

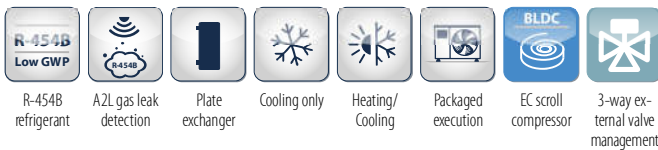
# PLI Inverter Chillers and HP with Low GWP refrigerant



High-efficiency full inverter compact outdoor packaged units

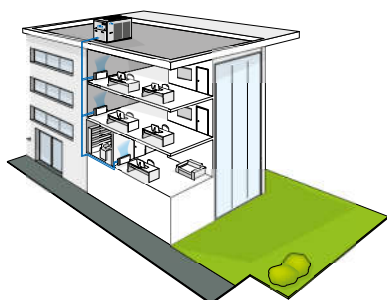


## PLI 35 - 55 kW



### PLUS

- » Refrigerant with GWP of less than 500
- » Inverter driven variable speed scroll compressor
- » Reduced refrigerant charge thanks to the use of micro-channel (C versions) or mini-channel (H versions) coils
- » Production of water from -10°C to 60°C
- » High seasonal efficiency values (ErP 2021 compliant)
- » Electronic expansion valve as standard
- » High configurability and wide availability of accessories
- » Availability of standard acoustic execution or in silenced configuration



### Heat pumps with inverter compressor and low GWP refrigerant

PLI is Galletti's new range of air-cooled packaged chillers and heat pumps for outdoor installation featuring with inverter-driven modulating scroll compressor and R454B refrigerant. R454B is a next generation A2L refrigerant with a GWP of only 467, one of the lowest on the market. This GWP value ensures that the PLI range complies with the gradual reduction of greenhouse gas emissions required by the F-GAS regulation, down to the stricter limits foreseen for 2030.

Not only that, the use of finned coils with reduced diameters for the passage of the refrigerant (micro-channels for only cooling versions and mini-channels for reversible heat pumps) allows a reduction of the refrigerant charge by more than 50% compared to similar products with same capacity but with standard technology.

The range consists of 4 models with cooling capacities from 35 to 50 kW, available as cooling only and reversible heat pump mode. The inverter controller allows to adjust the capacity and the input of the compressor to the actual thermal load and makes it possible to considerably reduce electrical intakes at the compressor start-up (reduction of starting currents) and during the operation under partial loads.

The use of top quality components at the cutting edge of technology in the cooling, hydraulic, and electrical systems makes PLI chillers state of the art in terms of efficiency, reliability, and operating limits. In fact, the ability to produce water from -10°C to 60°C, and full load operation with external air from -15°C to 48°C.

The range allows high configurability from an acoustic and hydraulic point of view, having ample accessories designed to meet installation needs characterized by reduced overall dimensions: without increasing the size it is possible to provide on board the storage tank and up to a maximum of two hydraulic pumps.

Advanced control, which is always provided across the entire range, allows continuous monitoring of operating parameters, advanced regulation logics, and connectivity.

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

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

## CONFIGURATOR

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
PLI050H50A		A	1	S	0	E	0	0	2	0	0	G	0	1

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

### AVAILABLE VERSIONS

#### Only cooling versions

PLI..CS0A	Power supply 400V-3N-50Hz
PLI..CS2A	Power supply 400V-3N-50Hz + circuit breaker
PLI..CS4A	Power supply 400V-3-50Hz + transformer
PLI..CS5A	Power supply 400V-3N-50Hz + circuit breaker + transformer

#### Reversible heat pump versions

PLI..HS0A	Power supply 400V-3-50Hz
PLI..HS2A	Power supply 400V-3-50Hz + circuit breaker
PLI..HS4A	Power supply 400V-3-50Hz + transformer
PLI..HS5A	Power supply 400V-3N-50Hz + circuit breaker + transformer

