



PLP Chillers and Inverter Heat Pumps with natural refrigerant



Outdoor monobloc unit with R290

PLP 35 - 65 kW



EC scroll
compressor



Refrigerant
R290



A3 gas leak
detection



External
3-way valve
management



Cooling only



Reversible
heat pump

Air/water unit with natural refrigerant R290 and inverter scroll compressor

The reduction of polluting emissions, whether directly related to the use of greenhouse gases or more indirectly related to emissions from the production of electricity used during the lifetime of a heat pump, is the first and most important pillar on which Galletti has based its Advanced Design solutions.

This has led to the creation of PLP, a new range of natural refrigerant air/water units with inverter compressors. Its extremely wide operating range and high performance under all operating conditions make it the perfect answer to the need to phase out the use of fossil fuels for heating and cooling buildings.

Thanks to the high temperature of the water produced (up to 80°C), we can replace a fossil fuel generator while maintaining the full performance of the existing emission system. By taking advantage of the continuous modulation of compressor capacity, we produce exactly what is needed to keep people comfortable, no more and no less, without waste, working to maximise the efficiency of the whole system.

We look to the future of our environment and the needs of the people who use our products.

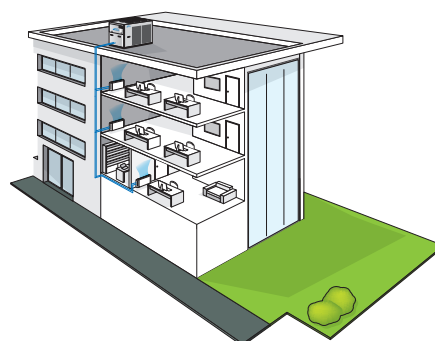
We work every day to make indoor comfort more sustainable.

PLUS

- » Refrigerant R290 (GWP = 3)
- » Inverter-driven variable speed scroll compressor
- » Extremely small refrigerant charge (< 5 kg)
- » Hot water production up to 80°C
- » Operation at full load down to -20°C air (60°C water)
- » Very high seasonal efficiency values
- » Monitoring of power output and COP (option)
- » Availability of low-noise configurations

PLP chillers and heat pumps are designed for cooling or heating the water to be used in air conditioning and heating systems for residential, commercial or industrial use.

The use of the natural refrigerant R290 (propane) ensures compliance with the stricter limits established by the F-GAS regulation regarding gases that potentially contribute to global warming (greenhouse gases).





PLP Chillers and Inverter Heat Pumps with natural refrigerant

Natural refrigerant (R290)

R290 (propane) is a natural refrigerant with a GWP (Global Warming Potential) of only 3. This makes it a strong contender to be one of the leading refrigerants for air conditioning solutions. It has a much lower contribution to the greenhouse effect than synthetic refrigerants and physical properties that make it ideal for the design requirements associated with the ever-increasing use of heat pumps.

Extremely extended operating limits

It is now clear that heat pumps will play a fundamental role in achieving the objectives of the European Green Deal, first and foremost the phasing out of fossil fuels. One of the basic requirements for the heat pump to be considered as a valid alternative to boilers, even in the most hostile climates, is undoubtedly the extension of the operating limits that have characterised the traditional heat pumps used until now.

Thanks to the use of scroll inverter technology, combined with the use of propane as a refrigerant and the innovative solutions developed by Galletti's Advance Design Unit during the design and prototyping phase, PLP guarantees the possibility of producing hot water at very high temperatures (up to 80°C) and operating at full load at extremely low outdoor temperatures (down to -20°C).

