# **=** Elginkan

# Felis Wall Type Condensing Boilers

 FELIS 65/100/125/150 Capacity Option
Stainless Steel Heat Exchanger
6 Bar Operating Pressure
Integrated Flue Flap
N0x Class: 6
Class A, In Accordance With The ErP
Cascade Opportunity Up To 16 Items
Efficiency Up To 108%
19 - 100% Modulation Rate
51 dB Sound Level
Fully Room Sealed Casing

E.E.A.



In accordance with the ErP Regulation





## **TECHNICAL DETAILS**



## **TECHNICAL TABLE**

STAINLESS

BLUEJET

Product Type	Unit	FELİS 65	FELİS 100	FELİS 125	FELİS 150
General					
Gas Category			12H	. 12E	
Flue Types			C13(x), C33(x), C43(x)	), C63(x), C93(x),B23P	
Room Sealed Type			Tam He	ermetik	
Gas Inlet Pressure (G20)	mbar		2	10	
Power Supply	V AC-Hz	230 VAC-50 Hz			
Power Consumption	Watt	117	143	228	306
Protection Class			IP)	(41)	000
Sound Level	dB	53	53	51	51
Weight (Net)	ka	53	66	74	89
Dimensions (LxWxD)	mm	835x501x590	835x501x590	835x501x660	835x501x730
Packed Dimensions (LxWxD)	mm	1 055x665x650	1 055x665x650	1 055x665x720	1 055x665x790
Capacity - Efficiency		1.000,000,000	1.000,000,000	1.000,000,0120	1.000,000,70
		105	00.00	0/ 00	0/ 55
Umin, Minimum Heating Load - ((d60°C)	kW	13,5	20,09	24,20	26,57
Qmax, Maximum Heating Load - (Id8U/6U°C)	kW	68,05	96,70	120,71	140,77
Pmin, Minimum Heating Power - ((d30°C)	kW	14,89	22,34	26,29	29,82
Pmax, Maximum Heating Load - (@50/30°C)	kW	73,36	102,00	129,01	150,43
Efficiency - (60°C return water) (max-min)	%	93,4 - 97,1	%97,3 - %96,9	%96,5 - %96,6	%97,0 - %96,4
Efficiency - (30°C return water) (max-min)	%	106,2 - 108,1	%105,7 - %108,0	%105,4 - %107,6	%105,5 - %107,7
Gas Consumption					
Natural Gas (@Min-Max Capacity)	m³/h	1,464 - 7,384	2,179 - 10,506	2,513 - 13,100	2,878 - 15,148
NOx-Annual emission (EN 15502)	mg/kWh	28,13	26,4	42,91	59,83
NOx Class	mg/kWh		6		5
Central Heating					
Water Volume	litre	4,5	6,5	8	9,5
Minimum Water Pressure	bar		0	,8	
Maximum Water Pressure	bar	4,5		6	
Operating Temperature (Central Heating Circuit)	οC		30	-90	
Maximum Installation Temperature	Jo		9	5	
Emission Values					
ርዐ Թ Maximum Canacity (G20)	nnm	<130	<209	<747	<264
CO @ Minimum Canacity (620)	nnm	<7	<12	<9	<12
$CO_2 \cap Maximum Canacity (620)$	%	9 32 ± 0 2	9 38 ± 0 2	9 50 ± 0 2	983 ± 0.2
$CO_2$ @ Minimum Capacity (620)	%	8 54 ± 0 2	8 52 ± 0 2	8 75 ± 0 2	8 89 ± 0 2
Flue Gas Temperature	0C	<75.4	<75.6	<76.8	<74.4
Flue Gas Flow Rate (min -max )	a/s	5 28 - 22 17	9 35 - 45 08	9 90 - 48 93	12 10 - 54
Flue Gas Pressure	Pa	30 - 100	30 - 100	50 - 150	60 - 200
Flue Distances					00 200
Flue Diameter	ømm	80 / 125		100 / 150	
C12 May Flue Length (Herizontel)	<i>p</i> m	10	11	11	11
C13 – Max. Flue Length (Horizontal)	m	10	10	10	10
C33 – Max. Flue length (Vertical)	m	11	j 10	j 12	J 10
Dzər – Max. Flue Leilgli	(1)	(1	١Z	١Z	١Z
Elbow Loss Distances					
Elbow ( 90°C)	m	1,5	1,5	1,5	1,5
Elbow (45°C)	m	1	1	1	1
Water pH range: 7,5 < pH < 9,5	Nater hardness i	range: 5°f< TH <15°f			

#### Backflow (Flue) Flap

Closure of the flap prevents the exhaust gases in the main chimney to diffuse through non-operating appliances in the cascade system.

