

RS ULX SERIES

PRODUCT OVERVIEW

Monobloc Ultra Low NOx Gas Burners



RIELLO
Energy For Life

www.riello.com

An aerial photograph of a city at sunset. A wide river flows through the center, with several bridges crossing it. The city skyline is visible in the background, with various buildings and structures. The sky is a warm orange color, and the water reflects the light. The foreground shows a bridge with a truss structure.

**ULTRA LOW NO_x
GAS MONOBLOC BURNERS
RS ULX SERIES**

NO_x EMISSIONS < 40 mg/Nm³ @3% O₂
WITHOUT FGR, WITH PROPER COMBUSTION CHAMBER DIMENSIONS



RS 68/E-EV ULX
RS 120/E-EV ULX
RS 160/E-EV ULX
RS 200/E-EV ULX



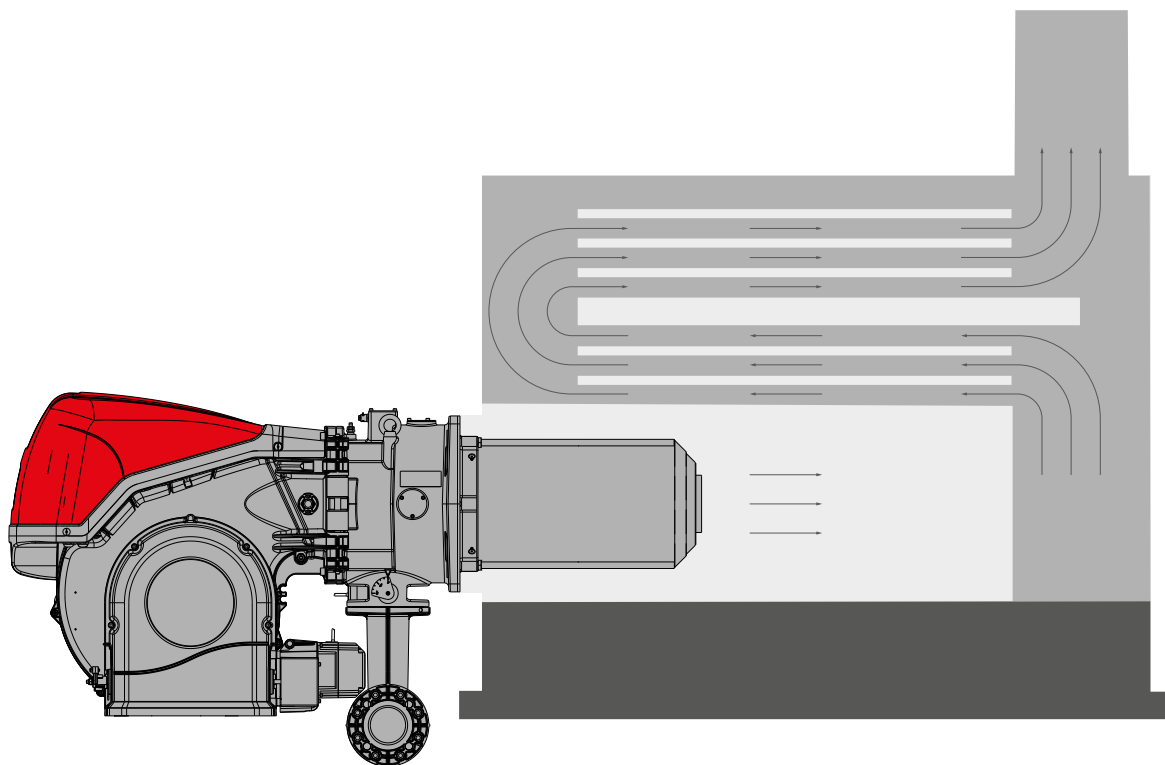
RS 310/E-EV ULX
RS 510/E-EV ULX
RS 610/E-EV ULX
RS 810/E-EV ULX

ULX TECHNOLOGY: A NEW MILESTONE IN THE REDUCTION OF NOx EMISSIONS

DUE TO THE GROWING FOCUS ON ATMOSPHERIC EMISSIONS, PERFORMANCE, ENERGY EFFICIENCY AND EMISSIONS REDUCTION ARE BECOMING INCREASINGLY IMPORTANT, PARTICULARLY IN HIGHLY INDUSTRIALISED COUNTRIES.