### CONFIGURATION OPTIONS

- 1 Expansion valve**
  - A Electronic
- 2 Water pump and accessories**
  - 0 Absent
  - 1 Single standard pump
  - 2 Double standard pump OR
  - 3 Single HP pump
  - 4 HP OR double pump
  - A Single standard pump Inverter
  - B Double standard pump Inverter OR
  - C Inverter Single HP pump
  - D HP OR inverter double pump
- 3 Water buffer tank**
  - 0 Absent
  - S Selected
- 4 Partial heat recovery**
  - 0 Absent
  - D Included with pump free contact
- 5 Air flow modulation**
  - A with EC Fans high pressure head
  - C Phase-cut
  - E with EC Fans
- 6 Antifreezing kit**
  - 0 Absent
  - E Plate exchangers only
  - P Plate exchanger + pump + expansion vessel
  - S Plate exchanger + pump + expansion vessel and tank
- 7 Acoustic insulation and attenuation**
  - 0 Absent
  - 3 Compressor compartment acoustic insulation and sound blanket
- 8 Refrigerant pipework accessories**
  - 0 Absent
- 9 Remote control / Serial communication**
  - 0 Absent
  - 2 RS485 connection port (Modbus protocol or Carel)
  - B BACNET IP/pCOWeb serial board
  - G BACNET IP / pCOWeb serial board + supervision software
  - L LON FTT10 serial board
  - S Remote simplified control panel
  - X Remote control panel for advanced controller
- 10 Special coils / Protective treatments**
  - 0 Copper-aluminium (standard heat pump only)
  - C Cataphoresis treatment on fins and coil carpentry
  - E Microchannel in Long Life Alloy (standard for chiller)
  - I Hydrophilic (heat pump only)
  - M Microchannel with e-coating (chiller only)
  - P Pre-painted fins with polyester paint (only heat pump)
  - R Copper-copper (heat pump only)
- 11 Base vibration dampers**
  - 0 Absent
  - G Made of rubber
  - M With spring
- 12 Outdoor coil trace heater**
  - 0 Absent
  - 1 Present (heat pump only)
- 13 Onboard controller**
  - 1 Advanced

### ACCESSORIES

<b>A</b>	3 way valve for DHW production (water tank not allowed)	<b>N</b>	Compressor tandem/trio isolation valves
<b>B</b>	Outdoor finned coil heat exchanger protection grille	<b>P</b>	DHW request from digital input
<b>D</b>	ON/OFF status of the compressors	<b>Q</b>	Temperature probe for pump shutdown on the primary circuit
<b>E</b>	Remote control for step capacity limit (advanced controller required)	<b>R</b>	Enabling 2nd set-point / external alarm signaling via digital input
<b>F</b>	Configurable digital alarm board (advanced controller required)	<b>T</b>	Energy metering kit
<b>I</b>	Refrigerant sensors	<b>U</b>	Unit lifting pipes
<b>L</b>	Water pipes additional insulation	<b>V</b>	Set-point modification with 4-20mA signal
<b>M</b>	0-10 V signal for external user pump control (on-board pump excluded)		

### MAIN COMPONENTS



#### Inverter scroll compressors

The Danfoss VZH inverter scroll compressor is part of the third and latest generation of scroll compressors offering variable speed technology. In addition to the advantages offered by the technology (precise cooling and humidity management, low starting current, energy efficiency, etc.), VZH scroll inverters have specific features that offer added value to the PLI range. These include Intermediate Relief Valves (IDV) which increase efficiency at low pressure ratios, further increasing efficiency at part load, and permanent magnet brushless motors. Not only that, the operational maps have been expanded to meet the needs of maximum efficiency for multiple applications in the HVAC world.

#### Fan

The sound levels are especially low thanks to the use of a specially designed fan with airfoil blades that is able to ensure a high air flow rate with limited noise emission.

