



### A short introduction of PACKMAN Dual fuel modular burners

RLGB-M Series or RAADMAN Modular dual fuel burners, covering a firing range from 160 to 17000 kW, are designed for a wide range of domestic and industrial applications All RAADMAN modular burners are equipped with LAMTEC, SIEMENS or Auto Flame electronic control system with capability of full air/gas ratio control throughout entire burner operating range. These burners have been tested and evaluated based on Iran national standard ISIRI-7595 (BS-EN 676) and ISIRI-7594 (BS-EN 267) for gas and oil operation respectively. According to performed experiments, the values of CO even in low excess air operation is lower than 30 mg/kWh (In some cases, values close to zero have also been reported). The precise design of combustion head results a full gas-air mixture that guarantees high efficiency levels in all various applications. Burner superior design accompanied by high quality electronic devices have also resulted a further improvement in boiler's performance in order to decrease fuel cost and emissions

### RLGB-M/M-505/LN (700-5100 kW)

RLGB-M/M-505/LN is a Low NOx electronic modular Dual fuel burner, designed for a wide range of domestic and industrial applications. The values of CO and NOx during burner operation are lower than 20 and 80 mg/kWh, respectively. Therefore, the burner's NOx class of III is reported and approved. Fully modular for oil/gas operation regard to independent actuators, compact design, high modulating ratio, independent oil motor, silent operation due to injected sound absorber and easy installation and maintenance are its considerable advantages.

### Burner Certificate

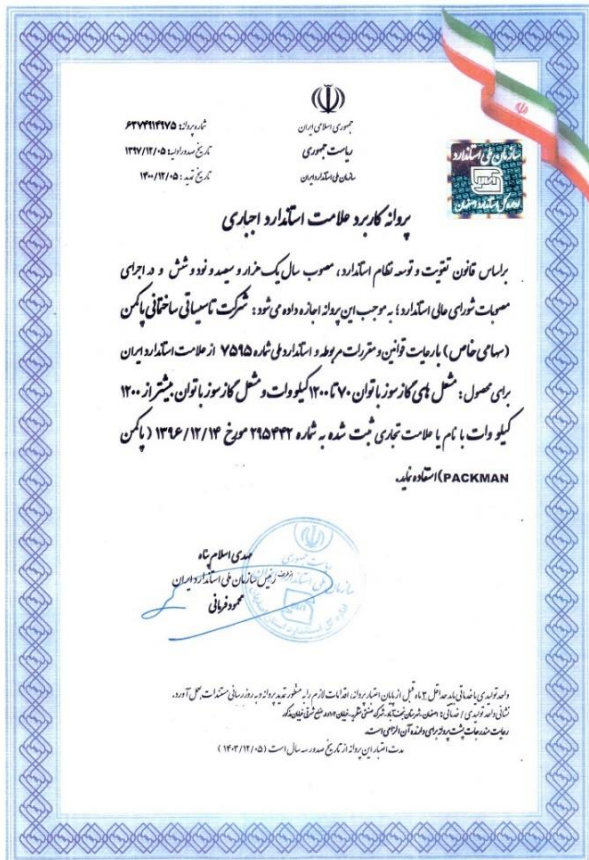


Figure 1 - Burner certification based on the Iran national standard ISIRI-7595, Equal to the BS-EN 676 international standard

