DYNACIAT LG

Water chillers
Heat pump

Compact et silent

High energy efficiency
Scroll compressors
High-efficiency brazed-plate heat exchangers
Self-adjusting electronic control

Cooling capacity: 25 to 190 kW
Heating capacity: 29 to 230 kW

Cooling · Heating · Hydraulic module · R-410A · EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

UTILISATION

The latest generation of **DYNACIAT** water chillers and heat pumps are the perfect solution for all cooling and heating applications in the Offices, Healthcare, Industry, Administration, Shopping Centres and Collective Housing markets.

These units are designed to be installed in machine rooms that are protected against freezing temperatures and inclement weather.

When producing chilled water, these units can be connected to a drycooler or a water cooling tower. This range is also available in a “split system” version without a condenser (LGN series).

Connected to an underfloor heating-cooling system, comfort units or an air handling unit, DYNACIAT can heat or cool buildings by reversing the cycle on hydraulic circuits using a set of valves (hydraulic valves not supplied).

For quick and easy installation, a range of hydronic modules is available as an option on the evaporator side (for chilled water production) and the condenser side (for hot water production).

DYNACIAT is optimised to use ozone-friendly HFC R410A refrigerant.

This range guarantees compliance with the most demanding requirements for increased seasonal energy efficiency (SEER, SEPR and SCOP) and CO_2 reduction to comply with the various applicable European directives and regulations.

RANGE

DYNACIAT LG series

Cooling or heating version.

DYNACIAT LGN series

Split system cooling only version without condenser.

Description

DYNACIAT units are packaged machines supplied as standard with the following components:
- Hermetic SCROLL compressors
- Chilled-water evaporator with brazed plates
- Hot water condenser, with brazed plates
- Electrical power and remote control cabinet:
  • 400V-3ph-50Hz (+/-10%) general power supply + Earth
  • transformer fitted as standard on the machine for supplying the remote control circuit with 24V
- Connect Touch electronic control module
- Casing for indoor installation

The entire DYNACIAT range complies with the following EC directives and standards:
- Machinery directive 2006/42/EC
- Electromagnetic compatibility directive 2014/30/EC
- EMC immunity and emissions EN 61800-3 'C3'
- Low voltage directive 2014/35/EU
- RoHS 2011/65/EU
- Pressure equipment directive (PED) 2014/68/EU
- Machinery directive EN 60-204 -1
- Refrigeration systems and heat pumps EN 378-2
- Commission Regulation (EU) No. 813/2013 implementing directive 2009/125/EC setting the ecodesign requirements

Designation

LG 150 A

A > generation of the range

150 > unit size

LG > cooling or heating version
LGN > cooling only version without condenser

Configuration

LG-LGN	Standard
LG-LGN LN option	Standard Low Noise

DESCRIPTION OF THE MAIN COMPONENTS

Compressors
- Hermetic SCROLL type
- Electronic motor overheating protection
- Crankcase heater
- Mounted on anti-vibration mounts

Evaporator
- Brazed-plate exchanger
- Plate patterns optimised for high efficiency
- 19 mm armaflex thermal insulation

Condenser
- Brazed-plate exchanger
- Plate patterns optimised for high-efficiency
- 19 mm armaflex thermal insulation (optional)

Refrigerating accessories
- Dehumidifier filters
- Hygroscopic sight glasses
- Electronic expansion valves
- Service valves on the liquid line

Regulation and safety instruments
- Low and high pressure sensors
- Safety valves on refrigerating circuit
- Water temperature control sensors
- Evaporator antifreeze protection sensor
- Factory-fitted evaporator water flow controller

Electrical cabinet
- Electrical cabinet with IP 23 protection rating
- A connection point without neutral
- Main safety switch with handle on front
- Control circuit transformer
- 24V control circuit
- Compressor motor circuit breaker
- Compressor motor contactors
- Connect Touch microprocessor-controlled electronic control module
- Wire numbering
- Marking of the main electrical components

Casing
Frame made from RAL7035 light grey & RAL 7024 graphite grey painted panels.

Connect Touch control module
- User interface with 4.3-inch touch screen
- Intuitive, user-friendly navigation using icons
- Clear text display of information available in 6 languages (F-GB-D-E-I-NL)

The electronic control module performs the following main functions:
- Regulation of the water temperature (at the return or at the outlet)
- Regulation of the water temperature based on the outdoor temperature (water law)
- Regulation for low temperature energy storage
- Second setpoint management
- Complete management of compressors with start-up sequence, timer and operating time balancing
- Self-regulating and proactive functions with adjustment of the control to counter parameter drift
- Optimised defrosting with free defrost function to optimise performance at partial load and the SCOP
- In-series staged power control system on the compressors according to the thermal requirements
- Management of compressor short cycle protection
- Frost protection (exchanger heaters)
- Phase reversal protection
- Management of occupied/unoccupied modes (according to the time schedule)
- Compressor and pump runtime balancing
- Management of the machine operation limit according to outdoor temperature
- Sound level reduction device (night mode according to the user programme) with limitation of compressor capacity and fan speed
- Diagnostics of fault and operating statuses
- Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
- Blackbox memory
- Master/slave management of the two machines in parallel with operating time balancing and automatic changeover if a fault occurs on one machine
- Weekly and hourly time schedule for the machine, including 16 periods of absence
- Pump standby based on demand (energy saving)
- Calculation of the water flow rate and operating pressure (hydraulic module version)
- Electronic adjustment of the water pump speed and water flow rate (variable-speed pump option)
- Display of all machine parameters (3 access levels, User/Maintenance/Factory, password-protected): temperature, setpoints, pressures, water flow rate (hydraulic version), runtime.
- Display of trend curves for the main values
- Storage of maintenance manual, wiring diagram and spare parts list.

