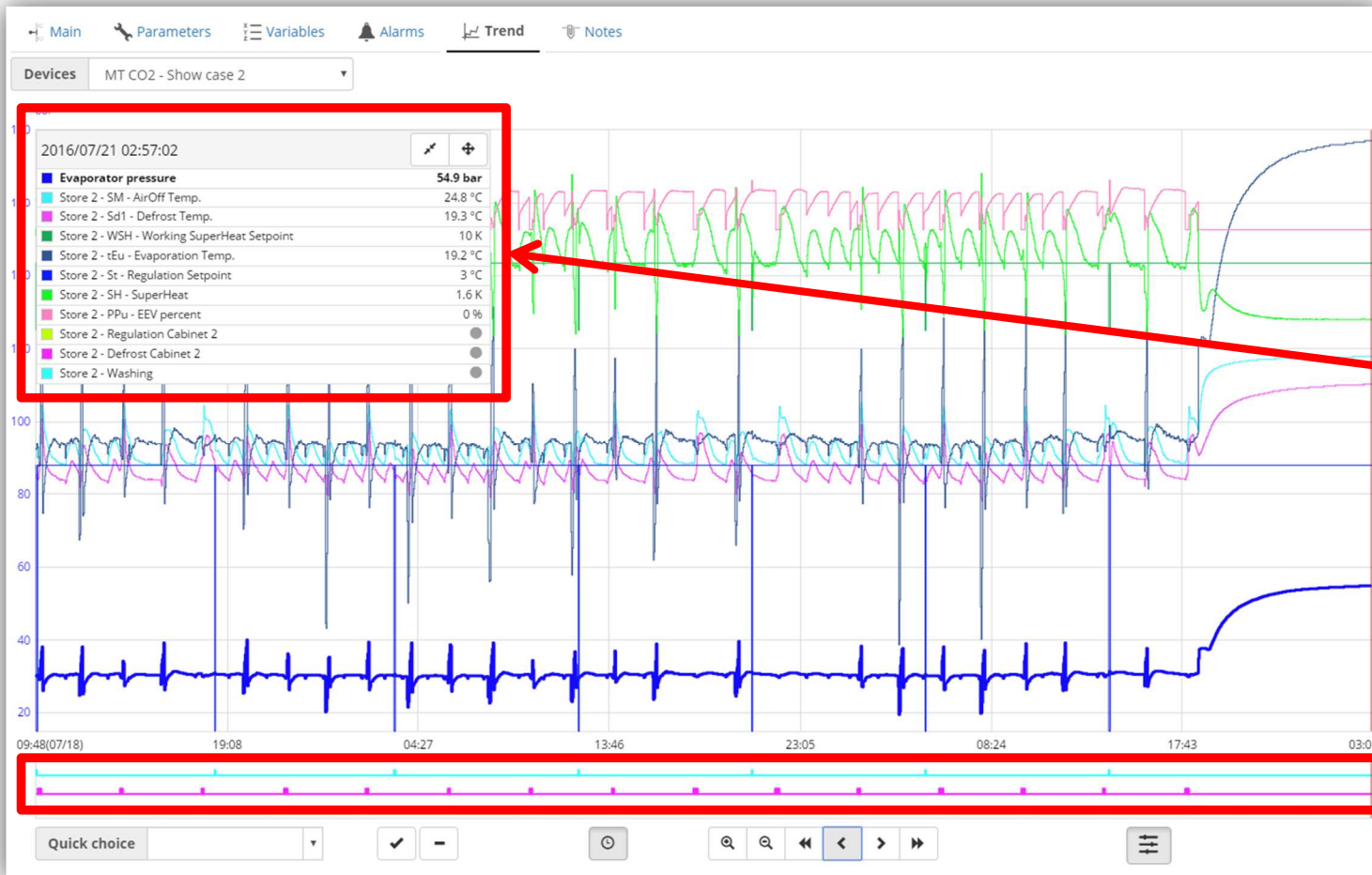
Detailed description

The screenshot shows the BOSS interface for the 'Parameters' page. At the top, there are navigation tabs: Main, Parameters, Variables, Alarms, Trend, and Notes. Below the tabs, there is a search bar with a magnifying glass icon and a dropdown menu for 'Category' set to 'Configuration parameters'. The main content is a table with columns: Value, New, U.M., Short desc, and Description. The first row of the table has an information icon (i) in the right margin, which is highlighted by a red box. A red arrow points from the 'Detailed description' label to this icon. Another red arrow points from the 'Quick search (textual)' label to the search input field.