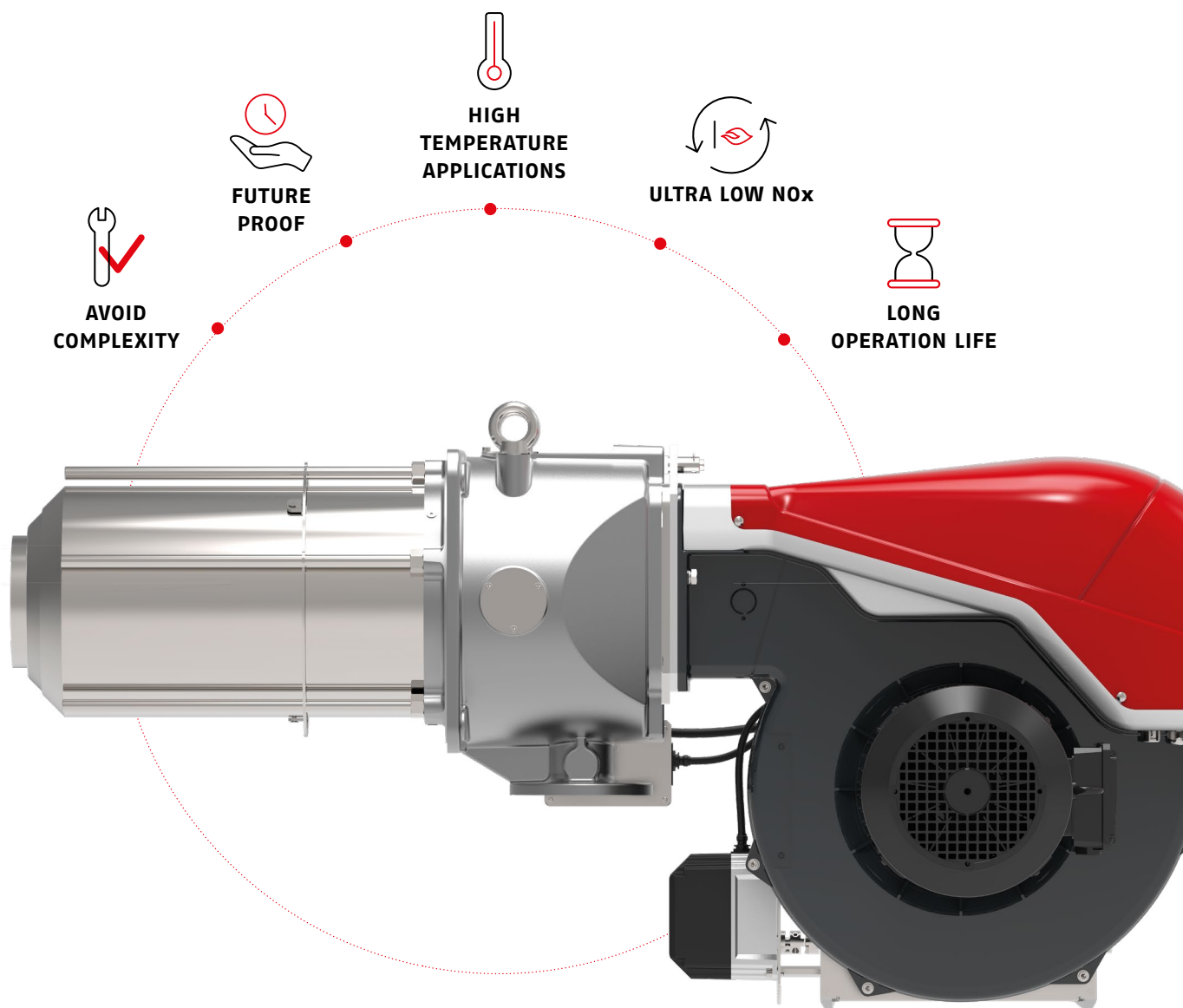
To meet the constantly tightening NOx emission requirements, RIELLO has developed **a new range of monobloc burners based on the innovative ULX combustion technology**, patented by RIELLO. ULX technology controls the fuel supply and the flue gases generated by the combustion process, managing them in such a way as to achieve low emission levels even in applications where the combustion chamber reaches high temperatures (for example, steam and superheated water boilers).

ULX technology enables NOx emissions of less than 40 mg/Nm³ @3% O₂, without the need for FGR systems, provided the combustion chamber is of an appropriate size;



The new ULX combustion head utilises gas staging and internal exhaust gas recirculation, helping to reduce NOx emissions. This new combustion head also incorporates the robustness and reliability characteristic of the RIELLO product range.

An **Integrated Digital Burner Management System**, utilising independent servomotors, enables the air-to-fuel ratio to be controlled at every operating point, helping to reduce NOx emissions whilst ensuring stable combustion and optimising the system's operational performance.



