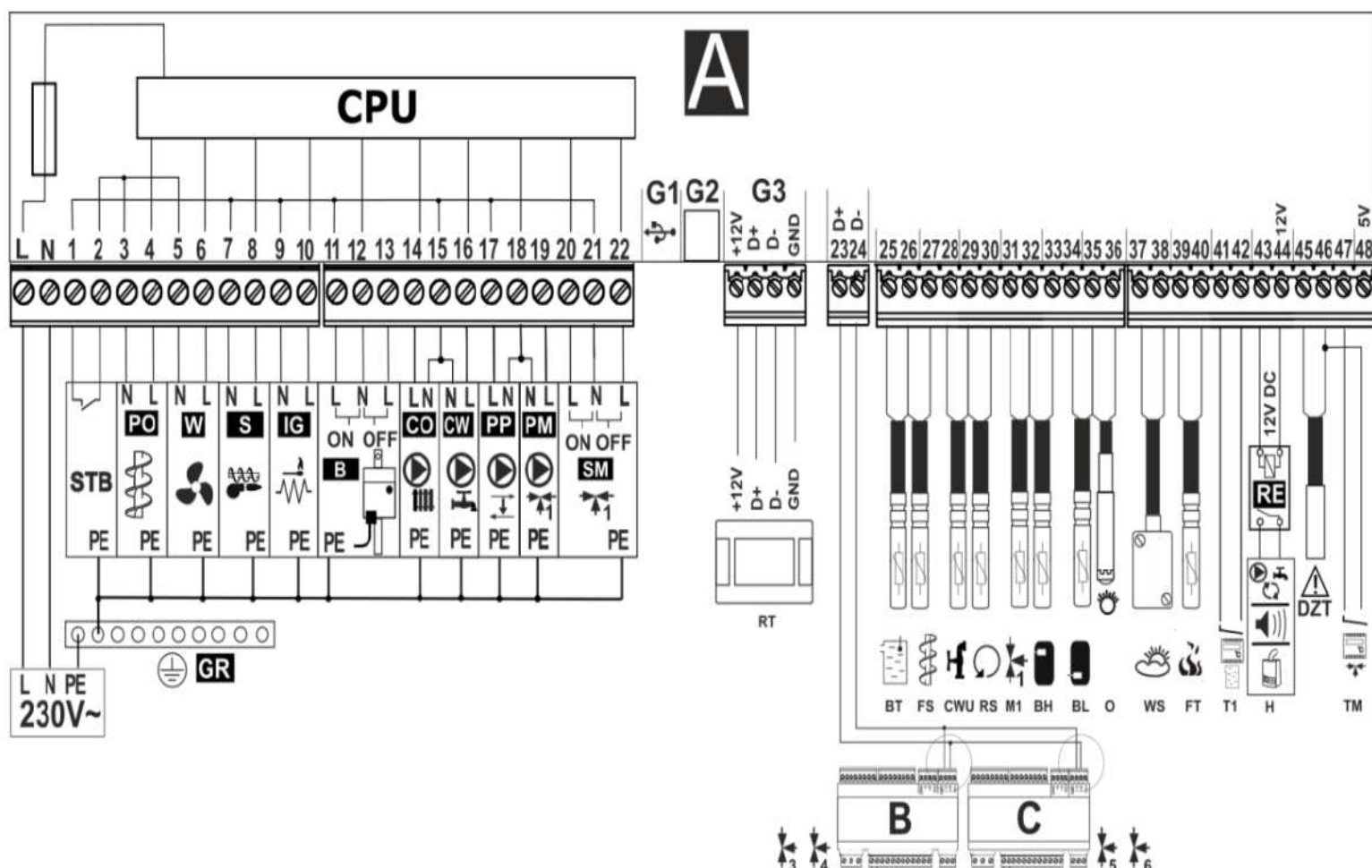


Pellet Duo Boiler Install Guide

Operation

The burner operates in sequence: **Fire Up**, **Stabilization**, **Work 100%**, **Work 50%**, **Work 30%**, **Burning OFF** and **Standby**. The **Fire Up** starts the fan to blow air in the burner chamber for cleaning ash and removing accumulated gases and the pellets are fed into the burner. Inside the combustion chamber, the igniter (heating element) starts. When the controller receives a light signal above detection of 25% from the fire sensor (photocell), **Stabilization** starts until the flame is stabilized. After the burner goes in **Work 100% (High Fire)** then **Work 50% (Medium Fire)** and **Work 30% (Low Fire)** until it reaches the setpoint temperature. The **Burning OFF** is activated when the operating temperature is exceeded to stop feeding and to burn away the remaining fuel. The burner cleans with the moving grates pushing down the ashes. The burner then goes into **Standby** until the temperature differential triggers a new cycle.