(If the system to be used contains aluminum components or aluminum radiator, this maximum pH value should not exceed 8,5)

02

51 dB SOUND LEVEL

Origin Turkey

#### 1. Wide Capacity Range

FELIS boilers, with 4 different capacities in the range of 65 – 150 kW, address your high capacity needs with the cascade opportunity up to 16 items. 2. Compact & Light

The design, which draws attention with its small dimensions compared to the high power it provides, is also in the forefront with its light weight. FELIS boilers offer the advantages of compactness & lightness both in installation and shipment stages.

#### 3. High Operating Pressure for High Buildings

The maximum water pressure value is 6 bar, which eliminates the need to use a floor heat exchange station in the mezzanine floor by dividing the system into two parts.

#### 4. High Efficiency & Low Operating Costs

FELIS boilers with compatible and long-lasting operating components provide high efficiency in 80/60 °C or 50/30 °C operating conditions.

#### 5. Environment and Budget Friendly Design

FELIS boilers are in NOx 6 class, which is the highest level, with annual NOx emission values between 28,13 - 42,91 mg/kWh. ( the best class of the new regulations ) While it does not pollute the environment with low NOx emissions, which is the indicator of high efficiency, it saves fuel and operating costs. For Felis 150, 59,83 mg/kWh and NOx: 5

#### 6. Wide Modulation Range & High Saving

FELIS boilers have a modulation rate of up to 19%. In this way, according to the heat request, the boiler turns the gas valve down to 19% and prevents overheating. This wide range of modulation, which maximizes energy savings, also extends the life of the boilers. With its wide modulation, FELIS boilers provide you the opportunity to work with the highest efficiency even in low capacities during the season change times.

#### 7. Noise Free Boiler Rooms

Operating at a sound level of only 51 dB at 125 and 150 kW capacity gives you the feeling of working in the library. It operates at a sound level of 53 dB at 65 and 100 kW capacity.

#### 8. Superior Safety Systems

With the safety systems in FELIS boilers, both you and your appliance are fully safe:

- Flame Loss Safety
- Central Heating Circuit Water Overheating Safety (85 °C)
- Flue Gas Overheating Safety (95 °C)
- Overtemperature Safety (105 °C)
- High Water Pressure Safety (6 bar)
- High Water Pressure Safety (0,8 bar)
- Low Voltage Safety [ 170 VAC]
- Frost Safety (The electrical connection of your appliance must not be cut-off in order for the frost safety to work)
- Automatic Air-Purge Valve

#### • Annual Maintenance Reminder System

#### 9. Large LCD Display & Turkish Menu

Felis boilers provide a full control over appliances with an easy-to-use menu structure, while transmitting a lot of information about the status of the appliances and the installation to the user with a large LCD screen and menus with 10 different language support.

#### 10 Integrated Flue Flan

With the closure of the flap, it prevents the exhaust gases in the main chimney to diffuse through non-operating appliances in the cascade system. The flue flap, which is standard in our appliances, regulates the modulation. Thanks to the flue flap, a suitable environment is created for a more efficient combustion

#### Bluejet Technology

The bluejet burner, which was developed jointly with the heat exchanger in accordance with the combustion feature of the heat exchanger in the Felis boilers, was adjusted according to the 1:5 modulation rate in our boilers. With this modulation rate, made according to the appropriate capacities as a result of the tests, efficient combustion values, low emission, low NOx value and low carbon emission were achieved. Thus, it has become a more efficient and more environmentally friendly appliance.

The three-dimensional design of the BlueJet burner, the surface structure made of stainless steel and the hole diameters on the burner surface where the fuel emerges and where the flame is formed, and the distances between each other are optimally planned. In this way, the flame on the burner was obtained as the blue flame, the most efficient form of flame, the flame exhibited a stable distribution on the burner. Thus, the combustion efficiency during the combustion increased, thermal and acoustic comfort is presented to the user.