ADVANTAGES

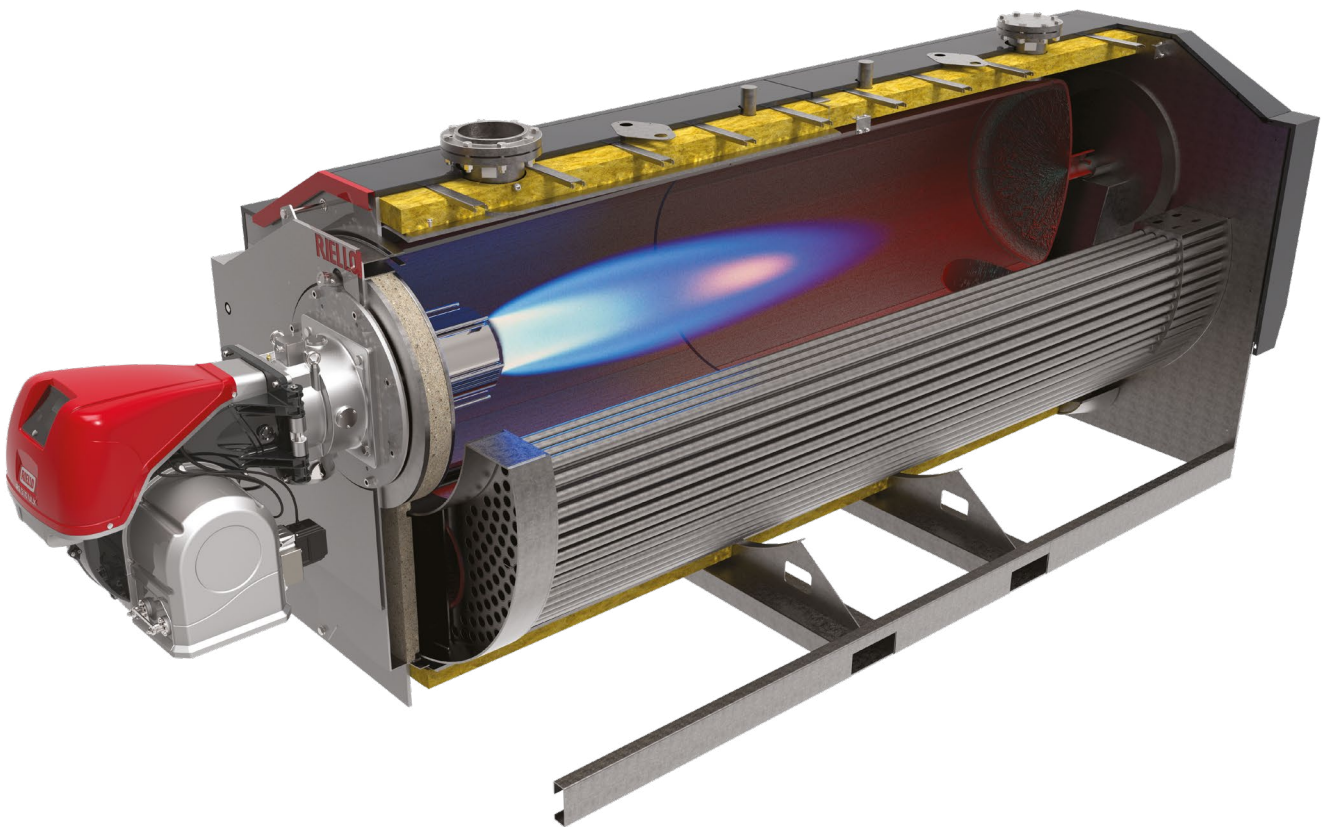
- > ULX burners, certified to Class 4 of the EN 676 standard, enable low NOx emission levels to be achieved in compliance with the applicable regulations.
- > The ultra-low NOx performance achieved with ULX technology helps to reduce NOx emissions even in high-temperature combustion chambers (such as steam or superheated water boilers), without the need for an external flue gas recirculation (FGR) system.
- > ULX technology is designed to simplify the management of low-NOx burners without introducing any additional complexity, and helps to ensure that installation, operation and maintenance procedures remain similar to those of traditional diffusive-flame burners.

ULTRA LOW NO_x INNOVATION IN BURNER TECHNOLOGY: REDUCED EMISSIONS ACROSS A WIDE RANGE OF APPLICATIONS

ULX MONOBLOC GAS BURNERS ARE DESIGNED TO OPERATE WITH LOW NO_x EMISSIONS EVEN IN APPLICATIONS WITH HIGH-TEMPERATURE COMBUSTION CHAMBERS

RIELLO's patented ULX advanced combustion technology helps to maintain the stability of the combustion process and keep NO_x emission levels low, even under complex operating conditions. This enables ULX burners to meet the requirements of the Medium Combustion Plant Directive (MCPD) and local regulations when used with hot-water boilers, as well as in high-temperature applications such as steam or thermal oil boilers.

The new RS 68÷810 ULX family of burners has been tested and certified to meet industry standards, helping to ensure safe and reliable operation. The burner's traditional design facilitates installation, whilst its proven durability makes it suitable for use in a range of commercial and industrial applications.



ULTRA LOW NO_x GAS MONOBLOC BURNERS RS 68÷810/E-EV ULX SERIES

Thanks to many years of experience in the design and manufacture of burners, RIELLO has developed a new range of high power burners, the New RS ULX Series, based on ULX (Internal Gas Recirculation) technology, designed for applications requiring low NO_x emissions. With proper combustion chamber dimension and the support of a RIELLO technician this burner series is capable to reach an emission limit of 30 mg/Nm³ @3,5%O₂, without the use of FGR systems.

The RS/E ULX series burners utilise a new combustion technology patented by RIELLO, which helps to reduce NO_x emissions and enables them to operate in compliance with the applicable emission standards.

An integrated digital burner management system controls the air-to-fuel ratio via independent servomotors, enabling precise control of combustion parameters and helping to reduce emissions, ensure combustion stability and optimise the system's operational performance across the entire modulation range.

The new RS/E ULX range combines Ultra Low NO_x combustion performance with the robustness and reliability of the RS series.

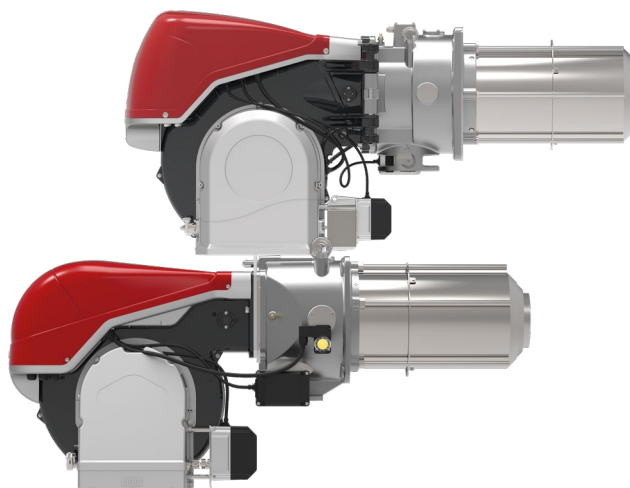
The monobloc design integrates the main components into a compact unit, simplifying installation and maintenance.