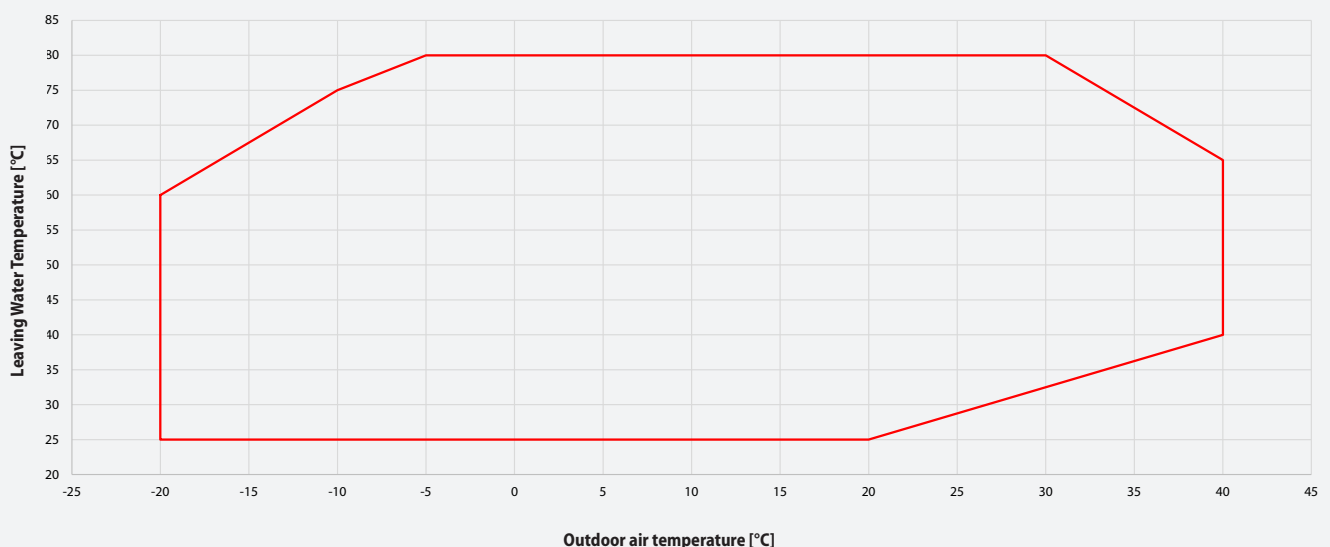
In this way (given the temperatures of the water produced, which cannot be achieved with traditional heat pumps), we can imagine replacing a combustion generator with an R290 heat pump, even if the insulation work on the casing is postponed to a later stage. This makes it possible to significantly increase the proportion of renewable energy used for heating without compromising indoor comfort.

Advanced Design's solutions look to the future of our environment and the needs of the people who use our products.

Inverter scroll compressor

The inverter scroll compressor used is part of the fourth and latest generation of scroll compressors offering a variable speed solution. In addition to the advantages offered by the technology (precise cooling and humidity management, low starting current, precise and seasonal energy efficiency), these compressors are equipped with specific features that add value to the PLP range. These include intermediate discharge valves, which increase efficiency at low compression ratios and further improve partial-load efficiency, and permanent magnet brushless motors.

PLP - Heating Mode



The models are completely configurable by selecting the version and the options. To the right is shown an example of configuration.

| Version | Field | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|------------|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| PLP057HS2A | A | 1 | S | 0 | E | E | 0 | 0 | 0 | I | G | 0 | 1 | 1 | 0 | |

To verify the compatibility of the options, use the online selection software or the price list.

AVAILABLE VERSIONS

Cooling only versions

| | |
|------------------|----------------------------------------------|
| PLP..CS2A | 400V-3N-50Hz power supply + circuit breakers |
| PLP..CS5A | 400V-3-50Hz power supply + circuit breakers |

Versions with reversible heat pump

| | |
|------------------|----------------------------------------------|
| PLP..HS2A | 400V-3N-50Hz power supply + circuit breakers |
| PLP..HS5A | 400V-3-50Hz power supply + circuit breakers |

CONFIGURATION OPTIONS

- 1 Expansion valve**
 - A Electronic
- 2 Water pump and accessories**
 - 0 Not present
 - 1 Standard single pump
 - 2 Standard dual OR pump
 - 3 Single HP pump
 - 4 Dual HP OR pump
 - 5 Standard single pump with Viton seal
 - 6 Standard dual OR pump with Viton seal
 - 7 Single HP pump with Viton seal
 - 8 Dual HP OR pump with Viton seal
 - A Standard single inverter pump
 - B Standard dual inverter OR pump
 - C Single inverter HP pump
 - D Dual inverter HP OR pump
 - E Standard single inverter pump with Viton seal
 - F Standard dual inverter OR pump with Viton seal
 - G Single inverter HP pump with Viton seal
 - H Dual inverter HP OR pump with Viton seal
- 3 Inertial buffer tank**
 - 0 Not present
 - S Present
- 4 Partial heat recovery**
 - 0 Not present
 - D Present with pump contact
- 5 Air flow modulation**
 - C Condensation control by phase cut fans
 - E With EC fan (standard for size 62)
- 6 Antifreeze kit**
 - E Evaporator
 - P Evaporator + pump
 - S Evaporator + pump + buffer tank
 - T Evaporator + buffer tank a
- 7 Sound insulation and attenuation**
 - 0 Not present
 - 2 Sound-insulating cover for compressor
 - 5 Compressor sound-insulating cover + Low-noise fans
- 8 Cooling options and accessories**
 - 0 Not present
- 9 Remote control / Serial communication**
 - 0 Not present
 - 2 RS485 serial board (Carel / Modbus protocol)
 - B BACNET IP / PCOWEB serial card
 - G BACNET IP / PCOWEB serial card + monitoring software
 - S Simplified remote control
 - X Remote microprocessor control
- 10 Special coils / protective treatments**