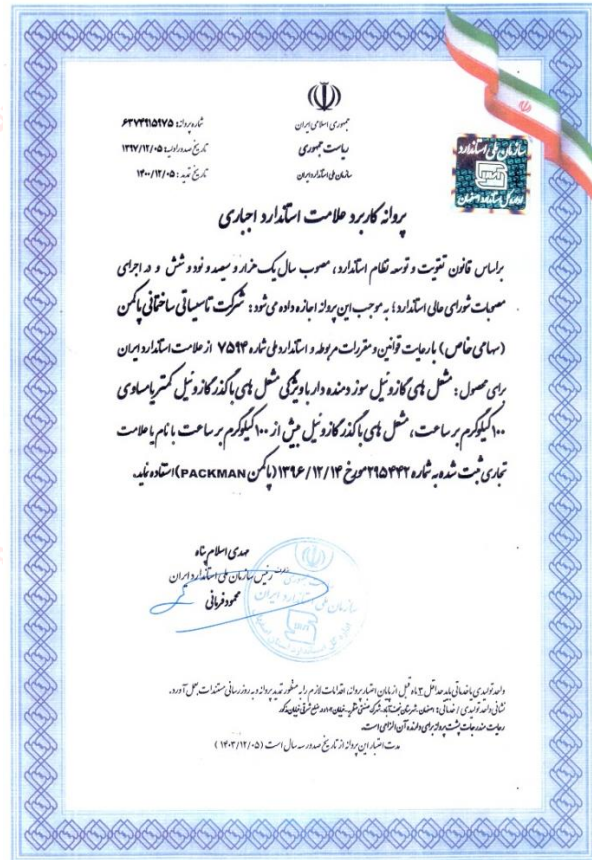


Figure 2- Burner certification based on Iran national standard ISIRI-7594, Equal to the BS-EN 267 international standard.



## General Dimension

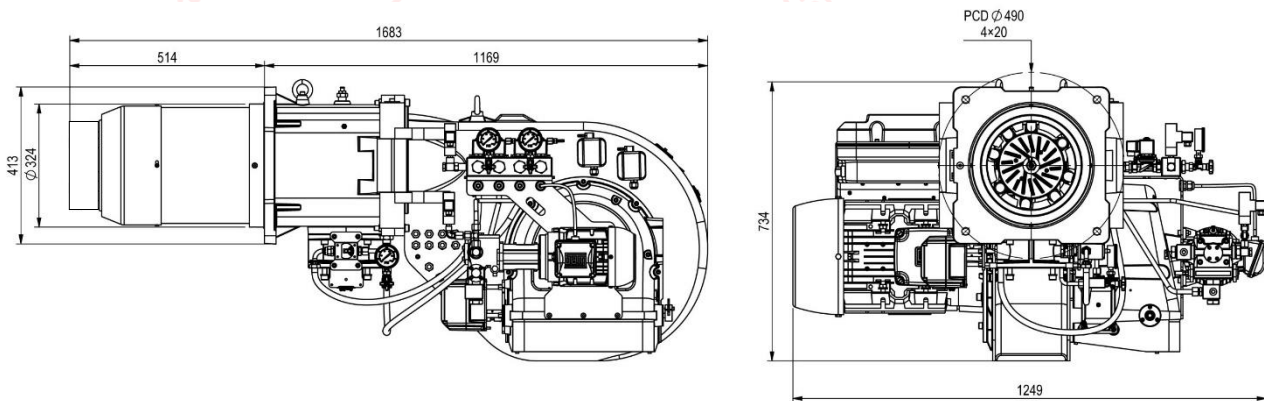


Figure 3 - Burner Dimensions

Notice: Any illegal copy or any kind of partial reversed engineering could be followed by the owner; and this company has the authority to track it by LAW.

