



High energy efficiency

Compact and quiet

Scroll compressors

Brazed-plate heat exchangers

Self-adjusting electronic control

Hydraulic module linked with aquatherm module



Cooling capacity: 30 to 80 kW
Heating capacity: 40 to 100 kW



Cooling or heating



Hydraulic module



USE

DYNACIAT ILG packaged reversible water-to-water heat pumps are medium-capacity machines designed for heating or air conditioning applications in collective housing blocks and commercial premises. They operate by drawing or recovering heat from the ground (horizontal or vertical geothermal loop) or from groundwater.

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

Connected to an underfloor heating-cooling system, comfort units or an air handling unit, the DYNACIAT ILG can heat or cool buildings by reversing the refrigerating cycle.

Each unit is delivered fully assembled, wired (control and power), charged with refrigerant and factory tested. Simply make the necessary electrical and hydraulic connections, and your unit is ready to operate.

In order to enable quick and easy installation, this range includes a hydraulic option (user side) and a water-source option (sensor side).

These independent modules can be seamlessly integrated into a technical room.

RANGE

DYNACIAT ILG series

Water-to-water reversible heat pumps

DESCRIPTION

The DYNACIAT ILG is supplied as standard with the following components:

- hermetic SCROLL compressors
- water-cooled condenser type heat exchanger
- chilled-water evaporator type heat exchanger
- chilled water or hot water outlet power control
- control, automatic operation and startup box:
 - . Power supply: 3~50 Hz 400 V (+10%/-10%) + earth
 - . Control circuit 1~50 Hz 230 V (+10%/-10%) (transformers fitted on unit as standard)
- casing for indoor installation

The entire AQUACIATPOWER range complies with the following EC directives and standards:

- Machinery directive 2006/42/EC.
- Electromagnetic compatibility directive 2014/30/EU.
- Electromagnetic compatibility 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
- Refrigerating systems and heat pumps EN 378-2
- EN 60-204 and EN 378-2

MAIN COMPONENTS

■ Casing

- Casing made from galvanised sheet metal panels
- RAL 7024 and RAL 7035 lacquer coating

■ Hermetic SCROLL compressors

- Built-in electric motor cooled by suction gases
- Motor protected by internal winding thermostat
- Placed on anti-vibration mounts

■ Evaporator

- Brazed-plate exchanger
- End and inside plates in AISI 316 stainless steel
- High-performance, optimised plate patterns
- Thermal insulation

■ Condenser

- Brazed-plate exchanger
- End and inside plates in AISI 316 stainless steel
- High-performance, optimised plate patterns
- Thermal insulation

■ Control functions and safety devices

- Thermostatic expansion valve
- Refrigerant high and low pressure safety devices
- Safety valves on refrigeration circuit
- Temperature and pressure sensors
- Evaporator water flow controller fitted

■ Electrics box

The fully wired electrics box, which houses all the electrical components and the electronic CPU board, controls the entire unit, monitors its operation, adjusts water setpoints and interfaces with an external control system.

It comprises:

- Control and power circuits
- Wire numbering
- Main safety switch with handle on front
- Control circuit transformer
- Circuit breakers on the power and control circuits
- Compressor and motor switch(es)
- Main earth connection
- Alarm or information signals on free terminals

Options (kit for installation on site)

■ Main options (delivered separately)

- Hydraulic module
- Aquatherm module
- Evaporator and condenser flexible couplings
- 800-micron water filter on evaporator and condenser
- Phase controller (rotation, missing phases, overvoltage and undervoltage)
- Soft Start gradual start-up

MICROCONNECT electronic control module

■ Components

- 1 control terminal with display to view and select the different modes (on/off, heating/cooling mode, timer, weekly programming)
- an electronic control board
- an outdoor temperature sensor

■ Functions

- controls the water or air temperature in each mode
- continuous monitoring of operating parameters
- display and diagnosis of faults
- setpoint adjustment based on outdoor temperature (in heating and cooling modes)
- auxiliary management
- management and automatic equalisation of compressor operating time (multiple compressors)
- dialogue with remote control terminal