# PLI Inverter Chillers and HP with Low GWP refrigerant

## Very low GWP refrigerant

Use of R454B refrigerant with low environmental impact. R454B is a next-generation A2L refrigerant with a GWP of only 467, one of the lowest on the market. This GWP value ensures that the PLI range complies with the gradual reduction of quotas of greenhouse refrigerants in the European market required by the F-GAS regulation, down to the stricter limits foreseen for 2030

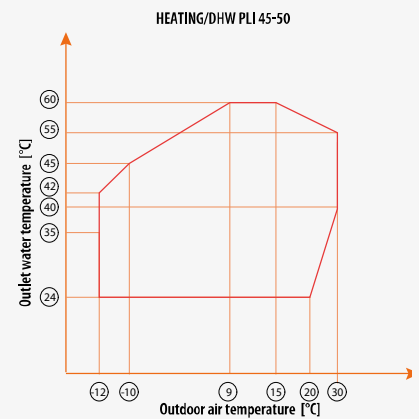
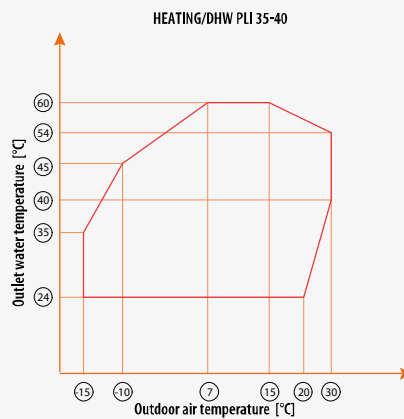
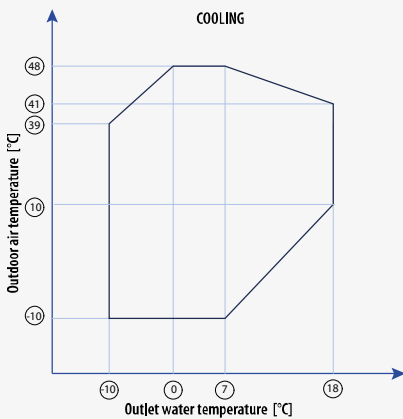
## Heat exchanger

Brazed-welded plate condenser in AISI 316 corrosion resistant austenitic stainless steel, specifically developed to maximise heat exchange coefficients between water and refrigerant.



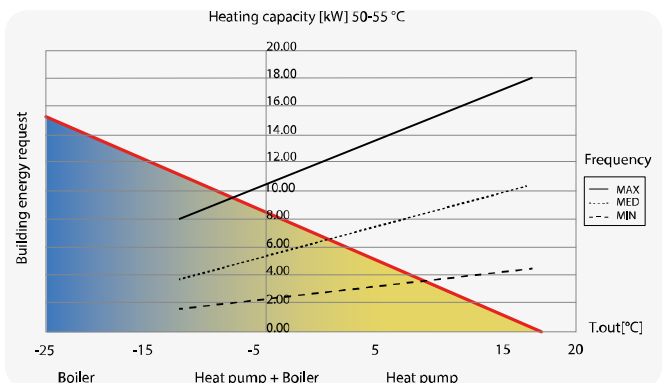
## EXTENDED OPERATING RANGE FOR EACH APPLICATION

PLI series heat pumps were designed to ensure maximum flexibility in every application. Thanks to their extremely wide operating range ensuring the operation even in particularly cold climates and allowing them to produce water up to a maximum of 60 °C and to the advanced adjustment logics provided by the electronic control, they are able to ensure not only winter heating and summer air conditioning, but also the production of thermal energy to be used for domestic hot water production. The high efficiency values that characterize them make it possible, in many cases, to cover the share of renewable energy required by the most recent regulations on limiting energy consumption and to benefit from the tax credits offered by the legislation of many countries that are dedicated to promoting equipment that meets the highest standards.



## PERFORMANCE AND FUNCTIONALITY ALWAYS ON TOP

The control unit is able to activate an alternative heat generator (boiler or heating element) and employ its operation according to various user-configurable logics in unfavorable weather conditions and particularly high thermal loads, in order to integrate the missing heat capacity or to completely replace heat generation. This feature can also be used during the defrost phases, in order to balance the energy extracted from the heat transfer fluid to melt the ice present on the outside of the heat exchanger, or in the case of machine stoppage due to malfunction or maintenance.