DESCRIPTION OF THE MAIN COMPONENTS

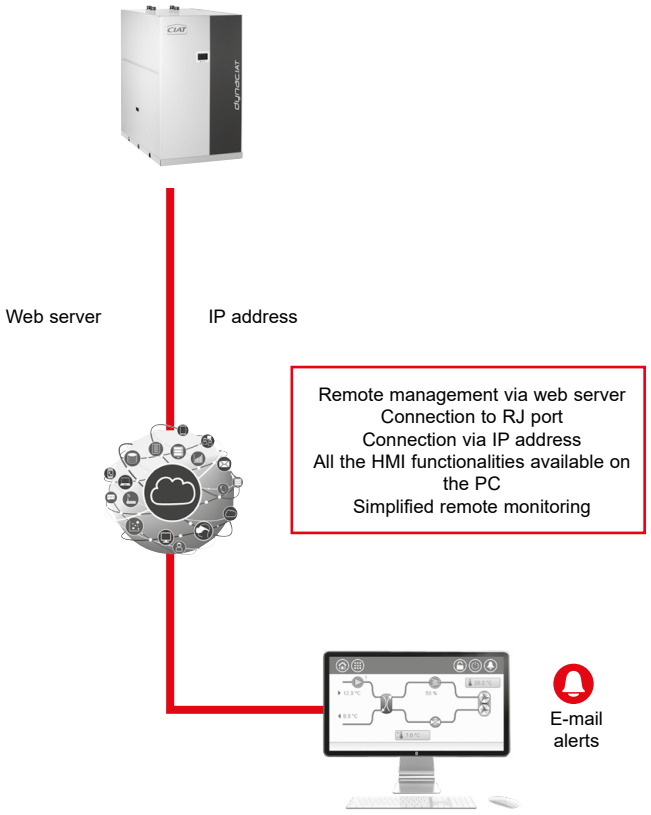
Remote management

Connect Touch is equipped as standard with an RS485 port and an ETHERNET (IP) connection, offering a range of options for remote management, monitoring and diagnostics.

Using the integrated Webserver, a simple internet connection uses the unit's IP address to access the Connect Touch interface on the PC, facilitating everyday management tasks and maintenance operations.

A range of communication protocols are available: MODBUS/JBUS RTU (RS485) or TC/IP as standard, LONWORKS – BACNET IP (Certified BTL) as an option, enabling most CMS/BMS to be integrated.

Several contacts are available as standard, enabling the machine to be controlled remotely by wired link:
- Automatic operation control: when this contact is open, the machine stops
- Heating/cooling operating mode selection
- Setpoint 1/setpoint 2 selector: when this contact is closed, a second cooling setpoint is activated (energy storage or unoccupied mode, for example)
- Power limitation: closing the contact concerned allows the power or refrigerating consumption of the machine to be limited by stopping one or more compressors (this limit can be set with a parameter)
- Fault reporting: this contact indicates the presence of a major fault which has caused one or both refrigerating circuits to stop
- Operational status reporting indicates that the unit is in production mode.



Maintenance

Connect Touch has two maintenance reminder functions as standard, making users aware of the need to regularly perform maintenance operations and to guarantee the service life and performance of the unit. These two functions can be activated independently.
A reminder message appears on the unit's HMI screen, and stays there until it is acknowledged by the maintenance operator. The information and alert relating to these functions are available on the communication bus to be used on the CMS/BMS.

- The scheduled maintenance reminder: when activated, this function enables the period between two maintenance inspections to be set. This period may be set by the operator in either days, months or operating hours, depending on the application.
- The compulsory F-GAS sealing test maintenance reminder: when activated, this function, which is the default factory setting, enables the period between two sealing tests to be selected, according to the refrigerant charge, in compliance with the F-GAS regulations

AVAILABLE OPTIONS

Options	Description	Advantages	LG
Low-temperature brine solution	Low temperature glycol solution production down to -12°C with ethylene glycol	Covers specific applications such as ice storage and industrial processes	●
Soft Starter	Electronic starter on each compressor	Reduced start-up current	●
Master/slave operation	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	●
Evap. single pump power/control circuit	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	Sizes 360 to 600
Cond. single pump power/control circuit	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	Sizes 360 to 600
Condenser insulation	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications)	●
HP single-pump hydraulic module	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included). Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	Sizes 360 to 600
LP evap. single-pump	Evaporator hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	●
HP evap. variable-speed single-pump	Evaporator hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	●
HP VSD dual-pump hydraulic mod.	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	Sizes 360 to 600
LP VSD single-pump	Evaporator hydraulic module equipped with low -pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	Sizes 360 to 600
Lon gateway	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	●
Bacnet over IP	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by Ethernet line to a building management system. Allows access to multiple unit parameters	●
Specific dry cooler control	Control box for communication with the drycooler via a bus. For OPERA drycooler need to select the cabinet with option control cabinet manage by the chiller Connect'Touch control	Permits the use of an energy-efficient plug-and-play system	●
External boiler management	Control board factory-installed on the unit to control a boiler	Extended remote control capabilities to a boiler on/off command. Permits easy control of a basic heating system	●
Electric heaters management	Control board factory-installed on the unit with additional inputs/outputs in order to manage up to 4 external heating stages (electric heaters, etc.)	Extended remote control capabilities to up to 4 electric heaters. Permits easy control of a basic heating system	●
Compliance with Russian regulations	EAC certification	Compliance with Russian regulations	●
Insulation of the evap. in/out ref. lines	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	●
Low noise level	Compressor sound enclosure	Reduced sound emissions	●
Evaporator screw connection sleeves (kit)	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	●
Condenser screw connection sleeves kit	Condenser inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	●
HP single-pump, condenser side	Condenser hydraulic module equipped with high pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	Sizes 360 to 600

● ALL MODELS
Refer to the selection tool to find out which options are not compatible