Main menu
Information
Boiler settings
Operating mode
• House heating
• HUW priority
• HUW no priority
HUW settings*
Summer/Winter
Boiler pump
• CH pump activation temp.
Circulation pump*
Mixer 1-5 settings*
General settings
Manual control
Services settings

Boiler settings
Preset boiler temp.
Burner settings
• Fan output
• Feeder operation
• Feeder interval
Boiler hysteresis
Room thermostat
• Thermostat selection: Off, Universal, TIS TRONIC
• Stand. t. CH from therm.
• Oper. t. CH from therm.
• Reduction boiler by therm.
• Room temp. factor
Weather control *
• Boiler weather control
• Heating curve boiler
• Curve translation
Manual burning
Fuel level
• Alarm level
• Fuel level calibration
Night time decrease
• On
• Reduction value
• Schedule

Summer/Winter
SUMMER mode
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• Auto*
Activ. temp. SUMMER
Deactiv. temp. SUMMER

Circulation pump *
Circulation support
Circ. standstill time
Circ. operat. time
Start temperature
Night time decrease
• On
• Reduction value
• Schedule

HUW settings*
HUW preset temperature
HUW container hysteresis
HUW disinfection
Night time decrease
• On
• Reduction value
• Schedule

Mixer 1-5 settings*
Preset mixer temperature
Room thermostat
• Thermostat selection: Off, Universal, TIS TRONIC
• Reduction temp. by therm.
• Room temperature factor
Weather control*
• Mixer weather control
• Heating curve mixer
• Curve translation
Night time decrease
• On
• Reduction value
• Schedule

General settings
Clock
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Screen brightness
Screen contrast
Sound
Weather correction
Language
Software update
WiFi settings*

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Boiler settings
Installation
Service counters
Restore defaults set.

Boiler settings
Burner settings
• WORK
• FIRE TEST
• FIRE UP
• STABILIZATION
• BURNING OFF
• FAN
• STOKER
• BELIMO
Min. boiler temp.
Max. boiler temp.
Boiler hysteresis
Room thermostat
• Pump off
• Burning off
No fuel detection time
Max. feeder temp.
Boiler cooling temp.
Return protection 4D
• Operation mode
• Min. return temp.
• Return temp. hysteresis
• Valve closing
Feeder efficiency *
Energy density *
Tank capacity *

WORK settings
• Hysteresis 30%
• Fan output 30%
• Feeding pause 30%
• Hysteresis 50%
• Fan output 50%
• Feeding pause 50%
• Hysteresis burning off
FIRE TEST settings
• Test duration
• Fan output
• Threshold detection
FIRE UP settings
• Blow-in time
• Blow-in output
• Min. fan output
• Max. fan output
• Feeding time
• Start time
• Heater operation time
• Heater interval
• Threshold detection
• Heater extension
STABILIZATION settings
• Stabilization mode
• Stabilization time 30%
• Stabilization time 50%
• Stabilization time 100%

BURNING OFF settings
• Max. time
• Extending
• Fan
• Threshold detection

FAN settings
• Min. output
• Max. output

STOKER settings
• Extending time
• Push time

BELIMO settings
• Forward time
• Return time
• Pause time
• Support mode: Cleansing in work, Fuel drop

Installation
Pumps
• CH stand. load. HUW
• Min. HUW temp.
• Max. HUW temp.
• Boiler inc. by HUW and M.
• HUW oper. extension
• Circulation support*

Buffer*
• Buffer support
• Loading start temp.
• Loading end temp.
• Min. buffer temp.

H Output
• Off
• Circulation pump
• Alarms
• Reserve boiler Deactiv. temp.