- C Cataphoresis (heat pump only)
- E Microchannels made of Long Life Alloy (standard for chiller)
- I Hydrophilic (standard for heat pump)
- M Microchannels with E-coating (chiller only)
- P Fins pre-coated with polyester coating (heat pump only)
- R Copper / copper (heat pump only)
- 11 Vibration isolation**
 - 0 Not present
 - G Rubber anti vibration shock mounts
 - M Spring anti vibration shock mounts
- 12 Coil heating cable**
 - 0 Not present
 - 1 Present (heat pumps only)
- 13 Remote control**
 - 1 Advancedw
- 14 Water flow check**
 - 1 Pressure switch
 - 3 Electronic flow switch (hot wire)
- 15 DHW options (only for units without buffer tank)**
 - 0 Absent
 - 1 DHW 3-way valve + tank probe
 - 2 DHW mode enabling with dry contact
 - 3 DHW 3-way valve + DHW mode enabling with dry contact

ACCESSORIES

| | |
|----------|------------------------------------------------------------------------|
| B | Condensing coil protection grille |
| C | Smart grid certification |
| D | ON/OFF status of the compressors |
| E | Remote control for limiting power steps |
| F | Configurable digital alarm card |
| G | Air separator for the water system (supplied loose) |
| H | Dirt separator for the water system (supplied loose) |
| I | Refrigerant leak sensors (standard) |
| L | Double insulation - water side (standard for buffer tank) |
| M | 0-10V signal for external pump control (excluding on-board pump) |
| N | Integration system enabling contact (boiler / electric heater) - PLANT |
| O | Night-time low-noise operation |
| P | Request for DHW via digital input |
| Q | Temperature sensor for pump switch-off on primary circuit |
| R | Enabling 2nd set-point |
| T | Kit for power metering |
| U | Unit lifting pipes |
| V | Set-point change with 4-20 mA signal |
| Z | Flow meter for calculating power output |
| 1 | Integration system enabling contact (electric heater) - DHW |





PLP Chillers and Inverter Heat Pumps with natural refrigerant

RATED TECHNICAL DATA OF PLP C WATER CHILLERS

| PLP C | | | 037 | 045 | 052 | 057 | 062 |
|--------------------------------------------------|-----|-----------------|-----------|------|------|------|------|
| Power supply | | V-ph-Hz | 400-3N-50 | | | | |
| Cooling capacity | (1) | kW | 36,0 | 41,4 | 46,7 | 51,2 | 57,1 |
| Total power input | (1) | kW | 12,0 | 14,0 | 16,4 | 18,1 | 19,2 |
| EER | (1) | | 3,01 | 2,97 | 2,84 | 2,83 | 2,97 |
| SEER | (2) | | 5,00 | 4,88 | 5,02 | 5,02 | 5,24 |
| Water flow | (1) | l/h | 6201 | 7140 | 8038 | 8814 | 9843 |
| Pressure drop, water side | (1) | kPa | 37 | 50 | 37 | 44 | 45 |
| Available pressure head - LP pump | (1) | kPa | 125 | 89 | 120 | 113 | 111 |
| Available pressure head - HP pump | (1) | kPa | 213 | 173 | 205 | 199 | 196 |
| No. of compressors / circuits | | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| Maximum absorbed current | | A | 42 | 48 | 56 | 59 | 62 |
| Inrush current | | A | 43 | 50 | 57 | 61 | 63 |
| Tank capacity | | dm ³ | 125 | 125 | 125 | 125 | 125 |
| Sound power level | (6) | dB(A) | 81 | 81 | 83 | 83 | 84 |
| Sound power level, low-noise configuration | (6) | dB(A) | 78 | 78 | 80 | 80 | 81 |
| Sound power level, super low-noise configuration | (6) | dB(A) | 76 | 76 | 79 | 79 | 79 |