AVAILABLE OPTIONS

Options	Description	Advantages	LG
LP single-pump, cond. side	Condenser hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	●
HP cond. variable-speed single-pump	Condenser hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included). Built-in safety hydraulic components available in option	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	●
HP cond. variable-speed dual-pump	Condenser hydraulic module equipped with dual high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Optional hydraulic safety components available	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	Sizes 360 to 600
LP cond. variable-speed single-pump	Condenser hydraulic module equipped with low-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Optional hydraulic safety components available	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	Sizes 360 to 600
Safety hydraulic components, evap. side	Screen filter, expansion tank and relief valve integrated in the evaporator hydraulic module	Easy and fast installation (plug & play), operating safety	●
Safety hydraulic components, cond. side	Screen filter, expansion tank and relief valve integrated in the condenser hydraulic module	Easy and fast installation (plug & play), operating safety	●
M2M supervision (accessory)	Monitoring solution which allows customers to track and monitor their equipment remotely in real time	Real-time expert technical support to improve equipment availability and reports at customer hand to monitor and optimize operating equipment.	●
Anti-vibration mounts (kit)	Elastomer antivibratils mounts to be place under the unit (Material classified B2 fire class according to DIN 4102).	Isolate unit from the building, avoid transmission of vibration and associate noise to the buiding. Must be used in conjunction with a flexible connection on the water side	●
Exchangers flexibles connection (kit)	Flexible connections on the exchanger water side	Easy installation. Limit transmission of vibrations on the water network	●
Exchangers water filter (kit)	Water filter	Eliminate dust in the water network	● Without pump option
Condenser water filter (kit)	Water filter	Eliminate dust in the water network	● Without pump option
Set point adjustment by 4-20mA signal	Connections to allow a 4-20 mA signal input	Simplified energy management, enabling the setpoint to be set by a 4-20 mA external signal	●
External temperature sensor	External temperature sensor control for using weather compensation	Allow to adjust set point using weather compensation and define autorisation operation mode to external temperature	●
Free Cooling dry cooler management	Control & connections to a Free Cooling Drycooler Opera or Vextra fitted with option FC control box	Easy system managment, Extended control capabilities to a dryccoler used in Free Cooling mode	●
Desuperheater flexibles connection (kit)	Flexibles connections on the desuperheaterr water side	Easy installation. Limit transmission of vibrations on the water network	Sizes 360 to 600

● ALL MODELS
Refer to the selection tool to find out which options are not compatible

TECHNICAL CHARACTERISTICS

DYNACIAT LG				080	090	100	120	130	150	180	200	240	260	300
Heating														
Standard unit Full load performances*	HW1	Nominal capacity	kW	30	35	38	44	51	56	70	77	89	101	114
		COP	kW/kW	5,48	5,48	5,44	5,47	5,43	5,45	5,49	5,40	5,46	5,42	5,47
	HW2	Nominal capacity	kW	29	33	36	43	49	54	68	74	85	97	108
		COP	kW/kW	4,31	4,33	4,32	4,33	4,37	4,31	4,35	4,30	4,27	4,36	4,29
	HW3	Nominal capacity	kW	28	33	35	41	47	52	65	73	81	93	103
		COP	kW/kW	3,57	3,61	3,59	3,58	3,65	3,59	3,55	3,60	3,51	3,68	3,54
Standard unit Seasonal energy efficiency**	HW1	SCOP $_{30/35°C}$	kWh/kWh	5,35	5,33	5,24	5,28	5,23	5,26	5,95	5,9	5,93	6,01	6,03
		ηs heat $_{30/35°C}$	%	206	205	202	203	201	202	230	228	229	232	233
	HW3	**SCOP $_{47/55°C}$**	**kWh/kWh**	**4,31**	**4,31**	**4,29**	**4,31**	**4,33**	**4,28**	**4,79**	**4,83**	**4,74**	**4,96**	**4,81**
		ηs heat $_{47/55°C}$	**%**	**164**	**164**	**163**	**164**	**165**	**163**	**184**	**185**	**181**	**191**	**184**
		P_{rated}	kW	32	37	40	47	54	59	75	83	93	106	118
		Energy labelling	kW/kW	A++	A++	A++	A++	A++	A++	-	-	-	-	-
Cooling														
Standard unit Full load performances*	CW1	Nominal capacity	kW	25	29	32	37	42	47	58	63	74	84	94
		EER	kW/kW	4,68	4,68	4,65	4,68	4,65	4,67	4,65	4,57	4,62	4,58	4,62
		Eurovent class		B	B	B	B	B	B	B	C	C	C	C
	CW2	Nominal capacity	kW	34	39	43	50	57	66	78	86	102	113	129
		EER	kW/kW	6,35	6,04	5,96	5,98	5,83	5,99	6,02	5,83	6,10	5,86	6,08
		Eurovent class		A	A	A	A	A	A	A	A	A	A	A
Standard unit Seasonal energy efficiency**		SEER $_{12/7°c}$ Comfort low temp.	kWh/kWh	4,79	4,78	4,69	4,72	4,69	4,72	5,41	5,34	5,31	5,45	5,41
		SEPR $_{12/7°c}$ Process high temp.	kWh/kWh	6,33	6,34	6,17	6,12	6,16	6,20	6,47	6,33	6,33	6,43	6,47
Unit with Low-temperature brine solution option Seasonal energy efficiency**		SEPR $_{-2/-8°C}$ Process medium temp.***	kWh/kWh	3,88	4,22	4,38	4,29	4,41	3,96	4,10	4,63	4,46	4,67	4,65
Part Load integrated values		IPLV.SI	kW/kW	5,840	5,850	5,760	5,780	5,770	5,820	6,580	6,680	6,560	6,810	6,720
Sound levels														
Standard unit														
Sound power(1)			dB(A)	67	69	69	69	70	70	72	72	72	73	73
Sound pressure at 10 m(2)			dB(A)	36	37	38	38	39	39	40	41	41	42	42
Unit with Low Noise option														
Sound power(1)			dB(A)	65	66	66	67	68	68	68	69	69	69	70
Sound pressure at 10 m(2)			dB(A)	34	35	35	35	37	37	37	37	38	38	39