STANDARD EQUIPMENT/AVAILABLE OPTIONS

DYNACIAT ILG	ILG 120 V to 300 V
Safety switch	●
Control circuit transformer	●
Electrical cabinet wire numbers	●
Water flow controller	●
Anti-vibration mounts	●
Hydraulic module	■
Aquatherm module (120 - 300)	■
Soft start	■
Water filter on evaporator and condenser	■
Phase controller (reversal, loss, asymmetry)	■
Flexible hydraulic couplings on evaporator and condenser	■
Refrigent leak detection	■
Underfloor heating/cooling system thermostat kit	■
Humidity sensor for underfloor heating/cooling system	■
DUO model (floor management + terminal unit)	■
Loop heater (9 or 15 kW)	■
400 L mixer tank	■
9 kW auxiliary electric heater kit	■

● Supplied as standard

▲ Factory-assembled option

■ Option supplied as a kit

- Not available

TECHNICAL AND ELECTRICAL PROPERTIES

DYNACIAT ILG		120V	150V	200V	240V	300V
Performance	Net cooling capacity (1)	29	37,8	50,5	58,9	76,7
	Net power input (1)	8,4	10,8	14,6	16,3	20,9
	Net energy efficiency rating (EER) (1)	3,44	3,51	3,46	3,62	3,67
	Net ESEER	3,53	3,61	4,31	4,38	4,34
	Net heating capacity (2)	39,2	51,2	68,3	79	101,9
	Net power input (2)	9,9	12,7	17,3	19	24,16
	Net COP (2)	3,98	4,02	3,95	4,16	4,15
	Net Seasonal Coefficient of Performance (SCOP) (3)	5,33	5,36	5,63	6,02	5,54
	η_s heating	205	206	217	233	214
	Prated	41,14	55,85	74,85	83,83	106,64
Sound power level (4)	67	70	69	70	73	
Refrigeration circuit	No. of refrigerating circuits	1				
	Refrigerant (GWP)	R410A (GWP =2088)				
	Refrigerant content	3,25	3,6	5,5	8,1	9,2
	CO ₂ equivalent tonne	6,78	7,51	11,48	16,91	19,20
Compressor	Type	Hermetic SCROLL (2900 rpm)				
	Start-up mode	- Direct in series				
	Number	1		2		
	Power control	100-0	100-0	100-50-0	100-50-0	100-50-0
	Refrigerant oil type	Polyolester POE 3MAF (32cSt)				
Power supply	Oil capacity	3,25	4,14	6,50	6,50	8,28
	Type	ph/Hz/V 3~50Hz 400V (+10%/-10%) + Earth				
	Max. rated current	23,2	30,2	42,2	46,2	60,2
	Starting current	137	174	139,	160	204
	Starting current Soft Start option	70	60	76	93	90
	Breaking capacity	kA 50				
	Unit protection	IP22				
	Max. wire cross-section	mm ² 50				
	Control circuit voltage	ph/Hz/V 1~50 Hz 230 V (+10%/-10%) - transformer fitted				
	Indoor circuit	Type	Brazed-plate heat exchanger			
Water content		2,7	3,6	4,8	5,3	9,9
Minimum/maximum water flow rate		4.1 / 14	5.3 / 18	7.2 / 25	8.4 / 28	11 / 36
Water connections		Ø G 1"1/2				G 2"
Max service pressure		bar 10 bar, water side				
Outdoor circuit	Type	Brazed-plate heat exchanger				
	Water content	2,7	3,6	4,8	5,8	9,9
	Min/max water flow	4.1 / 14	5.3 / 18	7.2 / 25	8.4 / 28	11 / 36
	Water connections	Ø G 1"1/2				G 2"
	Max service pressure	bar 10 bar, water side				
Dimensions	Min water volume	226	299	197	222	292
	Operating height	mm 1201				
	Length	798		1492		
	Depth	mm 883				
	Weight	Weight (empty)	226	289	379	452
Operating weight		237	301	394	468	622
Storage temperature		°C -20°C/+50°C				