FEATURES AND ADVANTAGES

- **Low NO_x emissions performance**, lower than 40 mg/Nm³ @ 3% O₂, without any need of FGR system, with proper combustion chamber dimensions
- Low NO_x levels even in applications **with high-temperature combustion chambers**
- Patented **new low NO_x combustion head**
- **High reliability** of operation and ignition
- **Installation, operation and maintenance** in line with **standard diffusive flame burners**
- Suitable for **retrofit and first equipment**
- **Long operating life**

RANGE RS/E-EV ULX

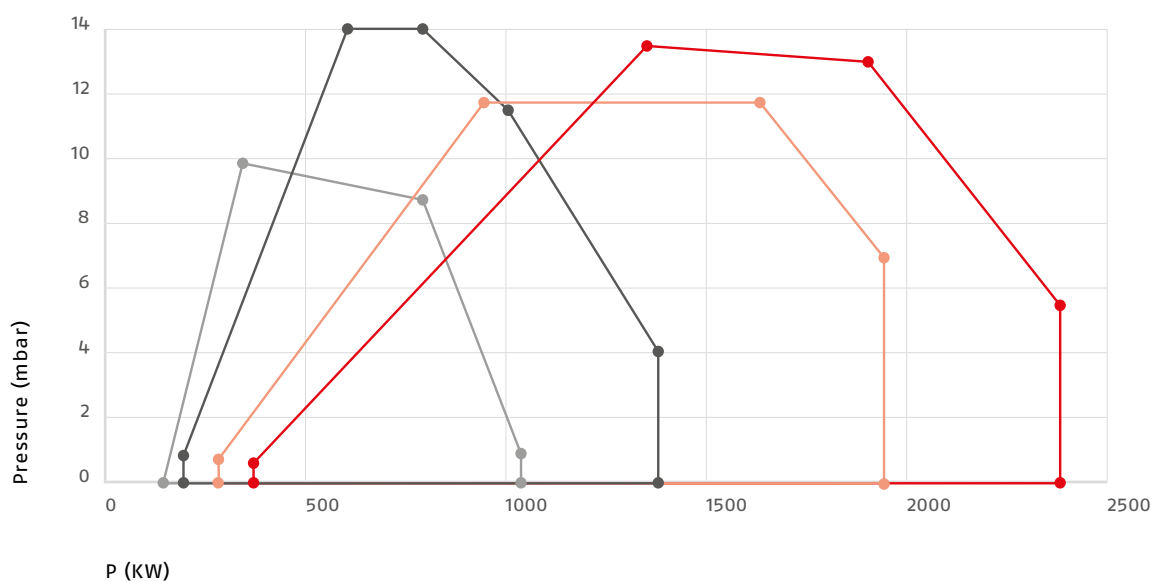
BURNER MODEL	OUTPUT
RS 68/E-EV ULX	150/350-1050 kW
RS 120/E-EV ULX	200/610-1400 kW
RS 160/E-EV ULX	290/950-1950 kW
RS 200/E-EV ULX	375/1360-2400 kW
RS 310/E-EV ULX	370/1250-3700 kW
RS 510/E-EV ULX	570/1900-4600 kW
RS 610/E-EV ULX	750/2080-6000 kW
RS 810/E-EV ULX	970/3350-8100 kW



Remark: the above output ranges are laboratory test data and the actual output may vary due to NO_x emissions required.