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2016, average climate
***	With EG 30%
HW1	Heating mode conditions: Evaporator water inlet/outlet temperature 10 °C/7 °C, condenser water inlet/outlet temperature 30 °C/35 °C, evaporator fouling factor 0 m². k/W
HW2	Heating mode conditions: Evaporator water inlet/outlet temperature 10 °C/7 °C, condenser water inlet/outlet temperature 40 °C/45 °C, evaporator fouling factor 0 m². k/W
HW3	Heating mode conditions: Evaporator water inlet/outlet temperature 10 °C/7 °C, condenser water inlet/outlet temperature 47 °C/55 °C, evaporator fouling factor 0 m². k/W
CW1	Cooling mode conditions: Evaporator water inlet/outlet temperature 12 °C/7 °C, condenser water inlet/outlet temperature 30 °C/35 °C, evaporator fouling factor 0 m². k/W
CW2	Cooling mode conditions: Evaporator water inlet/outlet temperature 23 °C/18 °C, condenser water inlet/outlet temperature 30 °C/35 °C, evaporator fouling factor 0 m². k/W
ηs heat $_{30/35°C}$ & SCOP $_{30/35°C}$	Values calculated in accordance with EN14825:2016
ηs heat $_{47/55°C}$ & SCOP $_{47/55°C}$	**Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
SEER $_{12/7°C}$ & SEPR $_{12/7°C}$	Values calculated in accordance with EN14825:2016
SEPR $_{-2/-8°C}$	Values calculated in accordance with EN14825:2016
IPLV.SI	Calculated as per AHRI standard 551-591(SI).
-	Not applicable
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

TECHNICAL CHARACTERISTICS

DYNACIAT LG		080	090	100	120	130	150	180	200	240	260	300
Dimensions												
Length	mm	600	600	600	600	600	600	880	880	880	880	880
Width	mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
Height	mm	901	901	901	901	901	901	901	901	901	901	901
Operating Weight (3)												
Standard unit	kg	191	200	200	207	212	220	386	392	403	413	441
Unit with evaporator with single LP pump	kg	250	258	258	263	266	271	431	435	442	449	465
Unit with condenser with single LP pump	kg	250	258	258	263	266	271	431	435	442	449	465
Unit with evaporator with single variable-speed HP pump + condenser with single variable-speed HP pump	kg	305	313	313	321	327	334	513	521	533	544	574
Compressors		Hermetic Scroll 48.3 r/s										
Circuit A	Qty	1	1	1	1	1	1	2	2	2	2	2
Number of power stages	Qty	1	1	1	1	1	1	2	2	2	2	2
Refrigerant (3)		R410A (GWP=2088 following ARI4)										
Circuit A	kg	3,5	3,5	3,6	3,7	4	4,6	7,6	7,8	7,9	8,7	11,5
	tCO_2e	7,3	7,3	7,5	7,7	8,4	9,6	15,9	16,3	16,5	18,2	24
Oil charge		TYPE: 160SZ										
Circuit A	l	3	3,3	3,3	3,3	3,3	3,6	3,3	3,3	3,3	3,3	3,6
Power control		Connect Touch Control										
Minimum capacity	%	100	100	100	100	100	100	50	50	50	50	50
Water type heat exchanger												
Evaporator		Plate heat exchanger with direct expansion										
Water volume	l	3,3	3,6	3,6	4,2	4,6	5	8,4	9,2	9,6	10,4	12,5
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger										
Water volume	l	3,3	3,6	3,6	4,2	4,6	5	8,4	9,2	9,6	10,4	12,5
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydronic module (optional)												
Single pump		Pump, Victaulic screen filter, drain valves (water and air), pressure sensors										
Expansion tank volume (optional)	l	8	8	8	8	8	8	12	12	12	12	12
Expansion vessel pressure(4)	bar	3	3	3	3	3	3	3	3	3	3	3
Max. water-side operating pressure with hydraulic module	kPa	300	300	300	300	300	300	300	300	300	300	300
Water connections with or without hydronic module		Victaulic®										
Connections	inch	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
External diameter	mm	48,3	48,3	48,3	48,3	48,3	48,3	60,3	60,3	60,3	60,3	60,3
Casing paint		Colour code: RAL 7035 / RAL 7024										

(3) Values shown are a guideline only. Please refer to the unit nameplate
(4) On delivery, the vessels are preinflated to a standard value, which may not be the optimum one for the installation. To enable the water volume to be varied as desired, adapt the inflation pressure to a value close to that which corresponds to the static height of the installation. Fill the installation with water (bleeding out any air) at a pressure more than 10 to 20 kPa higher than the vessel pressure.

TECHNICAL CHARACTERISTICS

DYNACIAT LG				360	390	450	480	520	600
Heating									
Standard unit Full load performances*	HW1	Nominal capacity	kW	137	156	172	183	206	230
		COP	kW/kW	5,60	5,57	5,49	5,64	5,59	5,56
	HW2	Nominal capacity	kW	131	148	163	174	197	218
		COP	kW/kW	4,42	4,43	4,37	4,40	4,48	4,36
	HW3	Nominal capacity	kW	125	140	155	166	189	209
		COP	kW/kW	3,58	3,62	3,56	3,60	3,76	3,59
Standard unit Seasonal energy efficiency**	HW1	SCOP $_{30/35°C}$	kWh/kWh	6,24	6,28	6,18	6,24	6,24	6,08
		ηs heat $_{30/35°C}$	%	242	243	239	242	241	235
	HW3	**SCOP $_{47/55°C}$**	**kWh/kWh**	**5,02**	**5,05**	**5,01**	**4,99**	**5,14**	**4,92**
		ηs heat $_{47/55°C}$	**%**	**193**	**194**	**192**	**192**	**198**	**189**
		P_{rated}	kW	143	161	178	191	216	239
Cooling									
Standard unit Full load performances *	CW1	Nominal capacity	kW	115	130	144	153	172	192
		EER	kW/kW	4,78	4,75	4,68	4,81	4,76	4,77
		Eurovent class		B	B	B	B	B	B
	CW2	Nominal capacity	kW	155	176	196	207	230	262
		EER	kW/kW	6,17	6,07	5,98	6,20	5,94	6,09
		Eurovent class		A	A	A	A	A	A
Standard unit Seasonal energy efficiency**		SEER $_{12/7°C}$ Comfort low temp.	kWh/kWh	6,05	6,16	6,07	5,91	5,97	5,87
		SEPR $_{12/7°C}$ Process high temp.	kWh/kWh	6,92	7,05	6,90	6,69	6,69	6,69
Unit with Low-temperature brine solution option Seasonal energy efficiency**		SEPR $_{-2/-8°C}$ Process medium temp.***	kWh/kWh	4,30	4,45	4,42	4,66	4,72	4,68
Part Load integrated values		IPLV.SI	kW/kW	6,860	6,980	6,900	6,820	6,890	6,820
Sound levels									
Standard unit									
Sound power(1)			dB(A)	76	77	78	76	77	78
Sound pressure at 10 m(2)			dB(A)	44	45	46	44	45	47
Unit with Low Noise option									
Sound power(1)			dB(A)	73	74	75	73	74	75
Sound pressure at 10 m(2)			dB(A)	41	42	43	41	42	44