H Output (mod)*
Pump protection boiler*
• Support
• Start temp.
• Stop temp.

Mixer 1-5 settings*
• Mixer support: Off, CH on, Floor on, Pump only
• Thermostat selection
• Min. mixer temp.
• Max. mixer temp.
• Valve opening time
• Pump off by therm.
• Operat. in SUMMER
• Mixer input dead zone
• Valve opening - alarm*
• Proportional range*
• Integr. time const.*
• Minimum closing*
• Temperature jump
• Time temp. control

Service Setting Password: 0-0-0-0

1 Controller Setting

Make sure to set your boiler with the recommended settings first.

Boiler	Pellet 20	Pellet 40	Pellet 40	Pellet 60	Pellet 95	Pellet 95
Fire Up						
Blow-in time	42sec	42sec	42sec	42sec	42sec	42sec
Blow-in output	80%	80%	80%	80%	80%	80%
Min. fan output	50%	50%	50%	50%	50%	45%
Max. fan output	80%	80%	80%	80%	80%	80%
Feeding time	7sec	7sec	7sec	7sec	8sec	8sec
Start time	220sec	220sec	220sec	220sec	220sec	200sec
Heater operation time	120sec	120sec	120sec	120sec	120sec	120sec
Heater interval	15sec	15sec	15sec	15sec	15sec	15sec
Threshold detection	25%	25%	25%	25%	25%	25%
Heater extension	28sec	28sec	28sec	28sec	28sec	25sec
Stabilization						
Mode	ON	ON	ON	ON	ON	ON
Time 30%	1min	1min	1min	1min	1min	1min
Time 50%	1min	1min	1min	1min	1min	1min
Time 100%	1min	1min	1min	1min	1min	1min
Work 100%	20KW	20KW	16KW	26KW	75KW	60KW
Blow-in output	68%	78%	75%	82%	84%	78%
Operation	2sec	2sec	2sec	2sec	2sec	2sec
Interval	14sec	14sec	15sec	12sec	14sec	18sec
Hysteresis	15°C	15°C	15°C	15°C	15°C	15°C
Work 50%	12KW	12KW	10KW	16KW	20KW	20KW
Hysteresis	7°C	7°C	7°C	7°C	7°C	7°C
Fan output	50%	55%	60%	50%	60%	60%
Feeding Pause	30sec	30sec	24sec	30sec	30sec	30sec
Work 30%	9KW	9KW	7KW	10KW	10KW	10KW
Hysteresis	3°C	3°C	3°C	3°C	3°C	3°C
Fan output	40%	42%	45%	45%	45%	45%
Feeding Pause <i>50s min</i>	50sec	50sec	36sec	50sec	50sec	50sec

Burning OFF						
Hysteresis	1°C	1°C	1°C	1°C	1°C	1°C
Max. time	30min	30min	30min	30min	30min	30min
Extending	30sec	30sec	30sec	30sec	30sec	30sec
Fan	40%	40%	40%	40%	40%	40%
Threshold detection	2%	2%	2%	2%	2%	2%
Fan						
Min. output	35%	35%	35%	35%	35%	35%
Max. output	100%	100%	100%	100%	100%	100%
Stoker						
Extending time	15sec	15sec	15sec	15sec	15sec	15sec
Push time	40sec	40sec	40sec	40sec	40sec	40sec
Belimo						
Forward time	152sec	152sec	152sec	152sec	152sec	152sec
Return time	152sec	152sec	152sec	152sec	152sec	152sec
Pause time	2min	2min	2min	2min	2min	2min
Support mode	Cleaning	Cleaning	Cleaning	Cleaning	Cleaning	Cleaning

2 Fan

If your fan makes a humming sound and does not turn, increase the fan minimum speed go to:

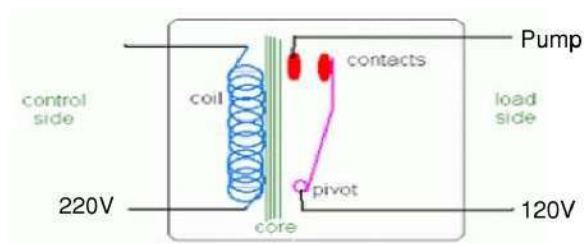
Service settings / Fan settings / Min output (>35%)

3 Boiler Pump

Boiler pump 14-15. 110VAC pump must be connected using a 220VAC relay.