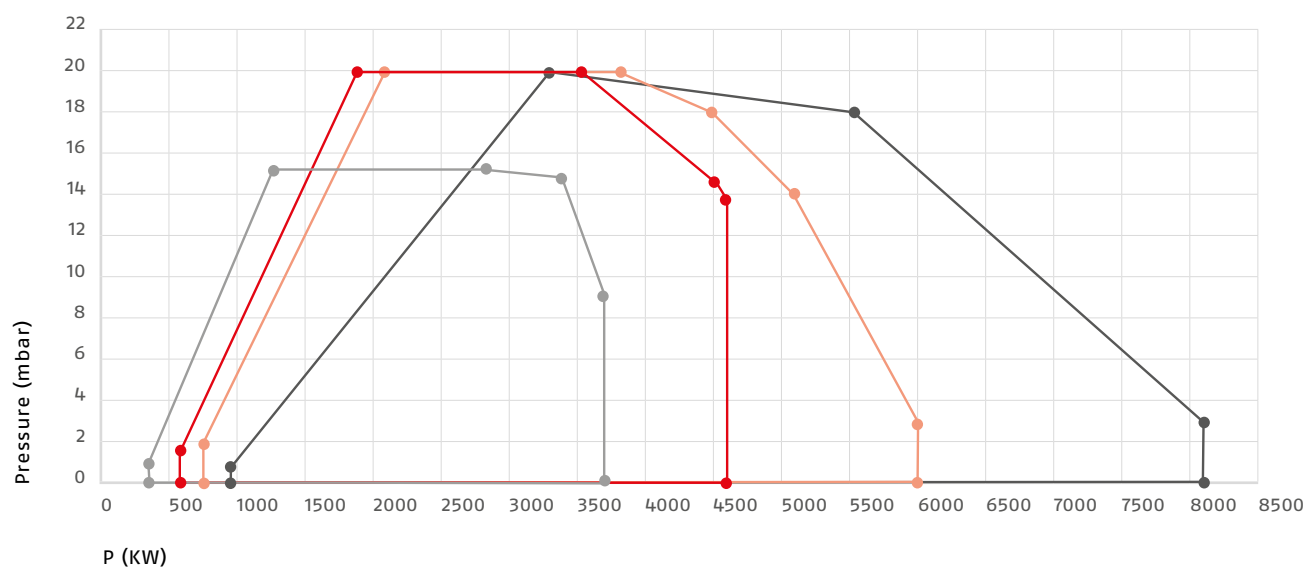
FIRING RATES

The shown firing rates are referred to a Ultra Low NO_x performance of 60 mg/kWh NO_x @3% O₂ (class 4 EN 676), obtained without external Flue Gas Recirculation, in special test boilers with diameter of combustion chamber conforming to the EN 676 homologation standard.
In specific applications and with support of a RIELLO technician it is possible to reach NO_x emission lower than class 4 EN 676.



— RS 68 ULX
— RS 120 ULX
— RS 160 ULX
— RS 200 ULX

Test conditions conforming to EN 676 Standard. Temperature: 20°C | Pressure: 1013,5 mbar | Altitude: 0 m a.s.l.

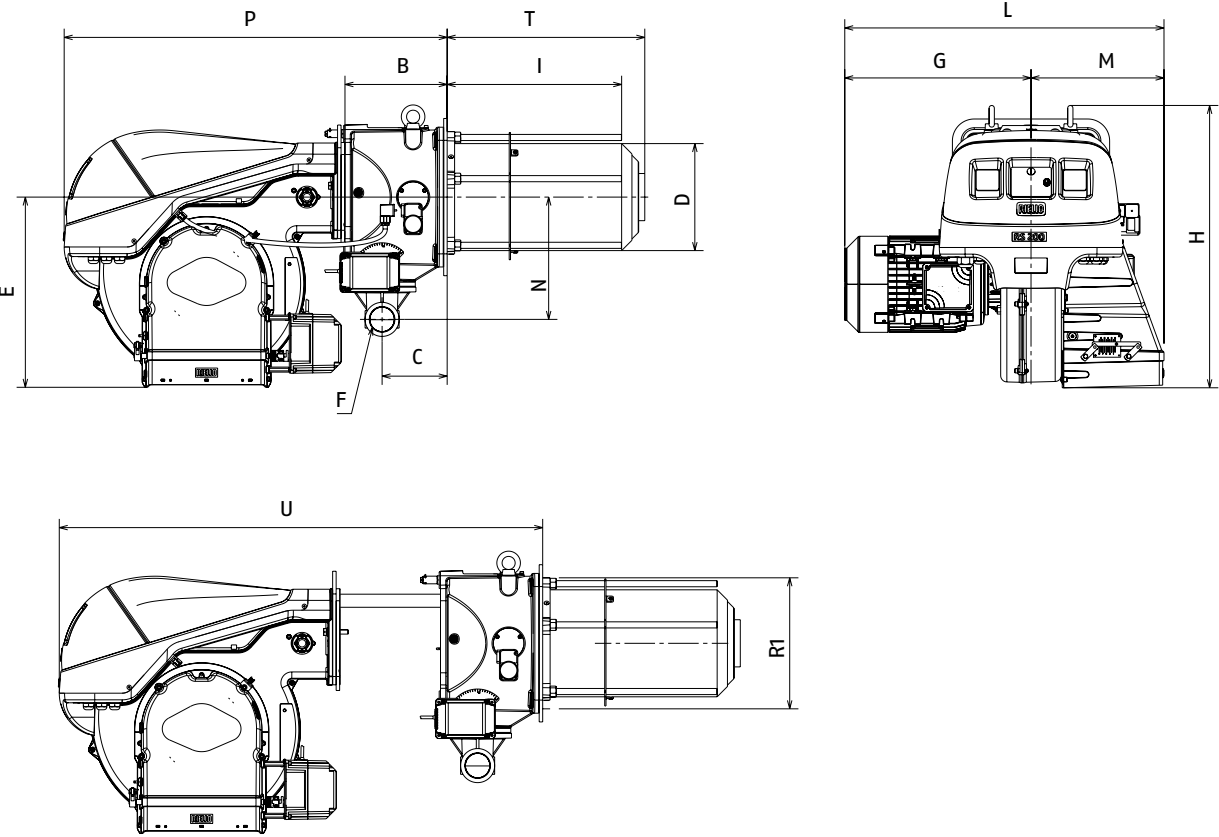


- RS 310 ULX
- RS 510 ULX
- RS 610 ULX
- RS 810 ULX

Test conditions conforming to EN 676 Standard. Temperature: 20°C | Pressure: 1013,5 mbar | Altitude: 0 m a.s.l.