# Cascade Control Panel with Display (AF11)

It is mandatory to use it in the Master boiler in single applications and the cascade system. It provides ease of control on the appliance with the instant display of all data on the appliance, heating settings, time program, change of mode settings and parameters, display where the error code and description is shown in case of fault, and keypad. Fully Turkish interface and 10 other language options are available.



#### AXIMUM 2.400 kW JEATING CAPACITY IN SINGLE CASCADE YSTFм



(1) Per 1 meter chimney addition on the horizontal, the maximum length of the vertical chimney is reduced by 1,2 meters.

EXHAUST GAS CONNECTION	FLUE TYPES	FLUE DIAMETERS	FELİS 65	FELİS 100	FELİS 125	FELİS 150
Horizontal flue with coaxial	C13x	ø80/125 mm	10	-	-	-
flue connection		ø100/150 mm	-	11	11	11
Vertical flue with coaxial flue		ø80/125 mm	12	-	-	-
connection	C33x	ø100/150 mm	-	13	13	13
Coaxial flue connection is	C/2v	ø80/125 mm	10	-	-	-
as horizontal flue	C43x	ø100/150 mm	-	11	11	11
Coaxial flue connection is made to the main flue in the boiler room as horizontal flue	C93x	ø80/125 mm	10	-	-	-
		ø100/150 mm	-	11	11	11
Flex or rigid flammable air is		ø80/125 mm	11	-	-	-
the flue . Usually used in cascade flue connections	B23P	ø100/150 mm	-	12	12	12

Maximum flue lengths are given for elbowless connections. The equivalent length for each 90° elbow is 1,5 meters, and for 45° it is 1 meter.

### **BOILER ACCESSORY PREFERENCES**

#### **BOILER ACCESSORIES**



#### AF12 Cascade Module Set

• In cascade systems, it provides the communication between the master and slave appliances. • It is mounted on the motherboard.

#### AF13 Outside Air Sensor

- It measures the outside air temperature and adjusts the operation of the appliances at the demanded temperature.
- It is connected to the motherboard via dual cable from sensor input. Its connections should be made with 1,5 mm2 copper cable. The maximum allowable cable length is 120 meters.
- It is an NTC type sensor.
- It can operate between -50 / +70 °C. • It has a tolerance of +1 / -1 K.

#### AF14 Cascade temperature sensor

- It is an NTC type sensor.
- It can operate in the range of -30 to 125 °C.
- It has a tolerance of +1/-1 K.
- Connections should be made with copper cable in 1 mm cross section and cable length should not exceed 80 meters.

#### AF15 DHW Tank Temperature Sensor

- The sensor is used to measure the temperature of the DHW tank, solar energy systems and/ or the temperature of the hydraulic separator/heat exchanger.
- The temperature is measured by the immersion type NTC through the DHW tank and the connection is made via the sensor input to the motherboard.
- It can operate in the range 0 95 °C.
- It has a tolerance of +0,5 / -0,5 K.
- It has a length of 2 m.

#### AF16 Zone Control Kit

- It provides control of pump and sensors of 3-way motor control in applications of heating systems with mixing valves. One AF16 is required for each 3-way motorized valve. With this control board, the operating condition of the heating circuit is adjusted depending on the demanded temperature and the operating principle of the 3-way motor valve.
- Since it is not included in the standard packaging of the appliance, it must be requested separately.

#### AF17 Room Unit (Digital)

- It is used for programming of the appliance and remote setting of heating requests.
- The operation mode setting, time program and heating setting on the digital display can be set via the room unit.

#### AF18 Room Unit

- It is used for programming of the appliance and remote setting of heating requests.
- Temperature adjustments are made by means of the rotary switch on the room unit.
- The operating mode is selected by means of the button located in the upper right corner. • The button located at the bottom right of the appliance is for switching the appliance off when
- the place is not used. (It is necessary to press the same button again to resume.) • Wiring of up to 200 meters can be made between the main unit and the room unit.