**PLI C WATER CHILLERS RATED TECHNICAL DATA**

PLI			035	040	045	050
Power supply		V-ph-Hz	400-3N-50			
Cooling capacity	(1)(E)	kW	36,6	43,1	48,4	53,4
Total power input	(1)(E)	kW	12,3	14,3	15,6	17,8
EER	(1)(E)		2,97	3,01	3,10	3,00
SEER	(2)(E)		5,04	5,17	5,28	5,21
Water flow	(1)	l/h	6295	7413	8325	9185
Water pressure drop	(1)(E)	kPa	32	35	42	38
Available pressure head - LP pumps	(1)	kPa	138	105	90	72
Available pressure head - HP pumps	(1)	kPa	218	195	178	157
Compressors / circuits			1/1			
Maximum current absorption		A	44,0	46,0	49,0	50,0
Start up current		A	60	60	60	60
Buffer tank volume		dm <sup>3</sup>	125	125	125	125
Sound power level	(3)(E)	dB(A)	82	82	83	84
Sound power level, low-noise version	(3)	dB(A)	79	79	80	81
Weight without options		kg	409	403	427	428
Maximum transport weight		kg	467	462	486	488

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

(2)  $\eta$  efficiency values for heating and cooling are respectively calculated by the following formulas: [ $\eta = SCOP / 2,5 - F(1) - F(2)$ ] e [ $\eta = SEER / 2,5 - F(1) - F(2)$ ]. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.

(3) Sound power level measured according to ISO 9614

(E) EUROVENT certified data

**PLI H HEAT PUMPS RATED TECHNICAL DATA**

PLI			035	040	045	050
Power supply		V-ph-Hz	230-1-50			
Cooling capacity	(1)(E)	kW	33,6	39,7	44,9	49,1
Total power input	(1)(E)	kW	13,0	15,3	16,3	18,8
EER	(1)(E)		2,58	2,59	2,75	2,61
SEER	(2)(E)		4,12	4,40	4,57	4,56
Water flow	(1)	l/h	5779	6828	7723	8445
Water pressure drop	(1)(E)	kPa	30	32	39	35
Available pressure head - LP pumps	(1)	kPa	140	108	92	75
Available pressure head - HP pumps	(1)	kPa	220	200	180	160
Heating capacity	(3)(E)	kW	35,7	44,6	48,8	53,9
Total power input	(3)(E)	kW	12,1	14,3	15,3	17,1
COP	(3)(E)		2,95	3,12	3,19	3,15
SCOP	(2)(E)		3,40	3,81	3,99	4,07
Heating energy efficiency class	(4)(E)		A+	A+	A++	A++
Water flow	(3)	l/h	6140	7671	8394	9271
Water pressure drop	(3)(E)	kPa	35	39	42	40
Available pressure head - LP pumps	(3)	kPa	121	91	70	60
Available pressure head - HP pumps	(3)	kPa	200	170	158	140
Maximum current absorption		A	44,0	46,0	49,0	50,0
Start up current		A	60	60	60	60
Compressors / circuits			1/1			
Buffer tank volume		dm <sup>3</sup>	125	125	125	125
Sound power level	(5)(E)	dB(A)	82	82	83	84
Sound power level, low-noise version	(5)	dB(A)	79	79	80	81
Weight without options		kg	411	406	431	433
Maximum transport weight		kg	470	465	490	492

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

(2)  $\eta$  efficiency values for heating and cooling are respectively calculated by the following formulas: [ $\eta = SCOP / 2,5 - F(1) - F(2)$ ] e [ $\eta = SEER / 2,5 - F(1) - F(2)$ ]. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.