Outputs in accordance with EUROVENT standard EN 14511 - 2013 conditions

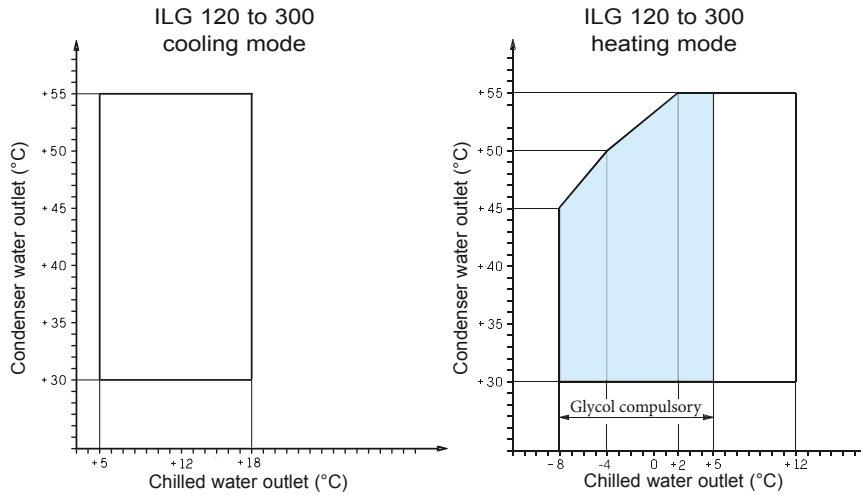
(1) Chilled water 12°C / 7°C and hot water 30°C / 35°C

(2) Chilled water 10°C / 7°C and hot water 40°C / 45°C

(3) Hot water 30°C/35°C - Average climate conditions according to standard EN 14825-2013

(4) LW: Overall sound power level as per ISO3744

OPERATING RANGE



EVAPORATOR LIMITS

The curves opposite show the minimum and maximum acceptable temperature differences for chilled water or glycol/water solution based on the outlet temperature.

■ Glycol/water mix

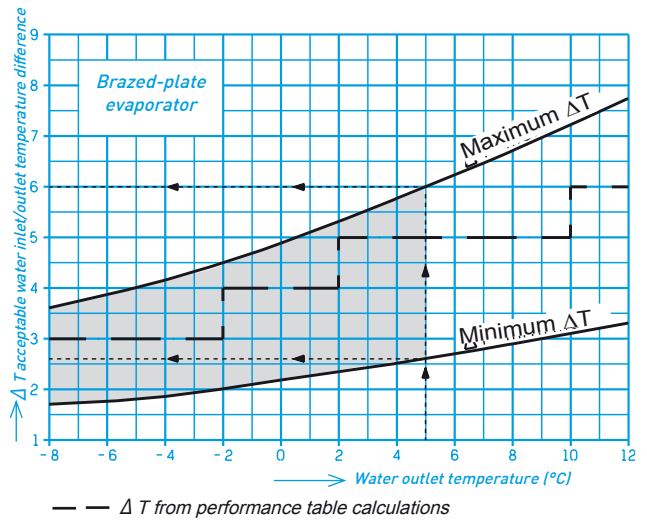
Example:

For a water outlet temperature of +5°C

Minimum difference: 2.6°C Water temperature: 7.6/5°C

Maximum difference: 6°C Water temperature: 11/5°C

If the temperature difference calculated is outside these two curves, contact us.



CORRECTION FACTOR FOR ETHYLENE GLYCOL

■ Evaporator

% concentration volume percent of ethylene	Cooling capacity	Multiplier correction factor	
		Water flow rate	Pressure drops
10	0.99	1.05	1.05
20	0.985	1.10	1.10
30	0.98	1.15	1.15
40	0.97	1.20	1.23

■ Glycol concentration required

Volume concentration in %		0	10	20	30	40
Ethylene glycol	Freezing point °C	0	-4	-10	-18	-27
	Minimum water outlet °C	5	3	-1	-7	-14
Propylene glycol	Freezing point °C	0	-4	-9	-16	-25
	Minimum water outlet °C	5	4	1	-4	-9

MINIMUM WATER VOLUME

The MICROCONNECT controller uses anticipation logic making it particularly flexible in adjusting operation to changes in settings, particularly on low-volume hydraulic systems.