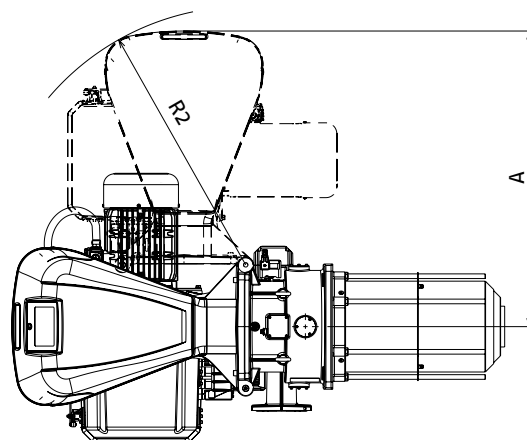
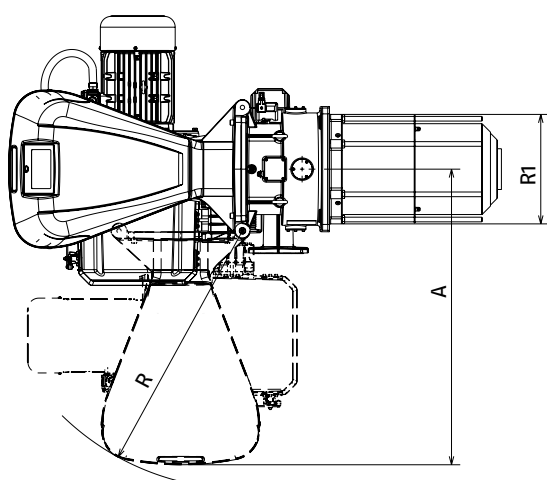
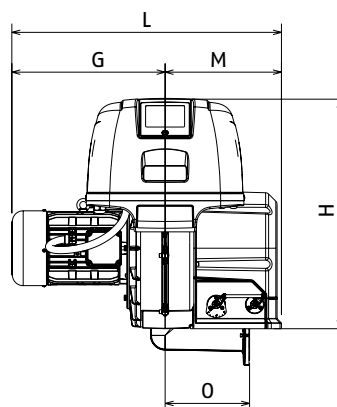
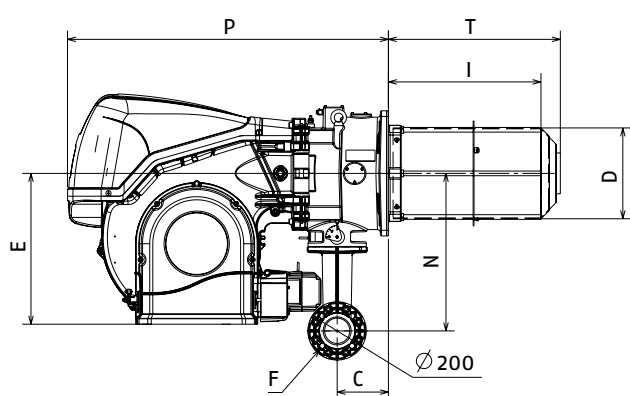
OVERALL DIMENSIONS (mm)

BURNER



BURNER MODEL	B	C	D	E	F	G	H	I	L	M	N	P	R1	T	U
RS 68/E ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/E ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/E ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446
RS 200/E ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446

BURNER MODEL	B	C	D	E	F	G	H	I	L	M	N	P	R1	T	U
RS 68/EV ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/EV ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/EV ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446
RS 200/EV ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446

BURNER


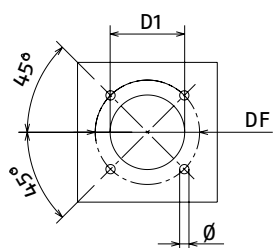
BURNER MODEL	A	C	D	E	F*	G	H	I	L	M	N	O	P	R	R1	R2	T
RS 310/E ULX	1015	176	312	518	DN65	480	790	525	880	400	541	290	1104	886	376	886	590
RS 510/E ULX	1015	176	312	518	DN65	527	790	525	927	400	541	290	1104	886	376	886	590
RS 610/E ULX	1015	181	344	518	DN65	580	790	533	980	400	597	290	1160	886	460	886	620
RS 810/E ULX	1200	181	379	537	DN65	575	890	530	990	415	597	290	1345	1055	460	1055	620

BURNER MODEL	A	C	D	E	F*	G	H	I	L	M	N	O	P	R	R1	R2	T
RS 310/EV 02 ULX	1015	176	312	518	DN65	511	790	525	911	400	541	290	1186	966	376	966	590
RS 510/EV 02 ULX	1015	176	312	518	DN65	559	790	525	959	400	541	290	1186	966	376	966	590
RS 610/EV 02 ULX	1015	181	344	518	DN65	610	790	533	1010	400	597	290	1250	966	460	966	620
RS 810/EV 02 ULX	1200	181	379	537	DN65	605	890	530	1020	415	597	290	1435	1135	460	1135	620

* The gas adapter is also suitable for DN 80 drilling.

OVERALL DIMENSIONS (mm)

BOILER MOUNTING FLANGE

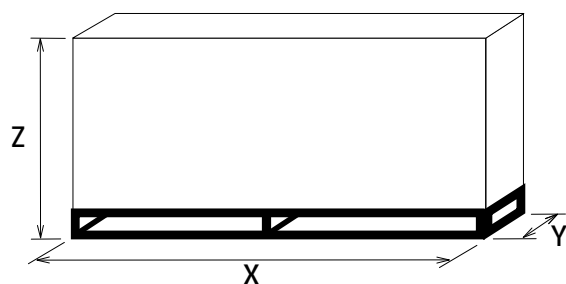


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BURNER MODEL	D1	DF	Ø
RS 68/E-EV ULX	260	325	M16
RS 120/E-EV ULX	260	325	M16
RS 160/E-EV ULX	320	368	M16
RS 200/E-EV ULX	320	368	M16