RATED TECHNICAL DATA OF PLP H HEAT PUMPS

| PLP H | | | 037 | 045 | 052 | 057 | 062 |
|--------------------------------------------------|-----|-----------------|-----------|------|------|------|-------|
| Power supply | | V-ph-Hz | 400-3N-50 | | | | |
| Cooling capacity | (1) | kW | 30,0 | 35,7 | 41,6 | 45,5 | 50,3 |
| Total power input | (1) | kW | 12,0 | 14,4 | 16,8 | 18,2 | 19,3 |
| EER | (1) | | 2,49 | 2,48 | 2,48 | 2,50 | 2,60 |
| SEER | (2) | | 4,45 | 4,34 | 4,26 | 4,25 | 4,50 |
| Water flow | (1) | l/h | 5165 | 6143 | 7155 | 7832 | 8653 |
| Pressure drop, water side | (1) | kPa | 28 | 39 | 30 | 34 | 36 |
| Available pressure head - LP pump | (1) | kPa | 145 | 114 | 131 | 126 | 123 |
| Available pressure head - HP pump | (1) | kPa | 234 | 200 | 217 | 211 | 209 |
| Heating capacity | (3) | kW | 37,2 | 45,7 | 52,5 | 57,1 | 63,0 |
| Total power input | (3) | kW | 11,0 | 13,8 | 15,8 | 17,3 | 18,8 |
| COP | (3) | | 3,37 | 3,31 | 3,32 | 3,31 | 3,35 |
| SCOP LT | (2) | | 4,50 | 4,20 | 4,35 | 4,25 | 4,49 |
| Energy efficiency class in heating mode | (4) | | A+++ | A++ | A++ | A++ | A+++ |
| SCOP MT | (2) | | 3,63 | 3,40 | 3,57 | 3,50 | 3,62 |
| Energy efficiency class in heating mode | (5) | | A++ | A++ | A+++ | A++ | A++ |
| Water flow | (3) | l/h | 6441 | 7908 | 9086 | 9886 | 10903 |
| Pressure drop, water side | (3) | kPa | 44 | 62 | 48 | 56 | 60 |
| No. of compressors / circuits | | | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| Maximum absorbed current | | A | 42 | 48 | 56 | 59 | 62 |
| Inrush current | | A | 43 | 50 | 57 | 61 | 63 |
| Tank capacity | | dm ³ | 125 | 125 | 125 | 125 | 125 |
| Sound power level | (6) | dB(A) | 81 | 81 | 83 | 83 | 84 |
| Sound power level, low-noise configuration | (6) | dB(A) | 78 | 78 | 80 | 80 | 81 |
| Sound power level, super low-noise configuration | (6) | dB(A) | 76 | 76 | 79 | 79 | 79 |

(1) Outdoor air temperature 35°C, water temperature 12°C - 7°C (EN14511:2022)

(2) The efficiency values η in heating and cooling modes are calculated using the following formulas, respectively: $[\eta = SCOP / 2.5 - F(1) - F(2)]$ and $[\eta = SEER / 2.5 - F(1) - F(2)]$. For further information, please refer to the "ErP 2009/125/EC DIRECTIVE" technical information found in the introductory pages of the catalogue or to Standard EN14825:2022.

(3) Outdoor air temperature 7°C - 6°C (w.b.), water temperature 40°C - 45°C (EN14511:2022)

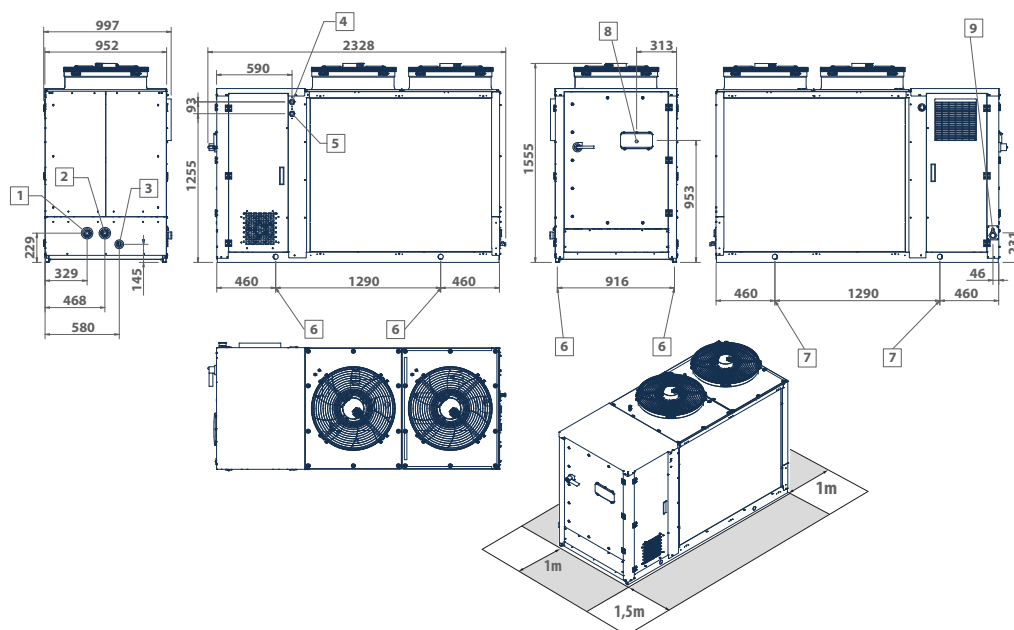
(4) Seasonal energy efficiency class of space heating at LOW TEMPERATURE under AVERAGE weather conditions [EUROPEAN REGULATION No. 811/2013]