By adjusting compressor running times, it prevents short-cycle protection cycles from starting and, in most cases, eliminates the need for a buffer tank.

The calculation of the minimum water volume is given for EUROVENT rated conditions, in cooling mode only.

This value is applicable for most air conditioning applications (unit with fan coil units)

Note: For installations running with a low volume of water (unit with air handling unit) or for industrial processes, the buffer tank is essential.

For heat pump applications, we recommend the use of a buffer tank to ensure a stable temperature is maintained during the defrosting cycles.

ILG models	120V	150V	200V	240V	300V
Min. system capacity (litres)	226	299	197	222	292

SOUND LEVELS

The DYNACIAT ILG range features a "noiseless" construction designed to reduce vibrations and noise sources:

- Scroll compressor(s) fitted on anti-vibration mounts
- Refrigerating circuit mounted on a structure separate from the frame to prevent vibrations
- Pipework separate from the structure of the unit

■ Sound power level ref 2×10^{-12} Pa ± 3 dB (Lw)

Sizes	SOUND POWER LEVEL SPECTRUM (dB)							Overall Lw overall dB(A)
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
120V	77	65	65	59	59	61	59	67
150V	78	74	72	67	60	64	57	70
200V	78	60	60	62	62	64	62	69
240V	78	68	68	62	62	64	62	70
300V	81	77	75	70	63	67	60	73

■ Sound pressure level ref 2×10^{-5} Pa ± 3 dB (Lp)

Measurement conditions: ■ free field ■ 10 metres from machine, 1.50 metres above floor level ■ directivity 2

Sizes	SOUND PRESSURE SPECTRUM (dB)							Lp level overall dB(A)
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
120V	46	34	34	28	28	29	28	35
150V	47	43	41	35	29	33	25	39
200V	47	28	29	31	31	33	30	38
240V	47	37	37	31	31	32	31	38
300V	50	46	44	38	32	36	28	42

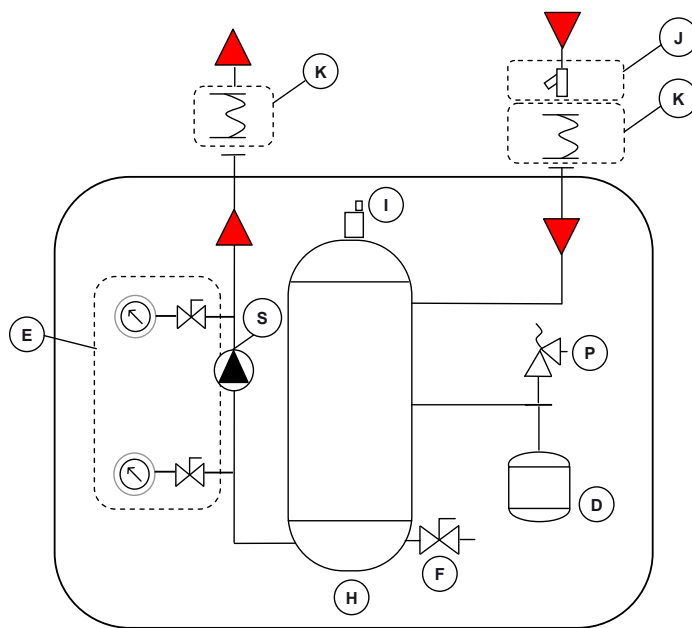
Note: Sound pressure levels depend on each system. As such, the levels listed above are given for information only. We remind you that only sound power levels are comparable and certified.

HYDRAULIC CONFIGURATION

Hydraulic module

This module is available as an option for the entire range.