BURNER MODEL	D1	DF	Ø
RS 310/E-EV ULX	390	452	M18
RS 510/E-EV ULX	390	452	M18
RS 610/E-EV ULX	480	608	M18
RS 810/E-EV ULX	480	608	M18

PACKAGING



COD 20158479

BURNER MODEL	X	Y	Z	Kg
RS 68/E-EV ULX	1400	700	810	90
RS 120/E-EV ULX	1400	700	810	100
RS 160/E-EV ULX	1500	1000	810	130
RS 200/E-EV ULX	1500	1000	810	130

BURNER MODEL	X	Y	Z	Kg
RS 310/E-EV ULX	2040	1180	1150	250
RS 510/E-EV ULX	2040	1180	1150	250
RS 610/E-EV ULX	2040	1180	1150	280
RS 810/E-EV ULX	2040	1180	1150	360

SPECIFICATION

STATE OF SUPPLY

Monobloc forced draught, Ultra Low NOx gas burner, with modulating operation, fully automatic, made up of:

- High-performance fan with low noise emissions
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase Fan starting motor
- Ultra-low-emission combustion head, configurable according to the required heat output, equipped with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - flame stability disk
- Automatic gas flow regulator, controlled by a high-precision servomotor
- Maximum gas pressure switch, with pressure test point, to stop the burner in case of excess pressure on
- Fuel supply line
- Electronic Cam control
 - for air/fuel setting
 - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- Ionization probe for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease by operator panel
- Contacts motor and protection thermal relay with release button
- Clean contacts relay
- Burner failure led signal and lighted release button
- Runners for opening the burner and inspecting the combustion head (RS 68 ÷ 200/E-EV ULX)
- Hinge for opening the burner and inspecting the combustion head (RS 310 ÷ 810/E-EV ULX)
- Lifting rings

> STANDARD EQUIPMENT:

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gas train flange
- Gasket for gas train flange
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

AVAILABLE MODELS BURNERS

MODEL	HEAT OUTPUT NATURAL GAS		TOTAL ELECTRICAL POWER	MOTOR ELECTRICAL POWER	NOTE
	kW	Nm³/h	kW	kW	
RS 68/E ULX	150/350-1050	15/35-105	2,1	1,5	(1)(2)
RS 120/E ULX	200/610-1400	20/61-140	2,9	2,2	(1)(2)
RS 160/E ULX	290/950-1950	29/95-195	5,5	4,5	(1)(2)
RS 200/E ULX	375/1360-2400	38/136-240	6,5	5,5	(1)(2)
RS 310/E ULX	370/1250-3700	37/125-370	9,1	7,5	(1)(2)
RS 510/E ULX	570/1900-4600	57/190-460	14	12	(1)(3)
RS 610/E ULX	750/2080-6000	75/208-600	17	15	(1)(3)
RS 810/E ULX	570/1900-4600	57/190-460	22	12	(1)(3)
RS 68/E 02 ULX	150/350-1050	15/35-105	2,1	1,5	(1)(2)
RS 120/E 02 ULX	200/610-1400	20/61-140	2,9	2,2	(1)(2)
RS 160/E 02 ULX	290/950-1950	29/95-195	5,5	4,5	(1)(2)
RS 200/E 02 ULX	375/1360-2400	38/136-240	6,5	5,5	(1)(2)
RS 310/E 02 ULX	370/1250-3700	37/125-370	9,1	7,5	(1)(2)
RS 510/E 02 ULX	570/1900-4600	57/190-460	14	12	(1)(3)
RS 610/E 02 ULX	750/2080-6000	75/208-600	17	15	(1)(3)
RS 810/E 02 ULX	570/1900-4600	57/190-460	22	12	(1)(3)
RS 68/EV ULX	150/350-1050	15/35-105	2,1	1,5	(1)(2)
RS 120/EV ULX	200/610-1400	20/61-140	2,9	2,2	(1)(2)
RS 160/EV ULX	290/950-1950	29/95-195	5,5	4,5	(1)(2)
RS 200/EV ULX	375/1360-2400	38/136-240	6,5	5,5	(1)(2)
RS 310/EV ULX	370/1250-3700	37/125-370	9,1	7,5	(1)(2)
RS 510/EV ULX	570/1900-4600	57/190-460	14	12	(1)(3)
RS 610/EV ULX	750/2080-6000	75/208-600	17	15	(1)(3)
RS 810/EV ULX	570/1900-4600	57/190-460	22	12	(1)(3)
RS 68/EV 02 ULX	150/350-1050	15/35-105	2,1	1,5	(1)(2)
RS 120/EV 02 ULX	200/610-1400	20/61-140	2,9	2,2	(1)(2)
RS 160/EV 02 ULX	290/950-1950	29/95-195	5,5	4,5	(1)(2)
RS 200/EV 02 ULX	375/1360-2400	38/136-240	6,5	5,5	(1)(2)
RS 310/EV 02 ULX	370/1250-3700	37/125-370	9,1	7,5	(1)(2)
RS 510/EV 02 ULX	570/1900-4600	57/190-460	14	12	(1)(3)
RS 610/EV 02 ULX	750/2080-6000	75/208-600	17	15	(1)(3)
RS 810/EV 02 ULX	570/1900-4600	57/190-460	22	12	(1)(3)

(1) Power range referred to a Low NOx performance conforming to class 4 EN 676

(2) Direct starter fan motor

(3) Star delta fan motor starter

REMARK: THE ABOVE OUTPUT RANGES ARE LABORATORY TEST DATA AND THE ACTUAL OUTPUT MAY VARY DUE TO NOx EMISSIONS OR TYPE OF APPLICATION.

