K X5/M/2 EL

Dual fuel gas/light-oil burners with electronic control box.
Gas fuel operation: two stages progressive or modulating operation (if equipped with addition of optional modulation kit PID and probe; to guarantee an ideal proportionality of the power supplied to the thermal load).
Light-oil fuel operation: two stages.
Composed by: aluminium frame, fan at high pressurisation and combustion head with adjustment at high efficiency and high flame stability.
Compact overall dimensions and disposition rationalized of the components with accessibility facilitated for the operations of setting and maintenance.
Available in the versions METHANE (natural gas) or L.P.G. (to specify at the order) on demand specific versions for town gas, coal gas or biogas.
Gas train complete with: work valve with adjustment, safety valve, minimum gas pressure switch and filter.
Complete of: flange and gasket for installation on generator, nozzles, flexible pipes and line filter.
The servomotors are indipendent and managed directly from the electronic control box of the burner: one servomotor for the gas modulator and one servomotor for the air shutter.

The burners are equipped with a display that allows to:
- adjust the operating parameters of the burner
- visualize the flame intensity
- adjust the operating curve of the burner (air / gas ratio)

With the addition of optional accessories (probes) thanks to the most advanced systems for automatic modulation in mechanical or electronic version, the burner constantly ensures the proper gas / air ratio. The maximum efficiency of the returns in each combustion point derived from the punctual adaptation of the thermal load to the heat requirements of the burner at any instant of operation.
In the version with the electronic cam the fuel / combustion air curve, more extended, is fully exploited, guaranteeing excellent performance in terms of accuracy and speed, even during the calibration phase.
A microprocessor monitors the different stages of the process and allows the correct repetition of the sequences of operation.
Optional accessories: PID power modulator kit, probe, PC interface, VSD, O2 control, O2 + CO control, field bus (profibus, modbus, profinet).