#### AF19 Web Server Communication Module

- It enables remote access, reporting and monitoring of appliances from the system, where there is internet connection.
- Online communication between the computer and the module is provided via ethernet cable connection. By logging in to the system with the created username and password, the simulation of the system, instantaneous values, operation/fault status, is monitored through computer.
- At the desired time, a graph can be created about the requested values and the report can be taken

#### **BOILER INSTALLATION KIT CONTENTS**

For 65 kW: Wall hanger bracket, 3 hanger screws, 3 dowels, 3 pieces of "gaskets (for water and gas connections)

For 100-125-150 kW: Wall hanger bracket, 3 hanger screws, 3 dowels, 2 pieces of 1 " gaskets (for water connections), 1 piece of 1" gasket (for gas connection)

The siphon kit, operating instructions, service lists, etc. are available in standard packaging of all boilers.

#### SINGLE BOILER APPLICATION

Cascade Control Panel with Display must be acquired in single boiler applications.





DC: Direct Heating Circuit 3WMV: 3-Way Motorized Mixing Valve

#### CASCADE BOILER APPLICATION (Up to 2:16 Boilers)

The AF11 control panel can be acquired as one for each boiler in the system. Thus, individual values of all boilers can be observed and additional control/observation functions can be reached.

1 x (AF16)

1 x (AP ...)

The system continues its normal operation even when no panels are acquired for other boilers other than the AF11 control panel acquired for zone control purposes; however, observation of values and access to additional functions of individual slave boilers cannot be obtained.



#### SYSTEMS with DHW TANKS

FELİS boilers have a priority control system for hot water production. For this purpose, the AF15 Immersion type Temperature Sensor must be added as needed.

•		
1x(DD) + 1x(3YMV)	2x(3YMV)	1x(DD) + 2x(3YMV)
Accessories	Accessories	Accessories
1 x (AF11)	1 x (AF11)	1 x (AF11)
1 x (AF13)	1 x (AF13)	1 x (AF13)
(AF14)	(AF14)	(AF14)
1 x (AF14)	2 x (AF14)	2 x (AF14)
1 x (AF16)	2 x (AF16)	2 x (AF16)
1 x (AP)	1 x (AP)	1 x (AP)

## INSTALLATION APPLICATION SCHEMAS

#### SINGLE BOILER, HEATING CIRCUIT+ DHW TANK



#### INSTALLATION EQUIPMENT

- Heating Circuit Pump (Secondary)
- Expansion Tank
- Safety Valve (Max. 6 bar for boiler)
- Hydraulic Separator
- Safety Valve (Max. 8 bar for DHW tank)
- DHW tank Circulation Pump
- DHW tank Recirculation Pump (Upon request)
- Pressure Reducer (To the boiler mains connection)
- Air-Purge Valve (On the hydraulic separator)
- Air Separator
- Dirt-Sludge Trap
- Electric Panel
- Other Installation Equipment (Check Valve, Filters, Valves)

ACCESSORY EQUIPMENTS				
PRODUCT/ACCESSORY NAME	MODEL	QUANTITY		
Felis Boiler 65/100/125/150	DK 06/ DK 10/ DK 12/ DK 15	(1 piece)		
Cascade Control Panel with Display	AF 11	(1 piece)		
Outside Air Sensor	AF 13	(1 piece)		
DHW tank Temperature Sensor	AF 15	(1 piece)		
Cascade Temperature Sensor (To the supply line of the hydraulic separator-clamp type)	AF 14	(1 piece)		
Energy Efficient Primary Circuit Circulation Pump	AP	(1 piece)		
Single Coil DHW tank		(1 piece)		

## INSTALLATION APPLICATION SCHEMAS

CASCADE, HEATING CIRCUIT + DHW TANK



#### **INSTALLATION EQUIPMENT**

- Heating Circuit Pump (Secondary)
- Expansion Tank
- Safety Valve (Max. 6 bar per boiler)
- Hydraulic Separator
- Air-Purge Valve (On the hydraulic separator)
- Air Separator
- Safety Valve (Max. 8 bar for boiler)

#### ACCESSORY E

#### PRODUCT/ACCESSORY NAME

Felis Boiler 65/100/125/150

Cascade Control Panel with Display Outside Air Sensor Cascade Control Module Card Cascade Temperature Sensor (To the supply line of the H separator-clamp type) DHW tank Temperature Sensor Single Coil DHW tank Energy Efficient Primary Circuit Circulation Pump