Value	New	U.M.	Short desc	Description
1	<input type="text"/>		/t	Alarms visualization on remote display
10	<input type="text"/>		/t1	Primary terminal display selection
6	<input type="text"/>		/t2	Secondary terminal display selection
9	<input type="text"/>		/to	Optional or always present user terminal selection
4	<input type="text"/>		d6	Terminal display selection during defrost
0	<input type="text"/>		r7	Enable master solenoid valve as single LAN solenoid valve
1	<input type="text"/>		/5	C or F selection
1	<input type="text"/>		/6	Disable decimal point
0	<input type="text"/>		H2	Keypad and IR remote control functions disable
2	<input type="text"/>		H3	Remote control enable code

UTC CCS PROPRIETARY & CONFIDENTIAL

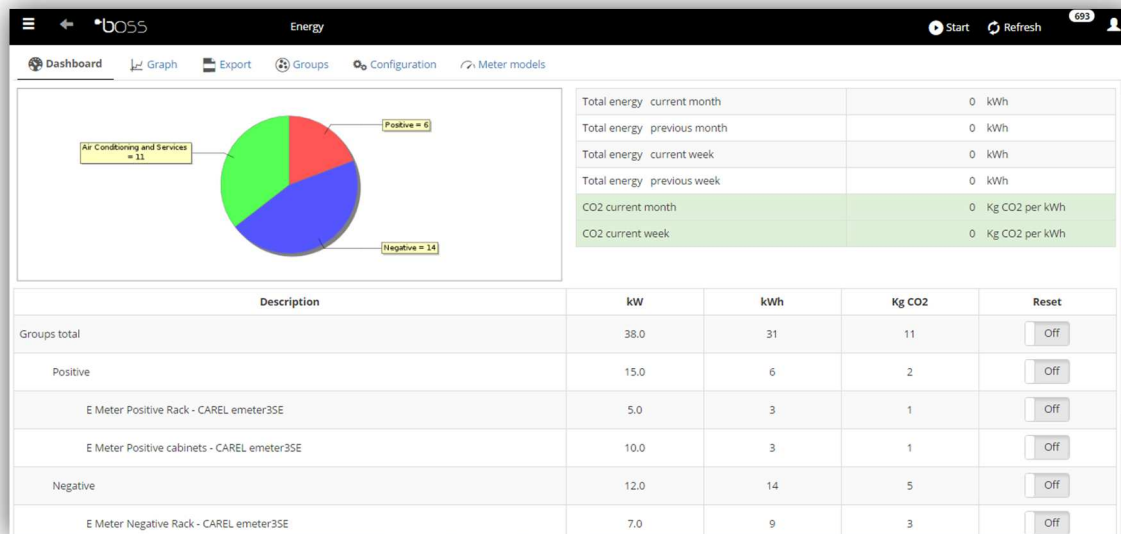
# boss – Trend page



New legend

New digital  
variables  
representation

## boss – plugin page



New layout

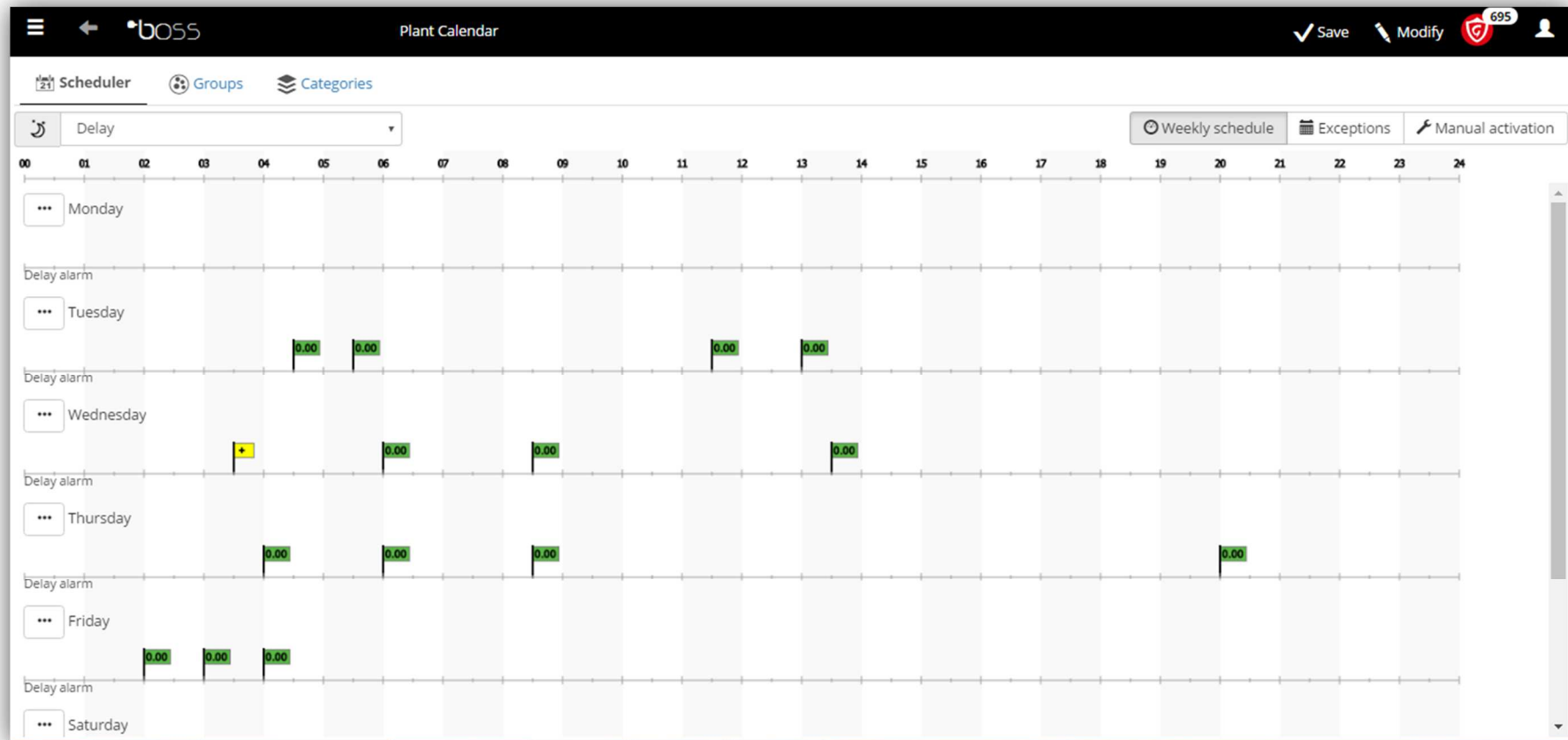
The screenshot shows the BOSS Configuration page. The top navigation bar includes buttons for Add, Import, and Export. The main table lists device models and their associated power and active energy data.