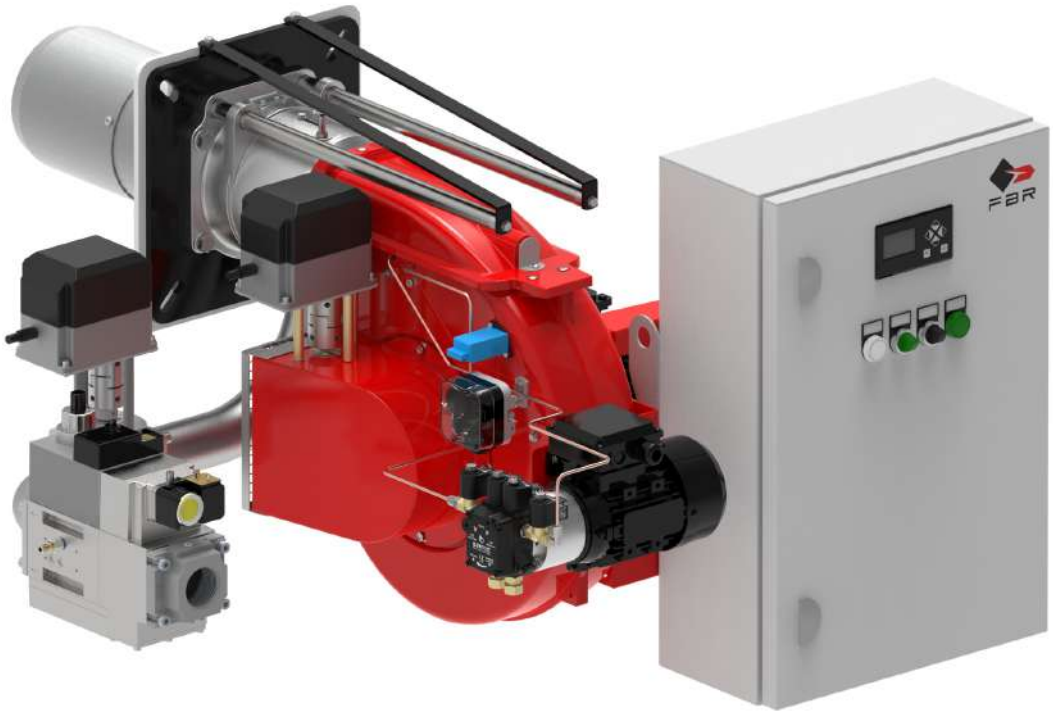


Fig. 1 K X5/M/2 EL

CONTROL BOX LAMTEC BT3

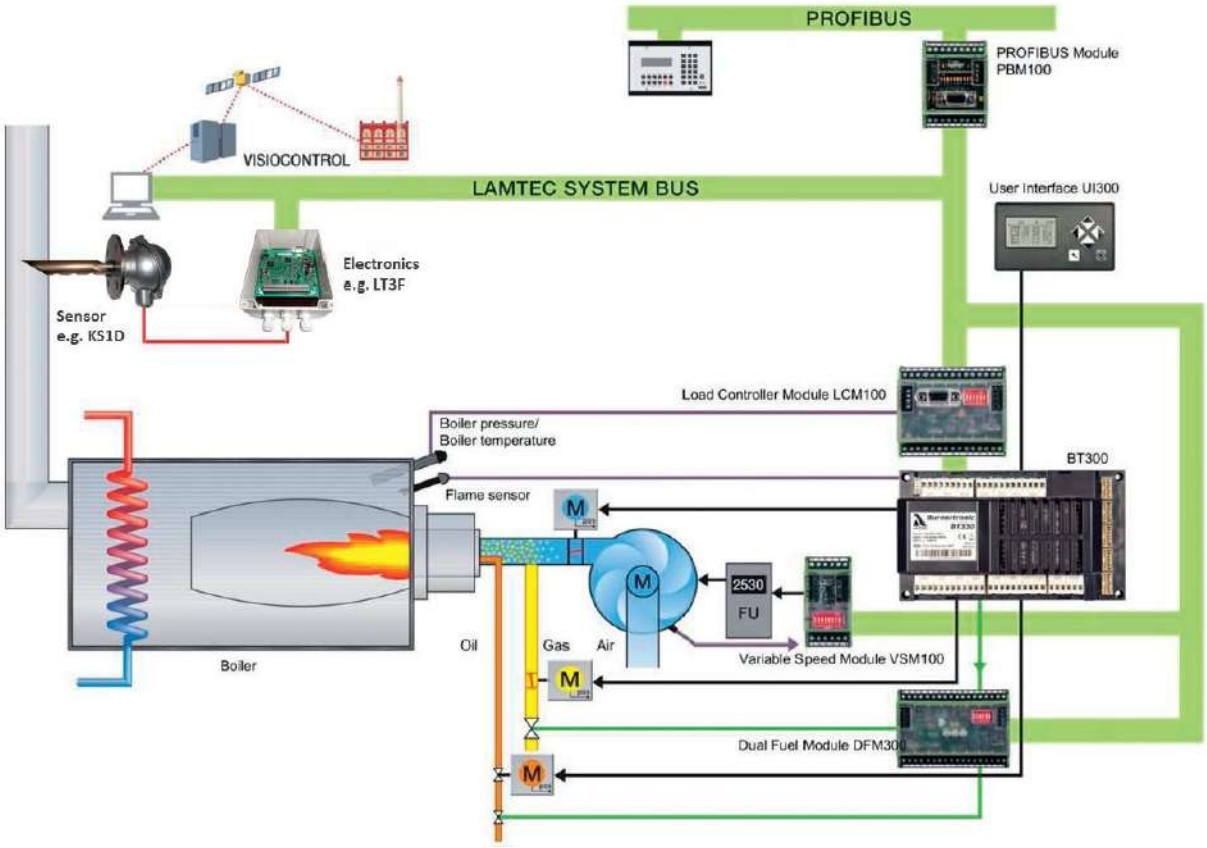


Fig. 2 Control box Lamtec BT3

TECHNICAL DATA AND OPERATING RANGE DIAGRAM K X5/M/2 EL

MODEL		K X5/M/2 EL
Thermal power min. 1°st. / min. 2°st. - max. 2°st. *	[Mcal/h]	120.4/352.6-731
Thermal power min. 1°st. / min. 2°st. - max. 2°st. *	[kW]	140/410-850
Gas flow G20 (NATURAL GAS) min. 1°st. / min. 2°st. - max. 2°st. *	[Nm³/h]	14/41.1-85.2
Gas flow G31 (L.P.G.) min. 1°st. / min. 2°st. - max. 2°st. *	[Nm³/h]	5.4/15.9-33
Fuel: NATURAL GAS (second family) - L.P.G. (third family)		
Fuel category:		I2R,I2H,I2L,I2E,I2E+,I2Er,I2ELL,I2E(R) I3B/P,I3+,I3P,I3B,I3R
Minimum pressure gas train D1" - S NATURAL GAS/L.P.G.** ***	[mbar]	210/--
Minimum pressure gas train D1"1/4 - S NATURAL GAS/L.P.G.**	[mbar]	97.5/52.5
Minimum pressure gas train D1"1/2 - S NATURAL GAS/L.P.G.**	[mbar]	25.8/24.1
Minimum pressure gas train D2"- S NATURAL GAS/L.P.G.**	[mbar]	24/23
Maximum pressure at the entry of valves (Pe. max)	[mbar]	360
LIGHT-OIL flow 1°st. / min. 2°st. - max. 2°st. *	[kg/h]	11.8/34.6-71.6
Fuel: LIGHT-OIL 1,5°E at 20°C= 6,2 cSt = 35 sec Redwood N°1		