## Firing Rate

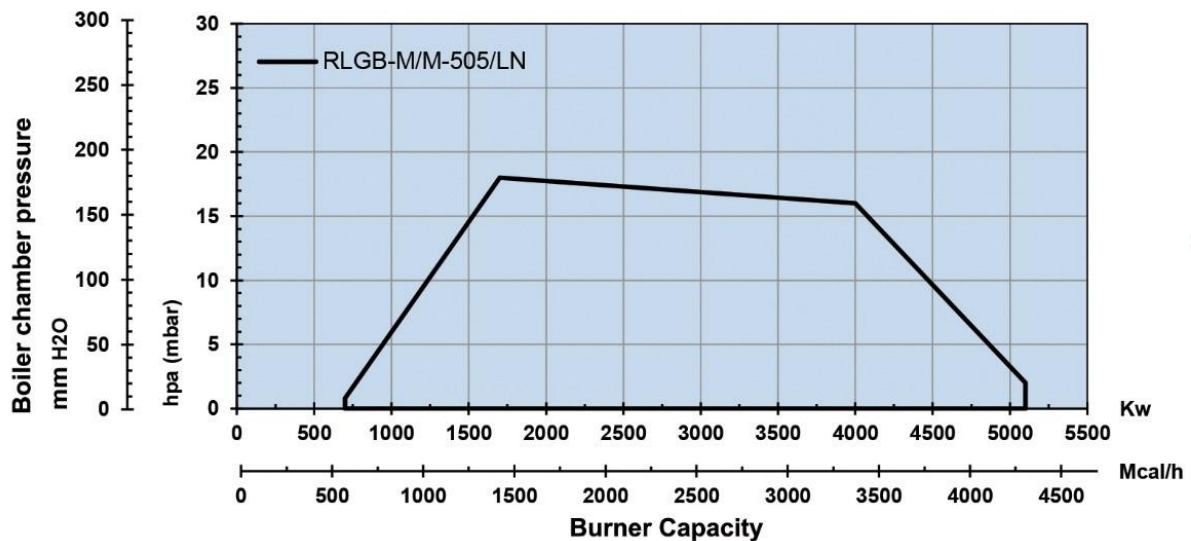



Figure 4 - Burner Firing Diagram

 The firing rate diagram has been obtained considering ambient temperature of 20°C and atmospheric pressure of 1013 mbar (Sea level condition) according to the BS-EN 267 & BS-EN 676.

## RLGB-M/M-505/LN Technical and Functional Features

- Highly efficient dual fuel burner for industrial applications.
- Light weight and optimized geometry.
- Mono-bloc design and fully enclosed aluminum air housing.
- Compatible with all types of combustion chambers according to EN303 standard.
- Simple Installation, adjustment and inexpensive maintenance.
- Electronic Modular operation with independent actuators.
- Ability to work based on Air-Fuel control curve.
- Large housing cover for optimal accessibility to the internal components.
- Engineered for maximize efficiency and fuel cost savings.
- Designed in accordance with 7595 & 7594 Iran national standard (BS-EN 676 & BS-EN 267)
- Suitable for single/double hot water/steam boilers plus high capacity multi burner water tube boilers.
- High-quality, low-emissions burner with NOx class of 3
- Equipped with high quality and reliable electronic devices.



Table 1 RLGB- M/M-505/LN Combustion Specification

Item	Description
Fuels	Natural Gas / Light oil
Gas Capacity **	700-5100 kW
Oil capacity	59-430 Kg/h
Gas operation	Electrical Modular System
Light oil operation	Electrical Modular System
Gas Pollution	III class of NOx according to BS-EN 676
Light oil pollution	II class of NOx according to BS-EN 267
Certificates Certificates No.	ISIRI 7595, ISIRI 7594 6374914975, 6374915975
Other abilities	<p>Low excess air operation</p> <ul style="list-style-type: none"> <li>-Ability to run according to the Air/fuel ratio curve</li> <li>-Ability of Communication with external systems via Bus</li> <li>-Independent ignition point position for safe burner starts</li> <li>-Adjustable pre-purge and post purge time</li> <li>-Absence of joint clearance using linkage-less actuators avoiding mechanical hysteresis</li> <li>-Easy commissioning using modular human interface</li> <li>-Parameter's indication</li> <li>-History of errors</li> <li>-Mono-bloc configuration</li> <li>-Including valve proving system</li> <li>-Silent operation</li> </ul> <p>(Due to the injected sound absorbing material)</p> <ul style="list-style-type: none"> <li>-Ability of hinged opening of burner housing in both directions</li> <li>-High turn down ratio for avoiding any shut down in low required loads</li> <li>-Economical price using central burner controllers (With improved technology and ease of use, combustion plant is becoming even more economical as: NO additional burner controller is required, Less installation work with less errors, NO additional cost for valve proving Taking less time for commissioning and service work)</li> <li>-<u>Optional</u> ability to install a variable speed drive for avoiding any impact in startup</li> <li>-<u>Optional</u> ability of running with O2 and CO sensors</li> <li>-<u>Optional</u> ability of running with FGR in order to further reduction in NOx level</li> </ul>