Hydraulic module configuration



Features and options:

- (D) Expansion vessel
- (F) Drain valve
- (H) Buffer tank
- (I) Air bleed valve
- (P) Safety valve
- (S) Hydraulic pump

Options:

- (K) Kit for the flexible connections to the heat pump and indoor circuit
- (E) Pressure gauge + control valve kit
- (J) Screen filter

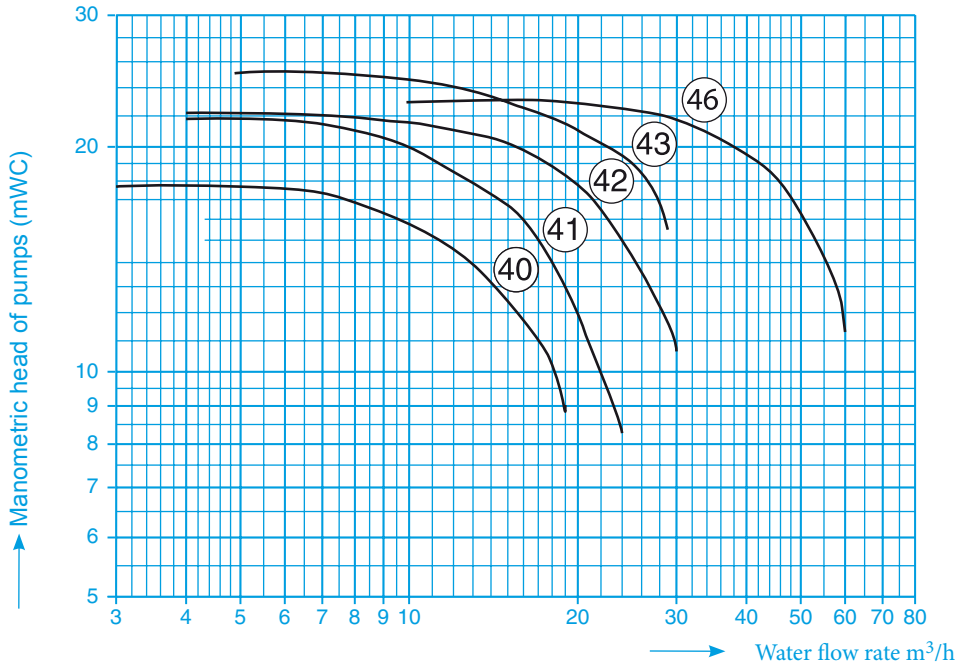
Hydraulic module specifications

MHG		40	41	42	43	46
Pump	No.	40	41	42	43	46
Max. power input	kW	0.95	1.37	1.83	2.62	3.54
Max. current at 50 Hz/400 V	A	1.91	2.36	3.15	5.2	6
Min water flow rate	m ³ /h	3	3	4	4	10
Max. pressure	mWC	17.5	21.5	22	24.5	23
Max water flow rate	m ³ /h	19	22.5	30	30	60
Min pressure	mWC	8.5	8	10	14	11.5
Tank volume	l	150				
Expansion vessel volume	l	24				
Electrical supply	V	3 ph - 50 Hz - 400 V (+10%/-10%) + earth				
Protection rating		IP 55				
Hydraulic connections	Ø	1"1/2 - 2" - 2"1/2				
Dimensions						
Height x Length x Depth	mm	1201 x 798 x 883				
Weight	Empty	kg				
	In operation	kg				