(3) Outdoor air temperature dry bulb 7°C / wet bulb 6°C, water temperature 40°C / 45°C (EN14511:2022)

(4) Seasonal energy efficiency class for LOW TEMPERATURE room heating under AVERAGE climatic conditions [EUROPEAN REGULATION No 811/2013]

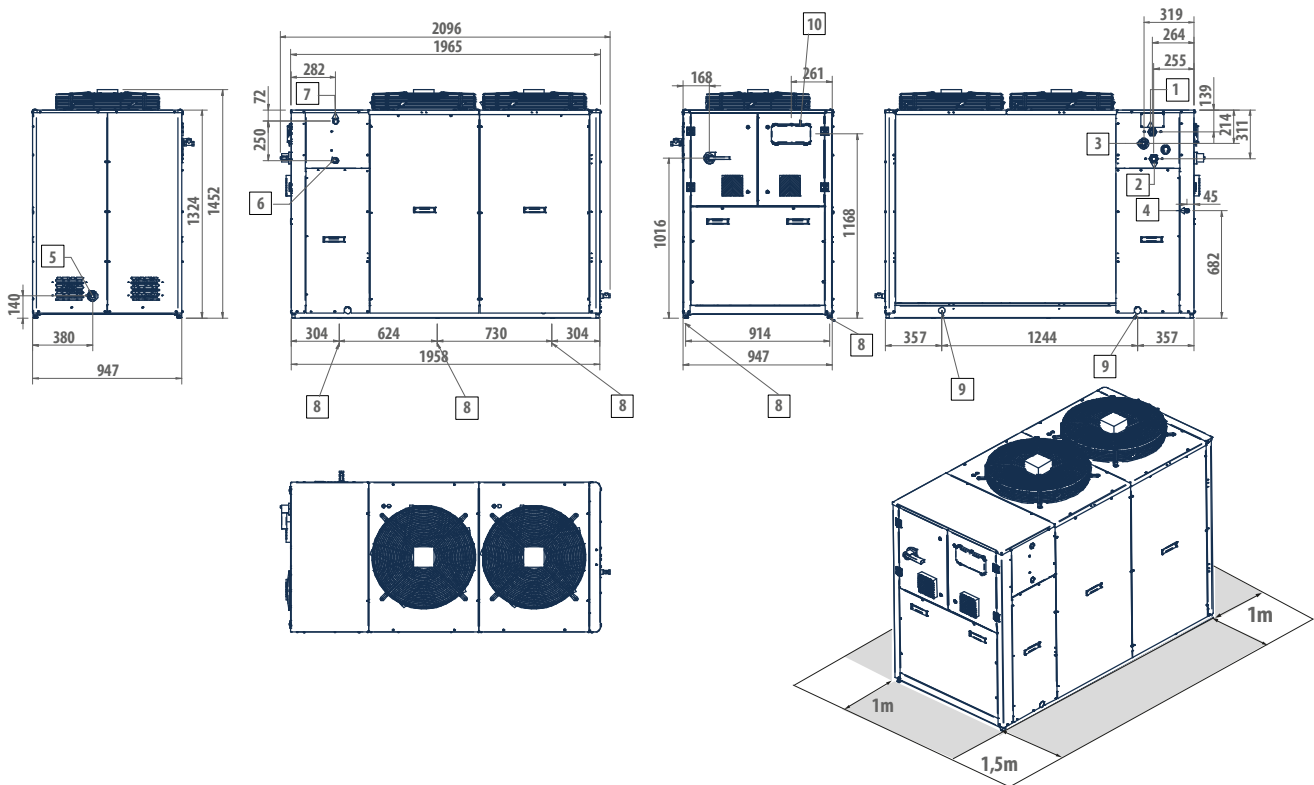
(5) Sound power level measured according to ISO 9614