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2016, average climate
***	With EG 30%
HW1	Heating mode conditions: Evaporator water inlet/outlet temperature 10 °C/7 °C, condenser water inlet/outlet temperature 30 °C/35 °C, evaporator fouling factor 0 m². k/W
HW2	Heating mode conditions: Evaporator water inlet/outlet temperature 10 °C/7 °C, condenser water inlet/outlet temperature 40 °C/45 °C, evaporator fouling factor 0 m². k/W
HW3	Heating mode conditions: Evaporator water inlet/outlet temperature 10 °C/7 °C, condenser water inlet/outlet temperature 47 °C/55 °C, evaporator fouling factor 0 m². k/W
CW1	Cooling mode conditions: Evaporator water inlet/outlet temperature 12 °C/7 °C, condenser water inlet/outlet temperature 30 °C/35 °C, evaporator fouling factor 0 m². k/W
CW2	Cooling mode conditions: Evaporator water inlet/outlet temperature 23 °C/18 °C, condenser water inlet/outlet temperature 30 °C/35 °C, evaporator fouling factor 0 m². k/W
ηs heat $_{30/35°C}$ & SCOP $_{30/35°C}$	Values calculated in accordance with EN14825:2016
ηs heat $_{47/55°C}$ & SCOP $_{47/55°C}$	**Bold values compliant to Ecodesign regulation: (EU) No 813/2013 for Heat Pump application**
SEER $_{12/7°C}$ & SEPR $_{12/7°C}$	Values calculated in accordance with EN14825:2016
SEPR $_{-2/-8°C}$	Values calculated in accordance with EN14825:2016
IPLV.SI	Calculated as per AHRI standard 551-591(SI).
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

TECHNICAL CHARACTERISTICS

DYNACIAT LG		360	390	450	480	520	600
Dimensions							
Length	mm	880	880	880	880	880	880
Width	mm	1583	1583	1583	1583	1583	1583
Height	mm	1574	1574	1574	1574	1574	1574
Operating Weight (3)							
Standard unit	kg	721	742	765	844	872	899
Unit with evaporator with single LP pump	kg	996	1022	1048	1158	1230	1261
Unit with condenser with single LP pump	kg	1016	1042	1068	1178	1230	1261
Unit with evaporator with single variable-speed HP pump + condenser with single variable-speed HP pump	kg	1056	1082	1108	1218	1270	1301
Compressors		Hermetic Scroll 48.3 r/s					
Circuit A	Qty	3	3	3	2	2	2
Circuit B	Qty	-	-	-	2	2	2
Number of power stages	Qty	3	3	3	4	4	4
Refrigerant (3)		R410A (GWP=2088 following ARI4)					
Circuit A	kg	13,3	14,7	15,3	10,5	11,5	12,1
	tCO_2e	27,8	30,7	31,9	21,9	23,9	25,05
Circuit B	kg	-	-	-	10,5	11,25	12
	tCO_2e	-	-	-	21,9	23,9	25,05
Oil charge		TYPE: 160SZ					
Circuit A	l	3,3	3,3	3,6	3,3	3,3	3,6
Circuit B	l	-	-	-	3,3	3,3	3,6
Power control		Connect Touch Control					
Minimum capacity	%	33	33	33	25	25	25
Water type heat exchanger							
Evaporator		Plate heat exchanger with direct expansion					
Water volume	l	15	17	19	23	26	29
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger					
Water volume	l	15	17	19	23	26	29
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Hydronic module (optional)							
Single pump		Pump, Victaulic screen filter, drain valves (water and air), pressure sensors					
Expansion tank volume (optional)	l	25	25	25	35	35	35
Expansion vessel pressure(4)	bar	4	4	4	4	4	4
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400
Water connections with or without hydronic module		Victaulic®					
Connections	inch	2,5	2,5	2,5	3	3	3
External diameter	mm	73	73	73	88,9	88,9	88,9
Casing paint		Colour code: RAL 7035 / RAL 7024					

(3) Values shown are a guideline only. Please refer to the unit nameplate

(4) On delivery, the vessels are preinflated to a standard value, which may not be the optimum one for the installation. To enable the water volume to be varied as desired, adapt the inflation pressure to a value close to that which corresponds to the static height of the installation. Fill the installation with water (bleeding out any air) at a pressure more than 10 to 20 kPa higher than the vessel pressure.

ELECTRICAL SPECIFICATIONS

DYNACIAT LG - Standard unit (without hydraulic module)		080	090	100	120	130	150	180	200	240	260	300	360	390	450	480	520	600
Power circuit																		
Nominal voltage	V-ph-Hz	400-3-50																
Voltage range	V	360-440																
Control circuit supply		24 V via internal transformer																
Nominal unit current draw(3)																		
Circuit A&B	A	10,5	13,2	13,8	15,6	16,2	20,2	26,4	27,6	31,2	32,4	40,4	46,8	48,6	60,6	62,4	64,8	80,8
Maximum unit power input(2)																		
Circuit A&B	kW	9,2	10,8	11,7	13,7	15,1	17,1	21,5	23,3	27,3	30,3	34,2	41	44,9	51,2	54,6	59,8	68,3
Unit power factor at maximum capacity(2)		0,85	0,83	0,85	0,85	0,86	0,85	0,83	0,85	0,85	0,86	0,85	0,85	0,85	0,85	0,85	0,85	0,85
Maximum unit current draw (Un-10%)(5)																		
Circuit A&B	A	17,3	20,8	22	25,8	28,2	32,2	41,6	44	51,6	56,4	64,4	77,3	84,7	96,7	103,1	112,9	128,9
Maximum current draw (Un)(4)																		
Circuit A&B - Standard unit	A	15,6	18,7	19,8	23,2	25,4	29	37,4	39,6	46,4	50,8	58	69,6	76,2	87	92,8	101,6	116
Maximum start-up current, standard unit (Un)(1)																		
Circuit A&B	A	98	142	142	147	158	197	161	162	170	183	226	193,4	208,8	255	216,6	234,2	284
Maximum start-up current, unit with soft start (Un)(1)																		
Circuit A&B	A	53,9	78,1	78,1	80,9	86,9	108,4	96,8	97,9	104,1	112,3	137,4	127,3	137,7	166,4	150,5	163,1	195,4