See **Main Menu / Circulation Pump**

Circulation pump *
Circulation support
Circ. standstill time
Circ. operat. time
Start temperature
Night time decrease
- On - Reduction value - Schedule



* unavailable if no adequate sensor or additional module is connected or the parameter is hidden.

• Circulation support	Switches on the user the possibility of operating the circulating pump from the menu. The pause time between periods of operation of the pump circulation is defined by the value of the parameter <i>Circ. standstill time</i> (the recommended setting is 15-40 min.). The circulation pump operates in cycles by <i>Circ. operat. time</i> (the recommended setting is 60 -120 sec.).
Buffer	
• Buffer support	Switches ON/OFF buffer support.
• Buffer loading start temp.	Temperature measured by upper buffer sensor at which buffer loading starts.
• Buffer loading end temp	Temperature measured by lower buffer sensor at which buffer loading ends.
• Min. buffer temp.	Temperature measured by upper buffer sensor at which the pumps are switched off and the mixer servos are closed.

4 Irregular Operation and Alarms

If you are experiencing irregular operation and multiple alarms please do the following steps:

- 4.1- Note your actual settings for future reference
- 4.2- In service settings reset the controller to default
- 4.3- Insert the new parameters according to **#1 Controller Setting**
- 4.4- Verify Belimo operation according to **#8 Moving Grate**
- 4.5- Make sure your feeder auger is screw properly according to **#12 Feeder auger not turning**
- 4.6- Make sure your fire eye sensor is clean and works properly according to **#14 Flame Optic Sensor**

5 Thermostat

TIS Tronic Thermostat RT (G3)

Main menu / Boiler settings / Room thermostat / Thermostat selection / TIS Tronic / Room temp. factor

Example: Room temp. factor. = 15, Mixer temperature will be increased by $(22\text{ }^{\circ}\text{C} - 20\text{ }^{\circ}\text{C}) \times 15/10 = 3\text{ }^{\circ}\text{C}$

Universal Thermostat T1 (41-42)

Main menu / Boiler settings / Room thermostat / Thermostat selection / Universal / Reduction Boiler by Therm

When the contact opens the boiler setpoint is reduced by the Reduction Boiler by Therm.

Main menu / Boiler settings / Room thermostat / CH pump standstill time and CH pump operation time

If you want the thermostat to turn the boiler pump OFF for a set duration and interval when contact opens.

Service settings / Boiler settings / Room thermostat

Choose whether the thermostat should turn off the boiler pump, turn off the boiler or both.

Zone Thermostat Universal (46-47) or TIS TRONIC (G3)

Main menu / Mixer settings / Thermostat selection and select **Universal** or **TIS TRONIC**

Service menu / Installation / Mixer settings / Mixer support

ON CH: Operate a mixing valve with a pump without maximum temperature

FLOOR: Operate a mixing valve with a pump at low temperature

PUMP: Activate zone pump, valve or fan

If you want the thermostat to lower the temperature of the zone:

Main menu / Mixer settings / Reduction temperature by thermostat

If you want the thermostat to switch off the zone pump, valve or fan:

Service menu / Installation / Mixer settings and select "YES" in the "Pump OFF thermostat"

6 Boiler Protection Pump

Use a 12VDC Relay with terminal 43, 44

12.18 Connecting the circulation pump

Pump hot water circulation may be connected to the regulator to the H Output (terminals 43, 44)

Should set the H outputs or H outputs (mod) to support the circulation pump, in the menu:

Service settings → Installation → H Output

Support for the circulation pump to turn on the user parameter *Circulation support* in the menu:

7 Mix Pellets / Corn

Mix them 60% pellets / 40% corn.

To mix more than 40% corn can cause sporadic combustion failure.

8 Moving Grate (Belimo)

If the moving grate motor is not working, verify the wiring is as below.

Figure 4. Burner connection diagram.