(E) EUROVENT certified data

# PLI Inverter Chillers and HP with Low GWP refrigerant

## DIMENSIONAL DRAWINGS

PLI035

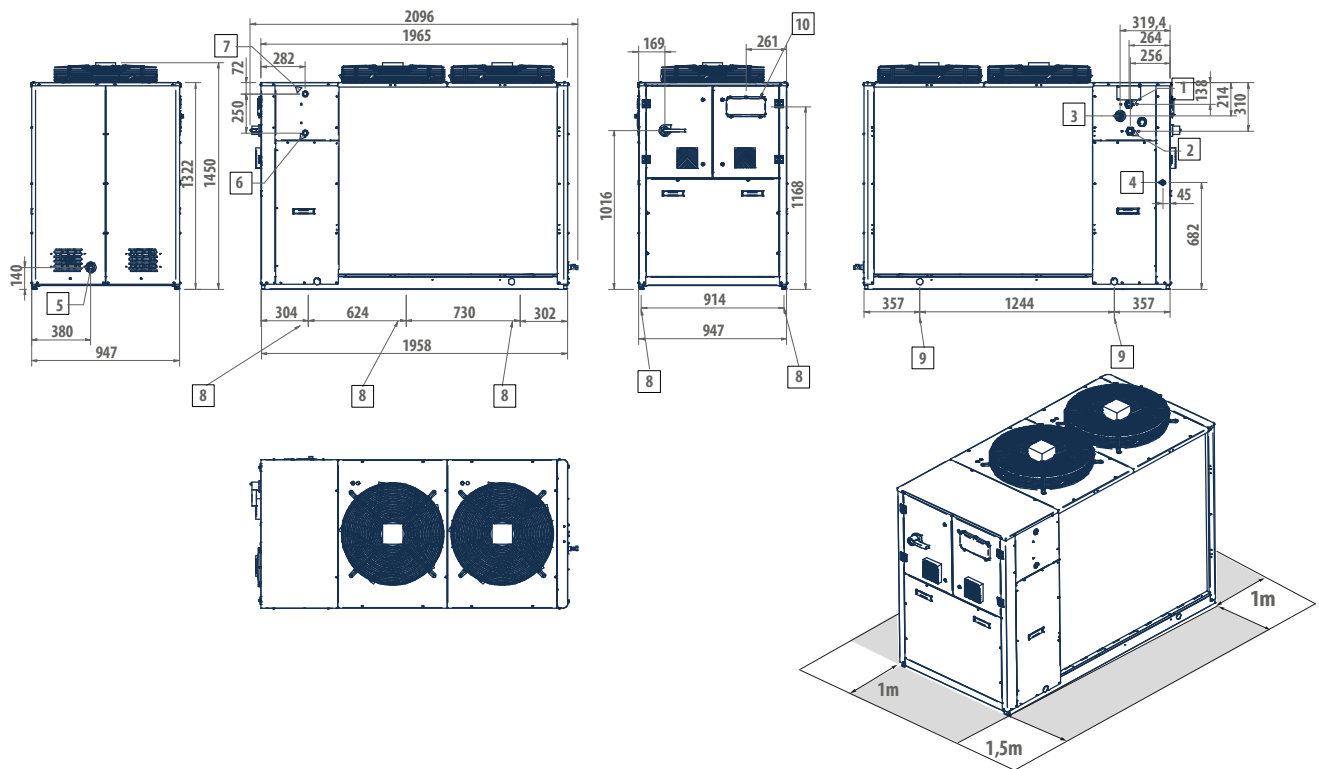


### LEGEND

1	Water inlet 1 1/4 " F
2	Water outlet 1 1/4 " F
3	Water supply 1/2 " M (optional tap)
4	Power supply
5	Water drainage tank 1/2 " F
6	Heat exchanger inlet 1 " M
7	Heat exchanger outlet 1 " M
8	Vibration dumpers
9	Lifting points
10	User interface

DIMENSIONAL DRAWINGS

PLI 040 - 045 - 050



**LEGEND**

1	Water inlet 1 1/4 " F
2	Water outlet 1 1/4 " F
3	Water supply 1/2 " M (optional tap)
4	Power supply
5	Water drainage tank 1/2 " F
6	Heat exchanger inlet 1 " M
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