(1) Maximum instantaneous starting current (maximum operating current of the smallest compressor(s) + locked rotor current of the largest compressor).
(2) Power input, at the unit's permanent operating limits (indication given on the unit's name plate).
(3) Standardised EUROVENT conditions, water type heat exchanger input/output = 12°C/7°C, outdoor air temperature = 35°C.
(4) Maximum unit current at 400V, during non-permanent operation (indication given on the unit's name plate)
(5) Maximum unit current at 360V, during non-permanent operation

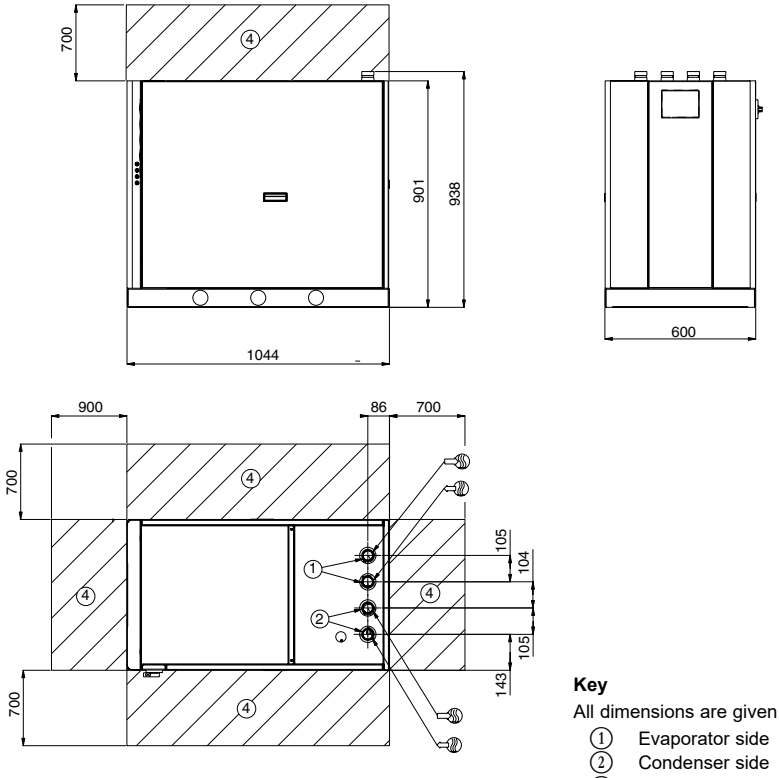
Short circuit current withstand capability (TN system(1))

DYNACIAT LG		080	090	100	120	130	150	180	200	240	260	300	360	390	450	480	520	600
Value without upstream protection																		
Short time assigned current (1s) - Icw	kA eff	3	3	3	3	3	3	3	3	3	3	3	5,5	5,5	5,5	5,5	5,5	5,5
Allowable peak assigned current - Ipk	kA pk	6	6	6	6	6	6	6	6	6	6	6	20	20	20	20	20	20
Value with upstream protection																		
Conditional short circuit assigned current Icc	kA eff	40	40	40	40	40	40	40	40	40	40	40	154	154	154	154	154	154
Associated Schneider circuit breaker - Compact type range(2)		NSX 100N																

(1) Type of system earthing
(2) If another current limiting protection device is used, its time-current trip and I^2t thermal stress characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit withstand values given above were determined for the TN system.

DIMENSIONS

DYNACIAT LG 80A to 150 without hydraulic module



Key

All dimensions are given in mm

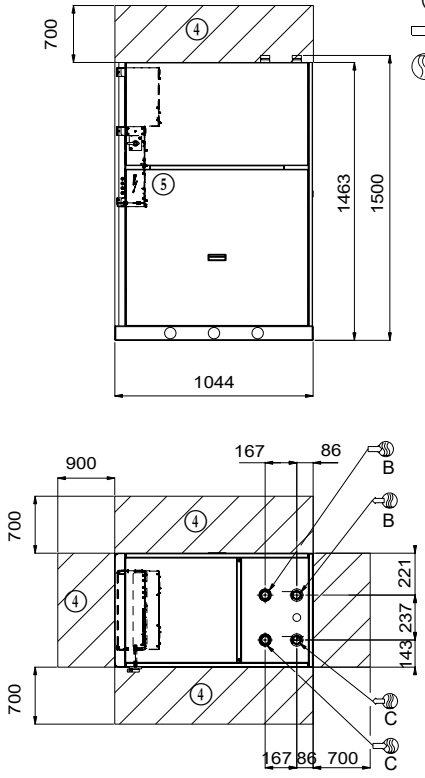
1. Evaporator side
2. Condenser side
3. Valve
4. Clearances required for maintenance (see Note)
5. Electrical box