(5) Seasonal energy efficiency class of space heating at MEDIUM TEMPERATURE under AVERAGE weather conditions [EUROPEAN REGULATION No. 811/2013]

(6) Measured in accordance with UNI EN ISO 9614

DIMENSIONAL DRAWINGS

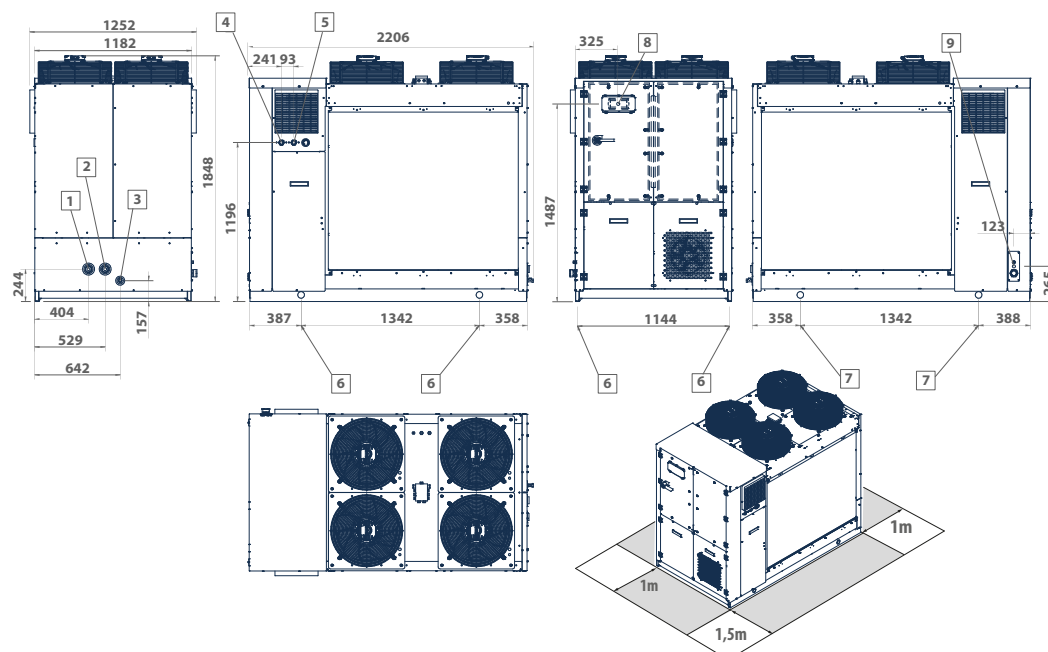
PLP 37 - 57



LEGENDA

| | | | |
|---|------------------------------------------------------------------------------|---|-------------------|
| 1 | Water inlet \varnothing 1 1/4" F (37-45) / \varnothing 1 1/2" F (52-57) | 6 | Vibration dampers |
| 2 | Water outlet \varnothing 1 1/4" F (37-45) / \varnothing 1 1/2" F (52-57) | 7 | Lifting points |
| 3 | Water drainage \varnothing 1/2" F | 8 | User interface |
| 4 | Partial heat recovery inlet \varnothing 1" F | 9 | Power supply |
| 5 | Partial heat recovery outlet \varnothing 1" F | | |

PLP 62



LEGENDA

| | | | |
|---|-------------------------------------------------|---|-------------------|
| 1 | Water inlet \varnothing 1 1/2" F | 6 | Vibration dampers |
| 2 | Water outlet \varnothing 1 1/2" F | 7 | Lifting points |
| 3 | Water drainage \varnothing 1/2" F | 8 | User interface |
| 4 | Partial heat recovery inlet \varnothing 1" F | 9 | Power supply |
| 5 | Partial heat recovery outlet \varnothing 1" F | | |