\*\* Reference conditions: Ambient temperature 20°C - Gas temperature 15°C - Barometric pressure 1013 mbar - Altitude 0 m

Table 2 - Recommended Gas Train

Standard Gas Train: Separated items, DN 80, less than 4 bar			
Item	QTY	Specification	Brand*
MVD 2080/5 (Safety valve)	1	Solenoid valve, Single stage gas valve, Fast opening fast closing, Max operating pressure= 200 mbar, DN 80	DUNGS
MVDLE 2080/5 (Main valve)	1	Solenoid valve, Single stage gas valve, Slow opening fast closing, Max operating pressure= 200 mbar, DN 80	DUNGS



GF 40080/4	1	Gas filter, Max operating pressure= 4 bar, DN 80	DUNGS
GW 150 A6	1	Gas pressure switch, Range: 5-150 mbar - with plug	DUNGS
GW 500 A6	1	Gas pressure switch, Range: 100-500 mbar - with plug	DUNGS
RG/2MBZ	1	High Pressure Regulator DN80 with Shutoff valve	MADAS
Push button valve	2	Rp ½	
Pressure indicator	1	Range: 0-400 mbar, Rp ½	
Pressure indicator	1	Range: 0-6 bar, Rp ½	
Collector 1	1	DN 80 – DN 50	
Collector 2	1	DN 50 – DN 80	

\* Though these brands are common in this type of burner, they would may change based on available components in the market (such as MADAS, SIEMENS, etc.) or according to the policy of Packman Co.

Table 3 - Burner Equipment and Accessories

Power System		
Item	Specification	Brand*
Main motor	11 kW, 3 Phase, B5, 380-400 Volt, 50 Hz, 2900 rpm	ELECTROGEN
Bi-metal	LRD16	SCHNEIDER
Contactora	LC1D25, LC1D32	SCHNEIDER
Star-Delta Timing Relay	RE22R1QCMU	SCHNEIDER
Selector switches	XB4 BD21	SCHNEIDER

Burner Management System		
Item	Specification	Brand*
Burner Tronic BT340 (Main controller)	Up to 3 actuators, permanent operation, 2 fuels, switchable, for dual fuel burners 230 VAC, in connection with DFM300	LAMTEC
Manual interface	UI300 - User Interface with graphic display, in panel installation housing "standard" housing color RAL7016 incl. connecting cable, IP41	LAMTEC
Flow actuator	Servomotor 3 N.M protection class IP54, 90° actuating range, 0.1° resolution/step, metal gearbox, cable length 1.5 m	LAMTEC
Air actuator	Servomotor 9 N.M protection class IP54, 90° actuating range, 0.1° resolution/step, metal gearbox, cable length 1.5 m	LAMTEC
load controller	LCM100 - load control unit expansion module incl. LSB interface and 24V power supply, Connecting cable BT300 X31	LAMTEC
Expansion module	DFM300 - For dual-fuel burner for BT34x 230 VAC	LAMTEC
Oil delivery system		
Main motor	1.5 kW, B34, 380-400 Volt, 50 Hz, 2890 rpm	ITALMOTORS
Bi-metal	LRD08	SCHNEIDER
Contactora	LC1D12	SCHNEIDER
Pump	TA5C 3010 7 counter-clockwise rotation	SUNTEC