Water inlet

Water outlet

Electrical power connection

DYNACIAT LG 80A to 150 with hydraulic module

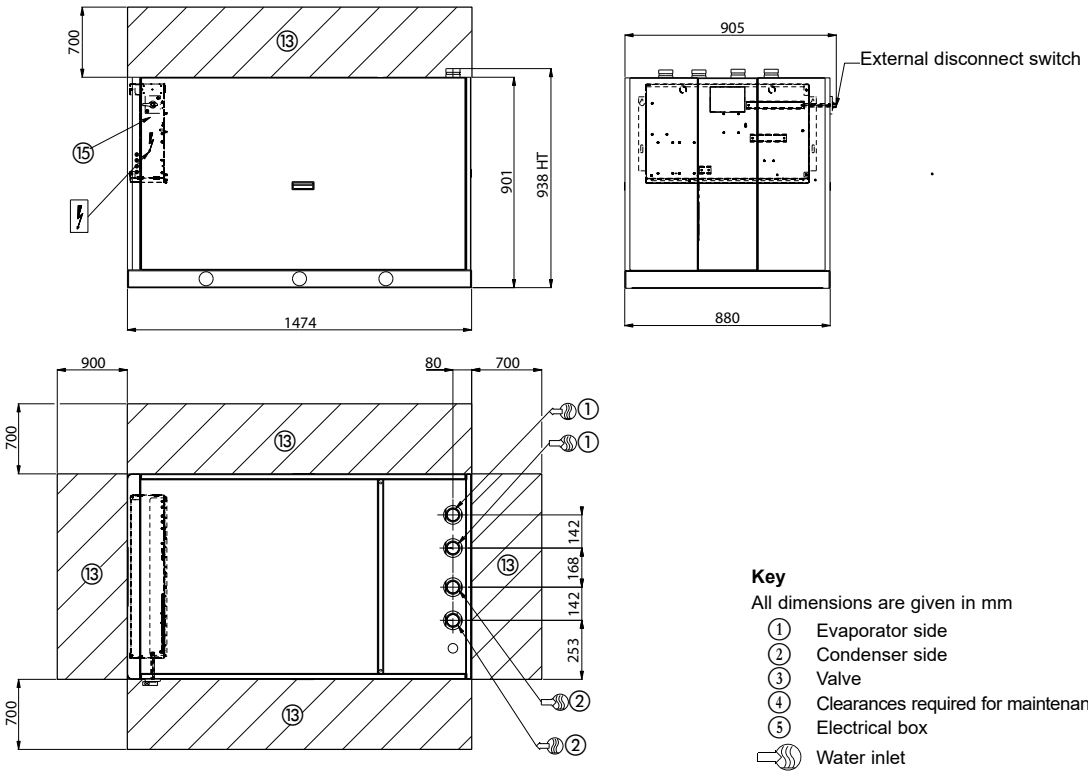


Notes:

Non-contractual drawings.
When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

DIMENSIONS

DYNACIAT LG 180 to 300 without hydraulic module



Key

All dimensions are given in mm

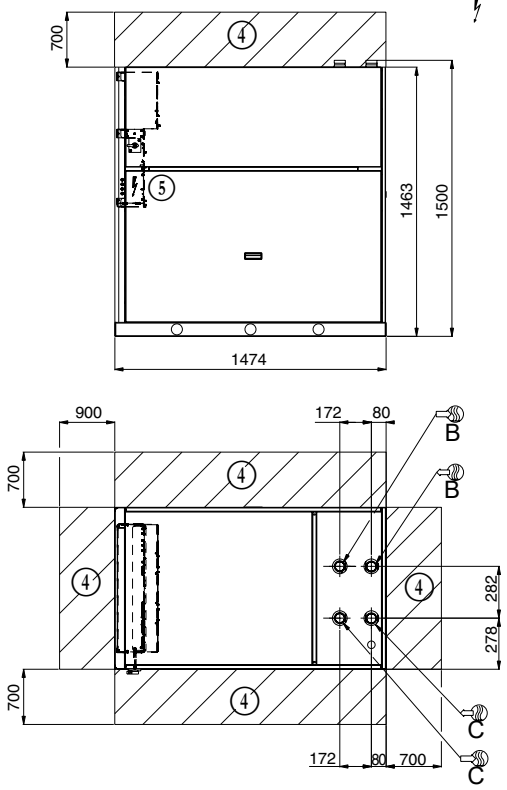
1. Evaporator side
2. Condenser side
3. Valve
4. Clearances required for maintenance (see Note)
5. Electrical box

Water inlet

Water outlet

Electrical power connection

DYNACIAT LG 180 to 300 with hydraulic module

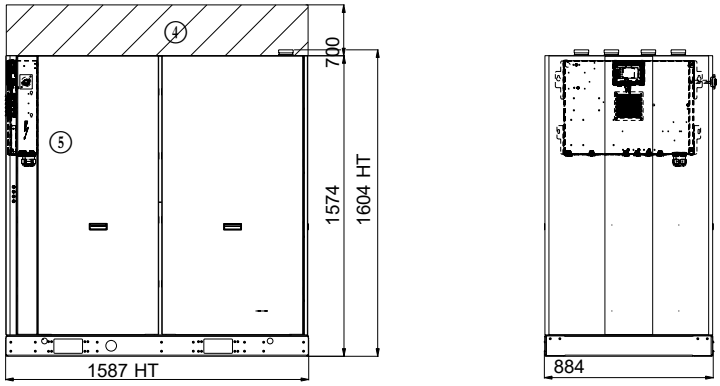


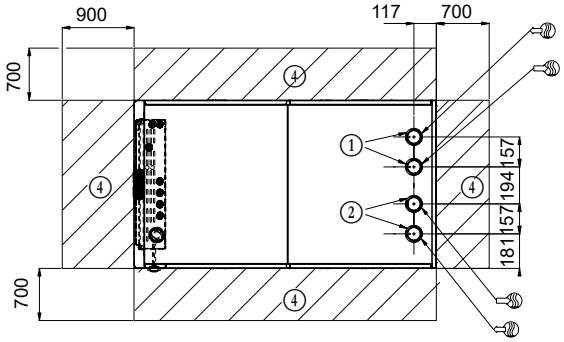
Notes:

Non-contractual drawings.
When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