Intermitted working operation (min. 1 stop every 24 hours) modulating gas - two stages light-oil		
Environmental conditions operation / storage:		-15...+40°C / -20...+70°C, rel. humidity max. 80%
Max. temperature combustion air	[°C]	60
Nominal electric power	[kW]	2.0
Fan motor	[kW]	1.5
Nominal absorption fan motor	[A]	3.2
Pump motor	[kW]	0.18
Nominal absorption pump motor	[A]	0.5
Power supply:		3~400V, 1/N~230V-50Hz
Electric protection degree:		IP 40

* Reference conditions: Environment temperature 20°C - Barometric pressure 1013 mbars - Altitude 0 metre (sea level).

** Minimal feeding-gas pressure to the gas train to get the maximum power of the burner, considering counter-pressure in combustion chamber of value 0 (zero).

*** For gas train D1" maximum burner power 600 kW.

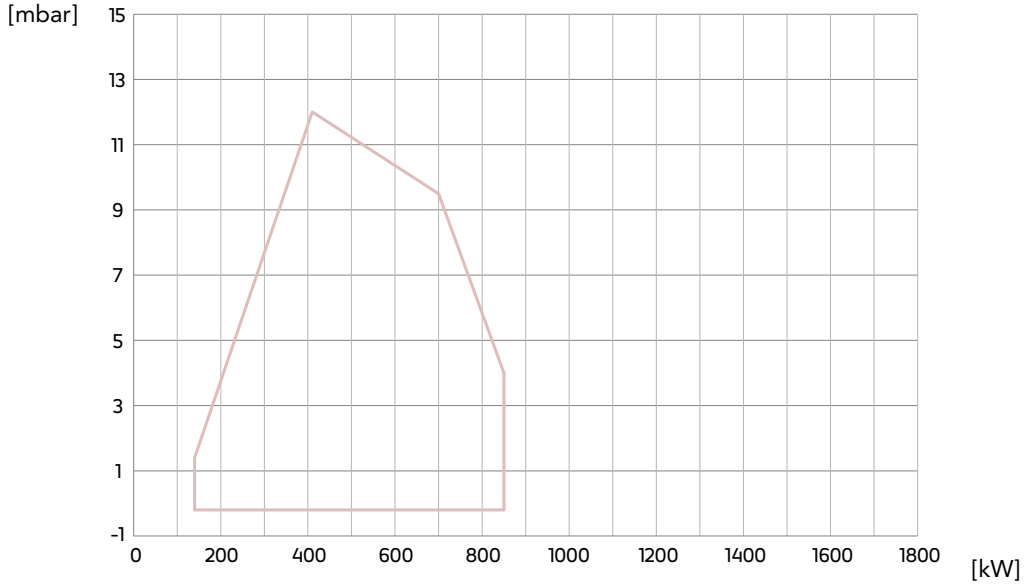


Fig. 3 X = Thermal power Y = Pressure in combustion chamber

The firing rates has been obtained based on test boilers in accordance with EN267 standards and are indicative of matching the burner to the boiler. For the correct operation of the burner, combustion chamber dimensions must be in accordance with current regulation. In case of non-compliance, contact the manufacturer.