Device model	Power	Active energy
er - CAREL emeter3 SE	Power SE	Active energy SE
	Power of socket (address 26) [kW]	Energy of socket (address 26) [kWh]
	Power of socket (address 35) [kW]	Energy of socket (address 35) [kWh]
	Power of socket (address 27) [kW]	Energy of socket (address 27) [kWh]
	Power of socket (address 28) [kW]	Energy of socket (address 28) [kWh]
	Power of socket (address 29) [kW]	Energy of socket (address 29) [kWh]

User can export the plugin configuration, modify it and import into boss for extending the plugin features with custom models

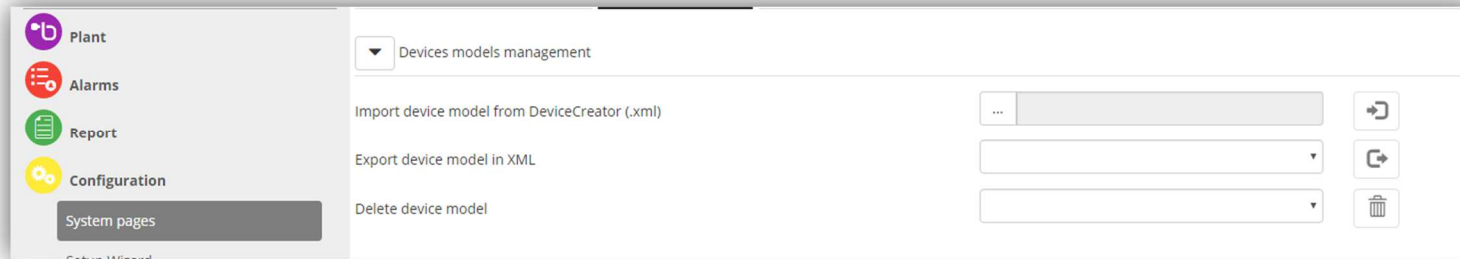
UTC CCS PROPRIETARY & CONFIDENTIAL

# boss – Calendar page

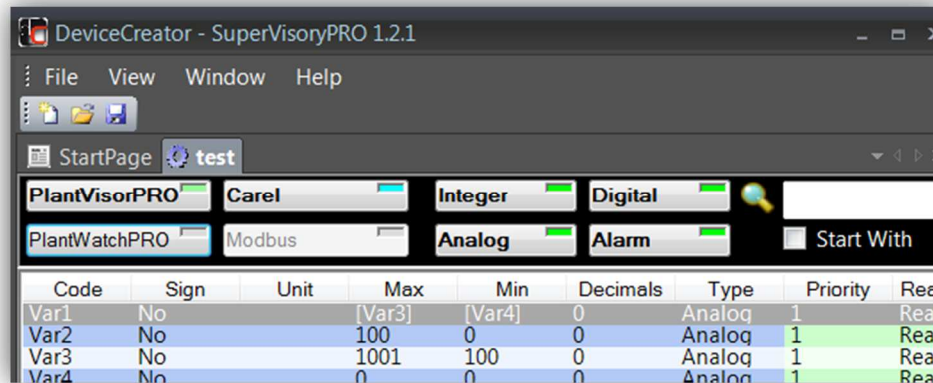


# boss – New device models management

User can export both standard and custom models



User can modify the exported models or create a new one (with device creator) and import it into boss



**Note: The standard device models are not overwritable**

UNCLASSIFIED PROPRIETARY & CONFIDENTIAL





D E S I G N I N G I N N O V A T I V E S O L U T I O N S

 United Technologies

**THANKS FOR YOUR ATTENTION**