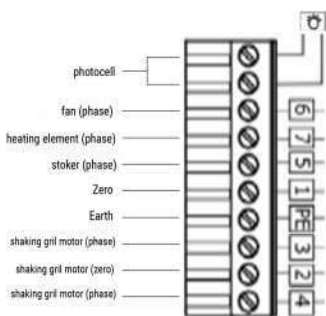
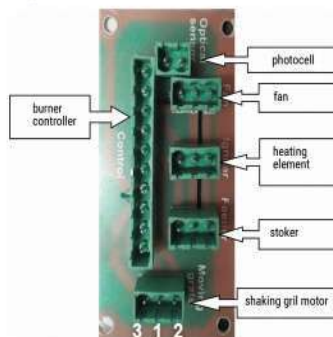
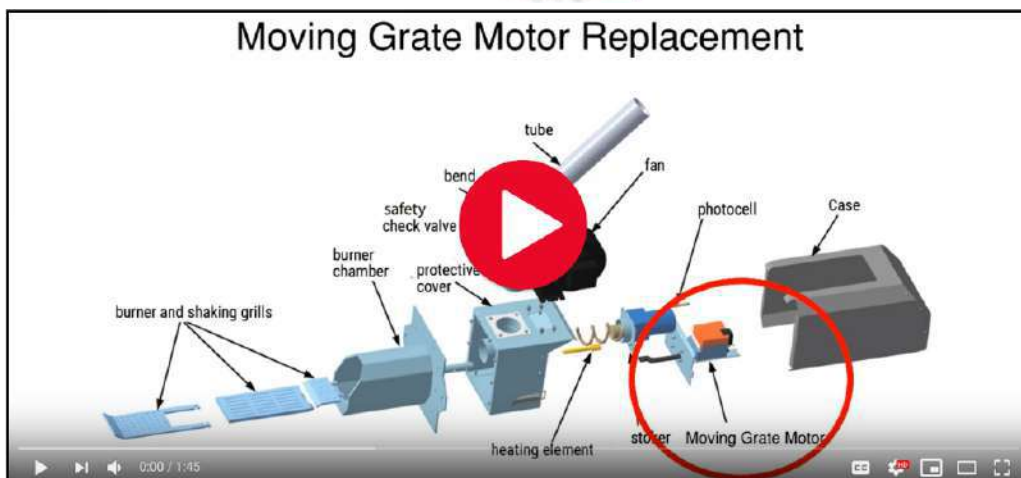


Figure 5. Burner circuit board connectors



If you need to replace the motor see the video below



9 Igniter

If the igniter is not working.

Disconnect the igniter wire from the controller.

Go in manual control and turn ON the igniter.

If you have 220V at the controller terminal and still not working when connected it is broken.

10 Blank Screen

Verify connection using the electrical diagram.

Make sure to switch ON the controller.

Verify those parameters with a multimeter.

10.1- 220V L to N

10.2- Controller fuse continuity

10.3- Verify terminal 1-2 is jump and 45-46 is jump (11-12 is jump on UNI boiler only)

10.4- If none of this work disconnects all from the controller except the L, N and the 2 jumpers.

*The controller must be kept away from hard freezing, overheating, water or a very high humidity environment.

If water or condensation enters the controller immediately disconnect and dry using a hair dryer at low temperature. Wait 24hrs and reconnect.

11 Hopper sides and auger

Hopper (pellet storage) can be installed on both sides of the boiler. Make sure to position the auger on the side of the boiler. You may have to flip the steel plate with the auger sliding hole. See right wrong installation of auger opposite to the boiler. Hopper (pellet storage) can be installed on both sides



12 Feeder auger not turning

- Verify if the motor operates
- If the motor operates but the auger does not turn well or stop to turn with small restriction remove the feeder
- Remove the moving grates by unclipping both sides and sliding out the grate mechanism
- Remove the 4x Screw Star #2 to slide out the feeder
- Locate the allen screw 5mm head and unscrew 1 turn
- Slide the auger out and verify the shaft condition
- If the shaft is damaged when reinserting the auger move the shaft 1/4" forward
- Make sure to thigh strongly the allen set screw back on the flat face of the shaft
- Reassemble reversely



13 STB Overheating

- 1- Terminal 1 and 2 must be jumped.
- 2- See if you have 220V between L-N



14 Flame Optic Sensor

Flame sensor must be connected to terminal 35-36.

95% of the trouble with a flame sensor is actually bad wiring.