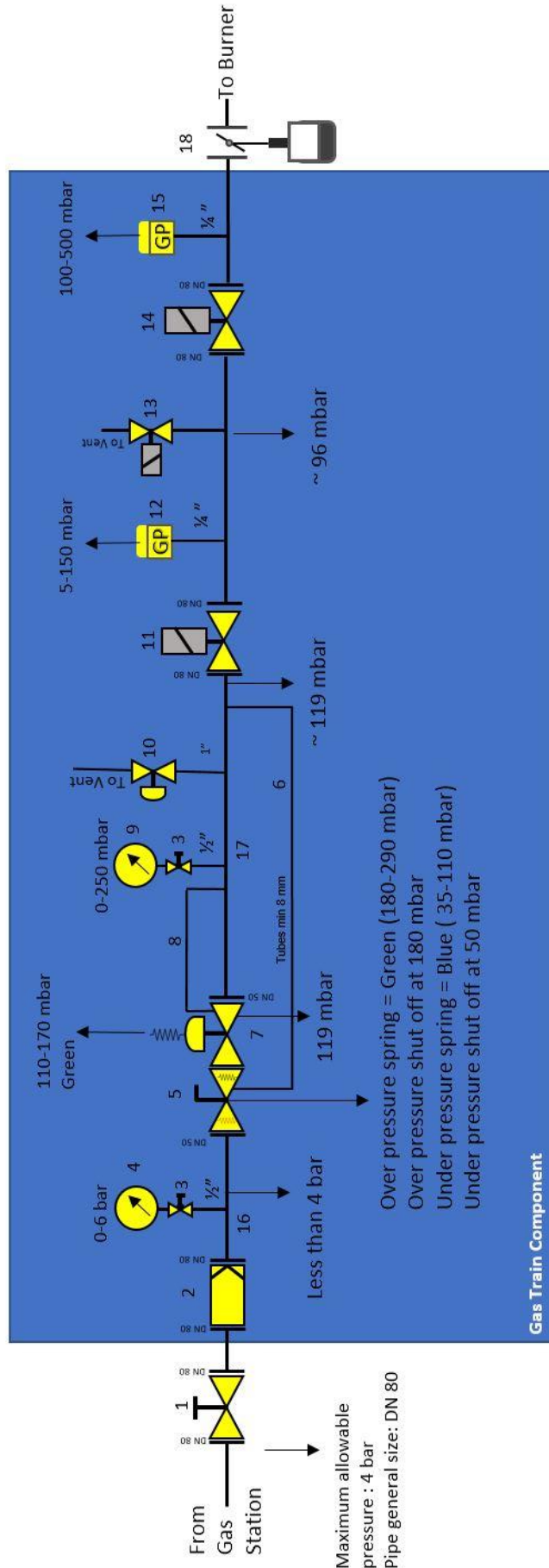


Safety solenoid valve	Pressure 0.5-40 bar Size 1/2 ,220 VAC	GEVAX
Max oil pressure switch	PSM03 (0,2...6bar)	WIKA
Min oil pressure switch	PSM03 (10...80bar)	WIKA
Oil regulator	Code: S60-VK1 Orifice equivalent diameter: 4.1 Angle of rotation: 90	FLUIDAL
Oil Nozzle	Type: N2 Angle 45° Output: 450 kg/hr	FLUIDICS
Feed line pressure gauge	0-40 bar	
<b>Ignition System</b>		
Item	Specification	Brand*
Transformer	Tra.f.an- cof 2 wire	TRAFO
<b>Other Components</b>		
Item	Specification	Brand*
Air pressure switch (Min switch)	LGW 10 A2, 1-10 mbar	DUNGS
Boiler chamber pressure switch (Max switch)	LGW 50 A2, 2.5-50 mbar	DUNGS
Flame scanner	QRA2(1)-UV flame detector, normal sensitivity, with flange/clamp	SIEMENS

\* Though these brands are common in this type of burner, they would may change based on available components in the market or according to the policy of Packman Co.



**Burner Model: RLGB-M-M-505/LN/Output : 700 – 5100 kW**  
Gas consumption: 510 m<sup>3</sup>/h - General Pipe size : DN 80



- |                             |                                       |                             |
|-----------------------------|---------------------------------------|-----------------------------|
| 1: Ball valve/high pressure | 7: High Pressure Regulator            | 13: Vent solenoid valve     |
| 2: Gas filter               | 8: Impulse line                       | 14: Main gas valve          |
| 3: Push button valve        | 9: Pressure gauge/(0-400 mbar)        | 15: Max gas pressure switch |
| 4: Pressure gauge/(0-6 Bar) | 10: Relief valve                      | 16: Collector 1             |
| 5: Slam shut valve          | 11: Safety gas valve                  | 17: Collector 2             |
| 6: Impulse line             | 12: Min/leak test gas pressure switch | 18: Butterfly valve         |

Figure 5 - Gas train diagram, DN 80, Less than 4 bar