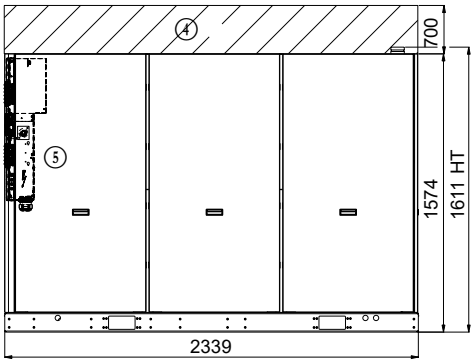
DIMENSIONS

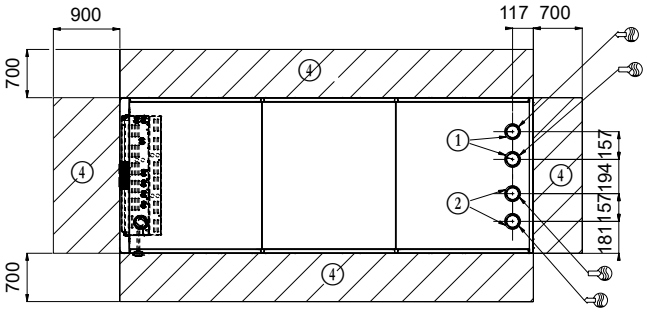
DYNACIAT LG 360 to 450 without hydraulic module





DYNACIAT LG 360 to 450 with hydraulic module





Key

All dimensions are given in mm

1. Evaporator side
2. Condenser side
3. Valve
4. Clearances required for maintenance (see Note)
5. Electrical box

Water inlet

Water outlet

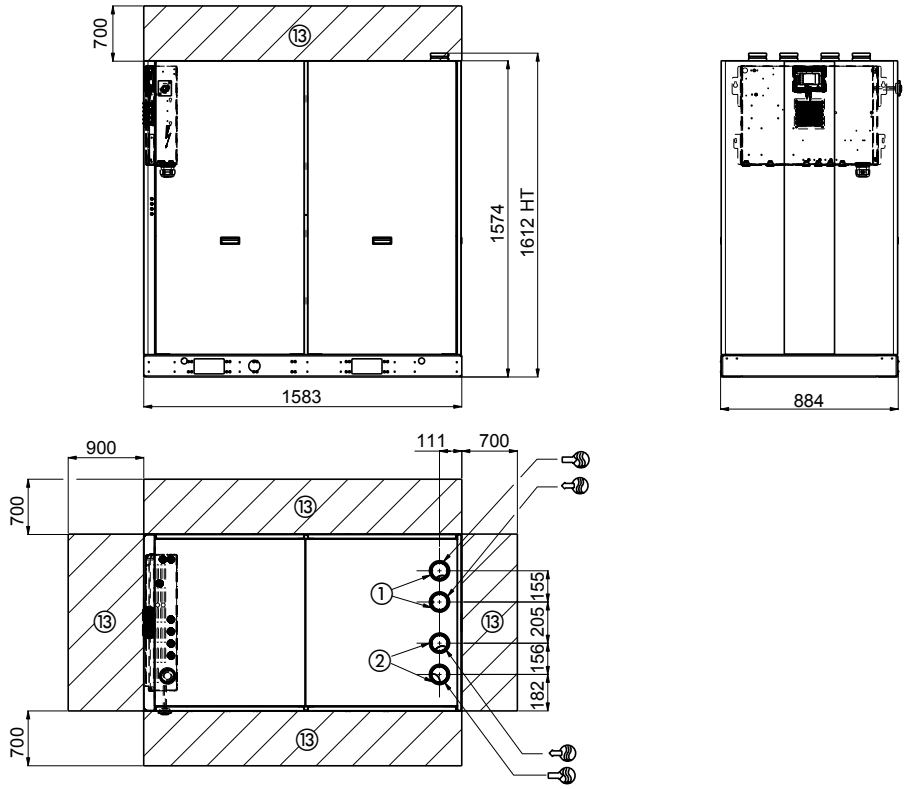
Electrical power connection

Notes:

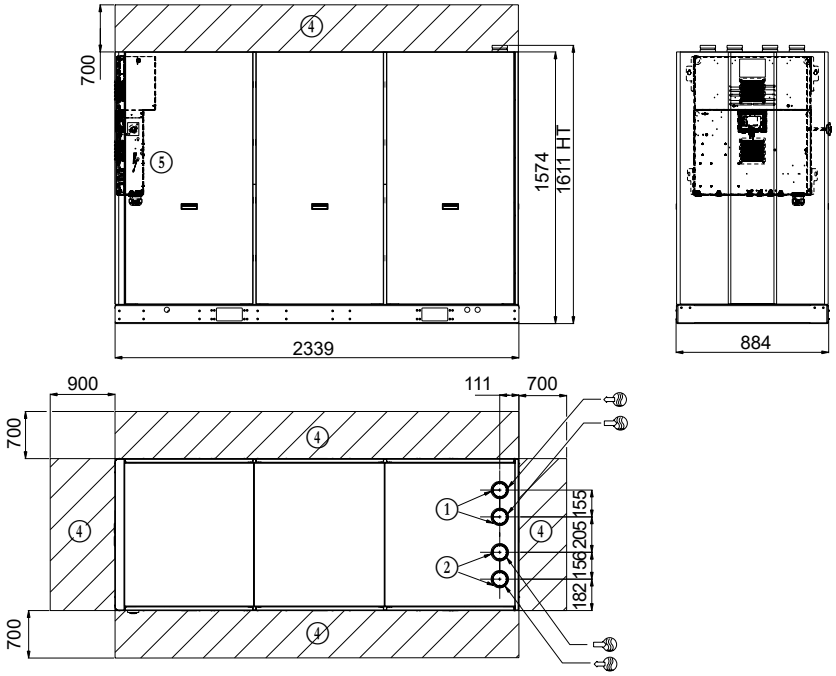
Non-contractual drawings.
When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

DIMENSIONS

DYNACIAT LG 480 to 600 without hydraulic module



DYNACIAT LG 480 to 600 with hydraulic module



Key

All dimensions are given in mm

1. Evaporator side
2. Condenser side
3. Valve
4. Clearances required for maintenance (see Note)
5. Electrical box

Water inlet

Water outlet

Electrical power connection

Notes:

Non-contractual drawings.
When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.