If there is no reading then disconnect the flame sensor and replace it with a jumper.

Controller should show 100%. If not showing 100% restore to default controller.

Use a multimeter with a flame sensor. Apply a flashlight directly to the flame sensor eye. Resistance should be very low $<100\Omega$. Then apply electrical tape on the eye. Resistance should be very high $>10'000\Omega$.

15 DZT thermal protection sensor

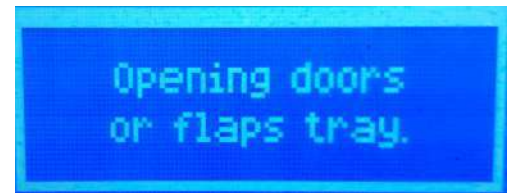
The DZT sensor must be connected to terminal 45-46.

[DZT-1 thermal sensor](#), Open: 185°F/85°C, Close: 140°F/60°C.

Error code: **Opening doors or flaps tray.**

If you operate at higher temperature you can order another [DZT-2](#).

[DZT-2 thermal sensor](#), Open: 200°F/95°C, Close: 155°F/70°C.



16 Back Plate

Plate goes on the rear of the burning chamber. In front of the flame.

17 Feed temperature sensor damage

Look carefully since 2 wires connect to the same terminal 26

18 Overheating of the boiler

See boiler sensor wires connection Terminal 25-26



19 Thermowell on top of boiler

For boiler temperature sensor and DZT (190F overheating bimetallic sensor) Terminal 45-46

20 Smoke in Flexible Tube

Verify that the stainless check valve is clean and that the nuts counterweight allows the check valve to close properly.

21 Backfire

- Backfire is caused by a very bad draft
- Clean the tube with a brush.
- Remove the twist turbulators in the heat exchanger to increase draft and exhaust gas temperature. The twist turbulators are only useful to increase heat exchange if using the boiler to maximum capacity most of the time
- You may also need to remove a couple of iron grates.
- Verify that your chimney height is optimum. The minimum chimney height for a small-capacity boiler is 16ft with a minimal amount of elbows.



- Also, check the burner it should be free of ash. Fuel coming in no excess. The burner's self-cleaning system could work incorrectly, the break period should be switched to "0".
- When the chimney draft is bad in warm weather above 32°F (0°C) careful cleaning must be done more frequently.

ecoSTER Touch Service settings

There are two "levels" in the ecoSTER TOUCH menu. The first one concerns the settings of the ecoSTER itself, the second concerns the boiler settings.

Probably the customer enters the service code in the section of the ecoSTER settings, not the boiler.

To get to the service settings of the boiler, please enter the boiler settings and then to the boiler service settings.

Code for ecoSTER TOUCH settings is **1410**.

3.12.7 Service settings



 You must enter service password in order to enter the settings.

- *Hotel mode* – disables editing other room thermostats and access to this device menu. User can execute only basic settings.
- *Visibility in other panels* – enabling options of preview and edition of this device from other room thermostats.
- *Restore default settings* – returning to default settings.
- *Touch panel calibration* – enables calibrating the touch panel.

ecoNET

1 Plug your unit to power and to controller

2 WiFi must be available or connect RJ45 ethernet cable to your modem

3 Configure connection with your boiler controller

General settings
Clock
Screen brightness
Screen contrast
Sound
Weather correction
Language
Update
WiFi settings*

3.1 Choose WPA2 in Security

3.2 Insert your WiFi name and password

3.3 ecoNET module will show connection to network (if not showing connection go back to 3.2)