Energy Efficient Primary Circuit Circulation Pump

- DHW tank Circulation Pump
- DHW tank Recirculation Pump (Upon request)
- Pressure Reducer (To the boiler mains connection)
- Dirt-Sludge Trap
- Electric Circuit Box
- Other Installation Equipment (Check Valve, Filters, Valves)

QUIPMENTS		
	MODEL	QUANTITY
	DK 06/ DK 10/ DK 12/ DK 15	(2 pieces)
	AF 11	(1 piece)
	AF 13	(1 piece)
	AF 12	(2 pieces)
nydraulic	AF 14	(1 piece)
	AF 15	(1 piece)
		(1 piece)
	AP	(2 pieces)

# **INSTALLATION EQUIPMENT**

ACCESSORY EQUIPMENT	S	
PRODUCT/ACCESSORY NAME	MODEL	QUANTITY
Felis Boiler 65/100/125/150	DK 06/ DK 10/ DK 12/ DK 15	(4 pieces)
Display Cascade Control Panel Group	AF 11	(2 pieces)
Outside Air Sensor	AF 13	(1 piece)
DHW tank Temperature Sensor	AF 15	[1 piece]
Cascade Control Module Card	AF 12	(4 pieces)
Cascade Temperature Sensor (To the system plate heat exchanger supply line-clamp type)	AF 14	(1 piece)
Zone Control Kit	AF 16	(1 piece)
Cascade Temperature Sensor (To the three-way motor supply line-clamp type)	AF 14	(1 piece)
Energy Efficient Primary Circuit Circulation Pump	AP	(4 pieces)
Boiler Temperature Sensor (From the pool to the plate heat exchanger return line)	AF 15	(1 piece)
Single Coil DHW tank		(1 piece)

- Circuit Pump (Secondary) Heating (
- Three-Way Motorized Mixing Valve (2 Pieces)
  - Expansion Tank (For the primary circuit)
- Expansion Tank (For the secondary circuit)
  - boiler) per bar 9 Valve (Max. Safety
- (For the system) Plate Heat Exchanger

INSTALLATION APPLICATION SCHEMAS

- Plate Heat Exchanger (For the pool system)
- 8 bar for boiler)
- dmr Ъ Circulation Safety Valve (Max. 8 DHW tank Circulati
- DHW tank Recirculation Pump (Upon request)
- Pressure Reducer (To the boiler mains connection)
- Air-Purge Valve (On the hydraulic separator, if exists)
  - Separator Air
- Dirt-Sludge Trap
- **Electric Circuit Box**
- Other Installation Equipment (Check Valve, Filters, Valves) Circulation pump for the pool system





#### INSTALLATION EQUIPMENT

- Heating Circuit Pump (Secondary)
- Three-Way Motorized Mixing Valve
- Expansion Tank
- Safety Valve (Max. 6 bar for boiler)
- Hydraulic Separator
- Safety Valve (Max. 8 bar for boiler)
- DHW tank Circulation Pump
- DHW tank Recirculation Pump (Upon request)

#### ACCESSORY E

#### PRODUCT/ACCESSORY NAME

Felis Boiler 65/100/125/150

Cascade Control Panel with Display Outside Air Sensor DHW tank Temperature Sensor AF 15 (1 piece) Cascade Temperature Sensor (To the supply line of the h separator-clamp type) Zone Control Kit Cascade Temperature Sensor (To the three-way motor sup

DHW tank Temperature Sensor (For the solar panel) DHW tank Temperature Sensor (For the return side from sola Energy Efficient Primary Circuit Circulation Pump Double Coil DHW tank

- Solar Power System Circulation Pump
- Expansion Tank (For the solar power system)
- Pressure Reducer (To the boiler mains connection)
- Air-Purge Valve (On the hydraulic separator)
- Air Separator
- Dirt-Sludge Trap
- Electric Circuit Box
- Other Installation Equipment (Check Valve, Filters, Valves)

QUIPMENTS		
	MODEL	MİKTAR
	DK 06/ DK 10/ DK 12/ DK 15	(1 piece)
	AF 11	(1 piece)
	AF 13	(1 piece)
	AF 15	(1 piece)
ydraulic	AF 14	(1 piece)
	AF 16	(1 piece)
pply line-clamp type)	AF 14	(1 piece)
	AF 15	(1 piece)
ar panel to DHW tank)	AF 15	(1 piece)
	AP	(1 piece)
		(1 niece)



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