For more information, please contact RIELLO Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

ACCESSORIES BURNERS

CONTINUOUS VENTILATION KIT



If the burner requires continuous ventilation in the stages without flame, a special kit is available as given in the following table.

BURNER	KIT CODE
RS 68-200/E-EV ULX	3010094
RS 310-810/E-EV ULX	20074542

Note: the Post-ventilation function is obtainable by modification of the Digital Burner Management System parameters (see burner instruction manual).

ACCESSORIES FOR MODULATING OPERATION



To obtain modulating operation, RS/E ULX burners equipped with REC27 and RS/EV ULX burners equipped with REC37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range.

For remote setpoint use RWF 55.

BURNER	REGULATOR TYPE		REGULATOR CODE
RS 68-120-200/E ULX	RWF 50.2	Basic version with 3 position output	20099869
	RWF 55.5	Complete with RS-485 interface	20099905
RS 310-810/E ULX	RWF 50.2	Basic version with 3 position output	20085417
	RWF 55.5	Complete with RS-485 interface	20074441
	RWF 55.6	Complete with RS-485/ PROFIBUS interface	20074442

The relative temperature or pressure probes fitted to the regulator, must be chosen on the basis of the application.



BURNER	PROBE TYPE	RANGE	PROBE CODE
All models	Temperature PT 100	-100 ÷ 500°C	3010110
	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214
	Pressure 4 ÷ 20 mA	0 ÷ 25 bar	3090873

PC INTERFACE KIT



To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.

BURNER	KIT CODE
All models equipped with REC 27 control box	3010436

VARIABLE SPEED DRIVE (VSD) FOR RS/EV SERIES ONLY



The motor speed variation for the RS/EV ULX burners series is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series.

BURNER	MAX POWER (KW)	KIT CODE
RS 68/EV ULX	1,5	20163060
RS 120/EV ULX	3,0	20163064
RS 160/EV - 200/EV ULX	5,5	20163071
RS 310/EV ULX	7,5	20163074
RS 510/EV ULX - RS 610/EV ULX	15	20163096
RS 810/EV ULX	22	20163099

SOUND PROOFING BOX



If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use.

BURNER	TYPE	dB(A)	CODE
RS 68-200/E-EV ULX	C4/5	10	3010404
RS 310-610/E-EV ULX	C7	10	3010376
RS 810/E-EV ULX	C7	10	20177776

OXYGEN CONTROL KIT [QG02] FOR RS/E-EV ULX BURNERS WITH LMV52 CONTROL BOX



The QG02 is an oxygen analyzer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.

BURNER	KIT CODE
All models equipped with LMV 52 control box	20045187*

An additional transformer kit is needed to provide the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact RIELLO Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

* Installations outside the burner cover

EFFICIENCY KIT WITH OXYGEN CONTROL



The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.

BURNER

KIT CODE

All models equipped with LMV 52 control box

3010377

MODBUS INTERFACE KIT



Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS).
The Modbus interface is based on the RS-485 standard.

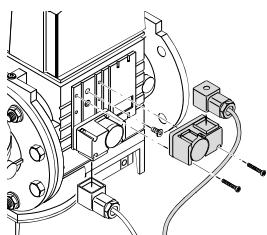
BURNER

KIT CODE

All models equipped with REC 27/37 control box

3010437

PVP (PRESSURE VALVE PROVING KIT)



The seal control function is included on Burner Digital Management System, it is only necessary to add the PVP kit on the gas train.

BURNER

GAS TRAIN

KIT CODE

ALL MODELS

VGD

3010344

RIELLO ENERGY FOR DAILY COMFORT

LOW EMISSIONS AND ENERGY EFFICIENCY

Attention to air quality is becoming increasingly important, particularly in areas characterised by high levels of industrial activity. Against this backdrop, RIELLO places particular emphasis on developing products designed to deliver high performance, energy efficiency and reduced emissions of nitrogen oxides and other pollutants associated with combustion.

RIELLO is committed to developing technologies capable of meeting increasingly stringent emission requirements, with a particular focus on reducing NOx emissions.



MORE THAN 100 YEARS EXPERIENCE

Every RIELLO burner is the result of the experience acquired in design and manufacturing, combined with the use of specialised technologies and a flexible design approach.

RIELLO continually invests in research into new materials and the development of combustion technologies.

The RS 68÷810/E-EV ULX SERIES, the new range of ULTRA LOW NO_x MONOBLOC GAS BURNERS, forms part of a new generation of products developed to combine energy efficiency with low NO_x emission levels.

OUR PRESENCE

RIELLO, one of the world's leaders in the production of gas, oil, dual-fuel and Low NO_x burners (with capacities ranging from 5 kW to 80 MW), offers solutions designed for a wide range of heating applications, from residential and commercial to industrial processes.

The RIELLO Combustion Research Centre represents one of the most modern facilities in Europe and one of the most advanced in the world for the development of the combustion technology.

Today, the company operates on international markets through a well-established sales network and training centres located in various countries, providing support to customers and their applications.



With headquarters in Legnago (Northern Italy), RIELLO has been manufacturing burners for more than 100 years.

The production plant is equipped with technology specifically designed for assembly lines and modern production cells, developed to support the efficient and flexible management of production activities.

RIELLO

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Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed. This document therefore cannot be considered a contract with third parties.

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