DIMENSIONS [MM]

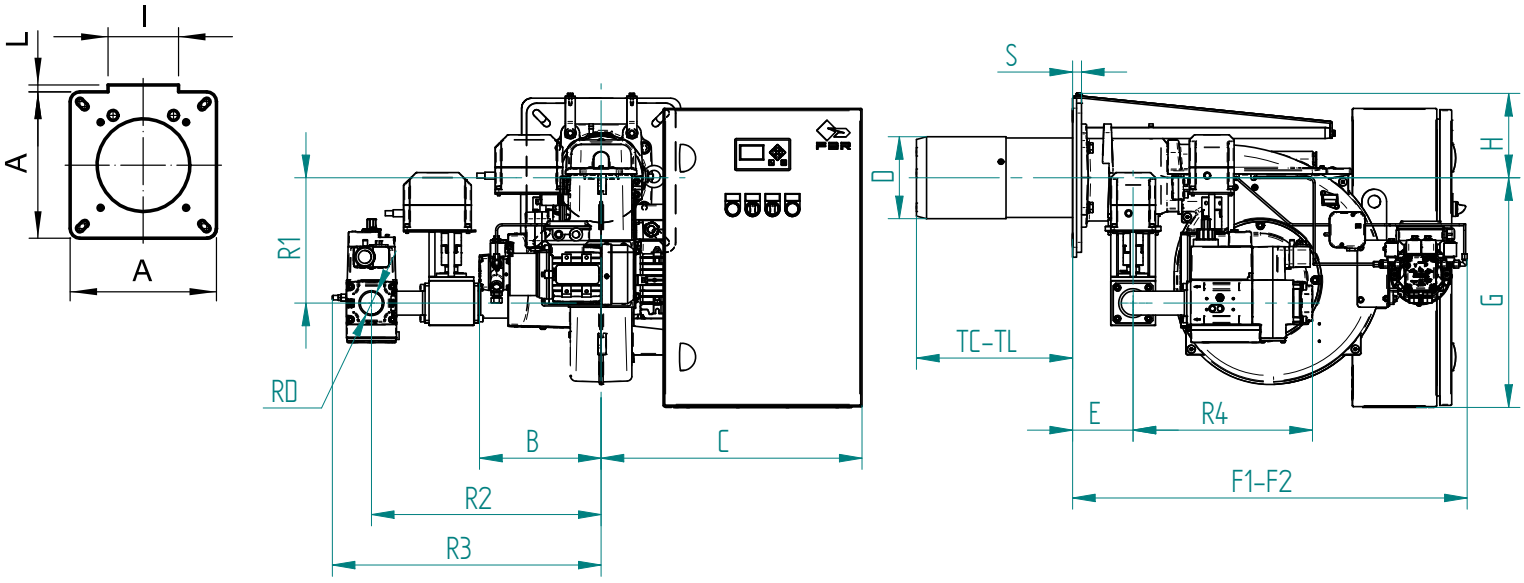
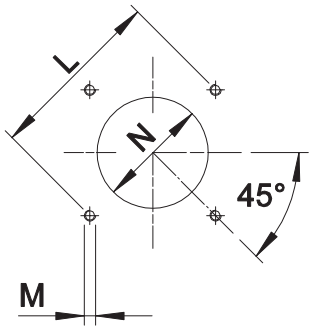


Fig. 4 Dimensions: K X5/M/2 EL

MODEL	A	B	C	D	E	F1	F2*	G	H	I	L	S	R1	R2	R3	R4	RD	Gas train weight
K X5/M/2 EL	300	245	525	165	122	794	1234	462	171	144	10	18	252	462	541	361	Rp1 1/2	25 kg