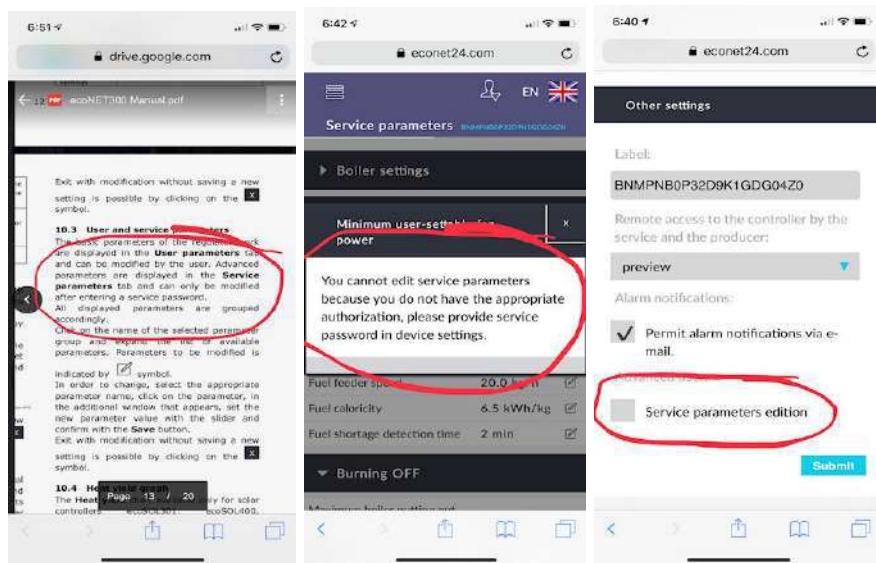


4 Go to www.econet24.com to register and download your phone app

4.1 Insert the UID of your unit that can be found in MAIN MENU / INFORMATION / ecoNET WIFI

Advance Service settings from ecoNET WIFI

The correct password is 2010



Wire Connection

If WiFi is not available to site use RJ45 cable to link your router to ecoNET module.

Use for outdoor Cat5e burial cable up to 250ft.

Schedule

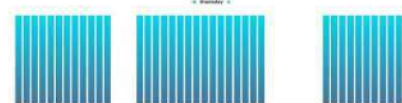
10.7 Schedule

In the **Schedule** tab user have the option of setting the time intervals, according to the list after clicking on the  symbol:

- reduction preset temperature of the heating circuits for boiler regulators.

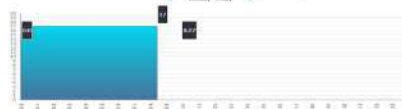
Turn on the schedule by selecting **On** for the available circulation from the list, and enter the decreasing temperature value in the **Decrease** field, i.e.g. 10°C. On a bar chart daily graph (24 hours), click on the appropriate bars (each bar corresponds to 30 minutes), which allows to set the active temperature reduction in the selected time interval. Once set, choose **Save**.

Decreasing of preset temperature can be set separately for all days of the week.

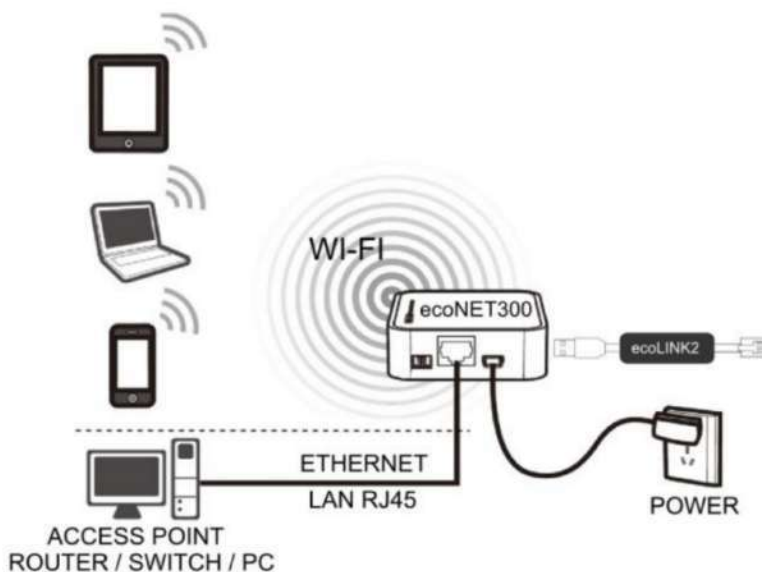


In the example above, on Tuesday, the preset temperature for the heating circuit is reduced by 10°C between 6:00 and 7:30 and 15:30 to 19:00. In other ranges, the preset temperature will not be lowered.

- switch on or off for heat pump circuits.



- working in schedule or fixed value for solar regulator.



For more information go to: [**pellet.mbtek.com**](http://pellet.mbtek.com)
 888-301-0737  [**info@mbtek.com**](mailto:info@mbtek.com)