*F2: Encumbrance with burner move back.
**TC-TL: see chapter "FLAME TUBE LENGTH"

BOILER PLATE



*** Suggested dimension of connection between burner and generator.

Fig. 5 Boiler plate

MODEL		L min	L max	M	N min	N * * *	N max
K X5/M/2 EL	mm	310	368	M12	185	185	250

FLAME TUBE LENGTH

Flame tube length must be selected based on the specifications supplied by boiler manufacturer and, in any case, it must be greater than the thickness of the boiler door included its insulation. In case of boilers with flame inversion or front flue combustion chambers, it is necessary to insulate the area between the flame tube and front door with refractory material. This protection material must not impede flame tube extraction.

MODEL		TC	TL ****
K X5/M/2 EL	mm	250	315

**** For different flame lengths, please contact our Technical-Sales Department.

DUAL FUEL GAS/LIGHT-OIL BURNERS WITH ELECTRONIC CONTROL BOX

PRODUCT SPECIFICATION

SHORT DESCRIPTION

Dual fuel gas/light-oil burners with electric control box.

DETAILED SPECIFICATION

Dual fuel gas/light-oil burners with electric control box, composed by:

- Light-oil fuel: two-stage operation;
- Gas fuel: two-stage progressive or modulating operation (PID fully modulating) if equipped with the additional modulation kit and probe
- Servo-controlled gas ball valve; progressive opening and free passage with total opening;
- Servo motor for gas ball valve;
- Predisposition for the addition of a specific kit that allows the operation to be transformed into modulating, i.e. the possibility of delivering any power value between minimum and maximum, depending on the instantaneous demand of the load;
- Aluminium frame;
- Fan at high pressurisation;
- Combustion head with adjustment at high performance and elevated flame stability equipped with blast tube and flame disc;
- Flange and insulating gasket for fixing at boiler;
- Three-phase power supply;
- Manual switch for the fuel selection gas/light-oil;
- Safety air pressure switch to stop the burner in lock-out in case of failed or anomalous fan operation;
- Complete with gas train with adjustable work valve, safety valve, minimum gas pressure switch and filter;
- Gas valve proving system as optional;
- Motor dedicated for the light-oil pump; it turns on simultaneously to the fan motor;
- Maximum gas pressure switch as optional;
- UV probe for flame detection;
- Supports and tierods for burner extraction;
- Servomotor for air shutter;
- Moving shutter with total closure when idle in order to reduce at the least energy losses related to boiler cooling down;
- IP 40 electric protection level.

CONFORMING TO:

- CE rules;
- 2014/30/UE Directive E.M.C.;
- 2014/35/UE Directive LVD;
- 2006/42/CE - 2006/42/EG - 2006/42/EC Directive MD;
- Directive PED (art.4, par.3) 2014/68/EU;
- Reference rules: EN676 (gas) - EN267 (liquid fuel) - EN746-2 (industrial thermoprocessing equipment).

STANDARD EQUIPMENT

- Flexible pipes;
- Line filter;
- Isomart gasket;
- Nozzles;
- Flange with insulating gasket;
- Burner nameplate;
- Warranty;
- Instruction handbook for installation, use and maintenance.

OPTIONAL

- Power modulating kits for temperatures;
- Power modulating kits for pressures;
- Kit for input 4-20mA / 0-10Vdc;
- Temperature probe 0°C-400°C (PT 100 a 0° C);
- Temperature probe 0°C-350°C (J probe);
- Temperature probe 0°C-1200°C (K probe);
- Pressure probe 0-3 bar, 0-6 bar. 0-16 bar, 0-20 bar, 0-30 bar;
- Sensors and system for O2 control (is suggest to add the VSD);
- Sensors and system for CO control (is suggest to add the VSD);
- Sensors and system for O2-CO control (is suggest to add the VSD);
- Modules for field BUS (modbus - profibus - profinet);
- Noise protection;
- Antivibration couplings;
- Handle gas taps.

The illustrations and data here shown are indicative. F.B.R. Bruciatori S.r.l. reserves the right to bring, without any obligation of warning, any changes that would be appropriate to the continuing development of their products.