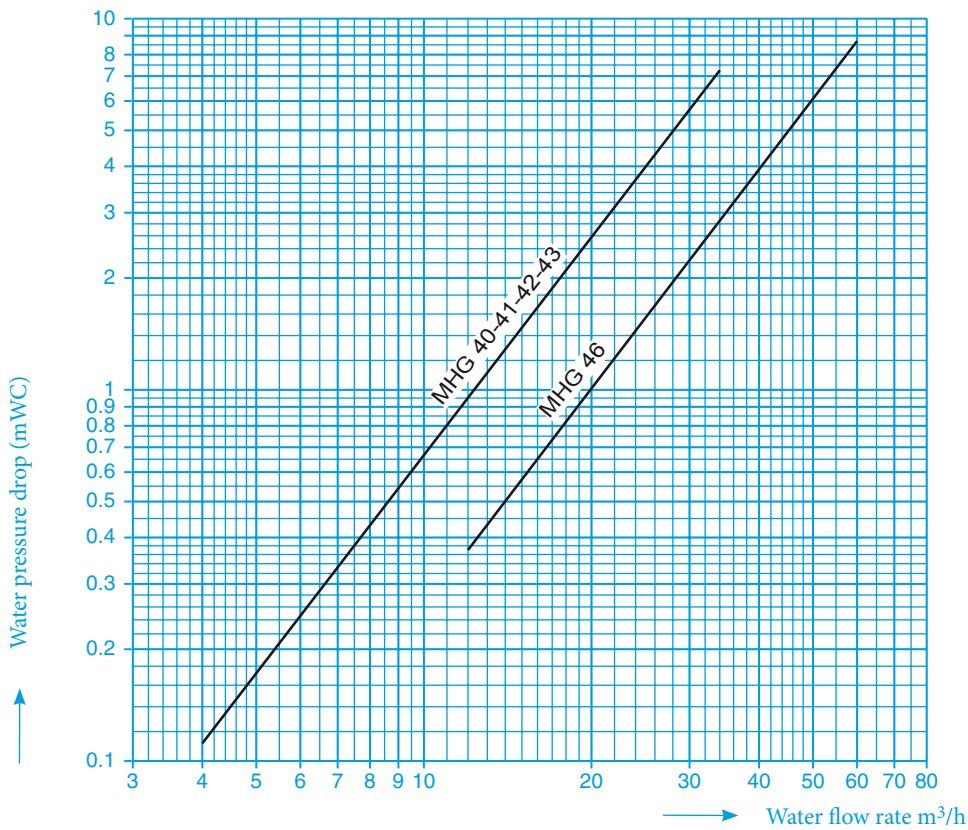
WATER PRESSURE DROP

Operating pressure - Single pumps 40 - 41 - 42 - 43 - 46

(does not take into account the pressure drop inside the hydraulic module and the heat pump)



Hydraulic module pressure drop

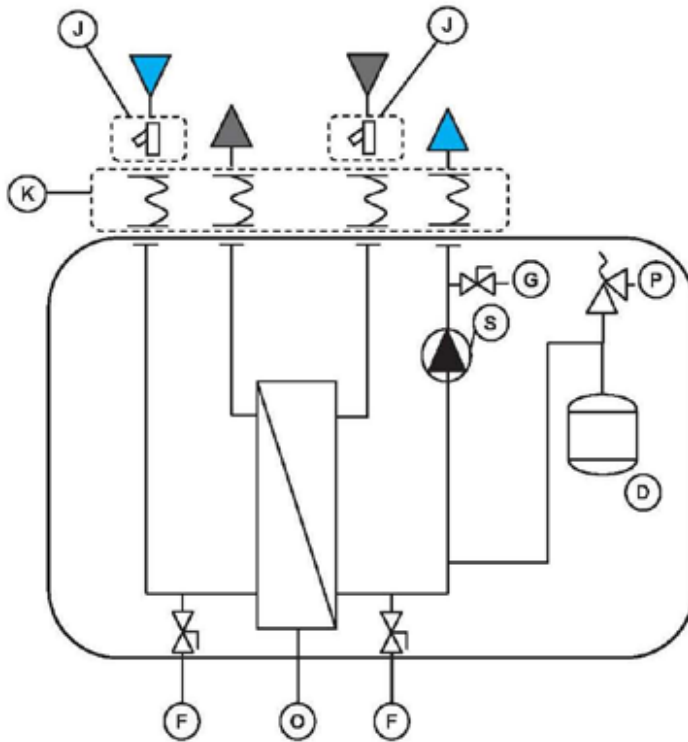


HYDRAULIC CONFIGURATION

■ Aquatherm module

This module is available as an option for the entire range.
It is connected to the sensor side in geothermal applications with an intermediate exchanger.

Aquatherm module configuration



Features and options:

- (D) Expansion vessel
- (F) Drain valve
- (G) Shut-off valve
- (O) ITEX AGEO exchanger
- (P) Safety valve
- (S) Accelerator pump

Options:

- (K) Kit for the flexible connections to the heat pump and indoor circuit
- (J) Screen filter

Aquatherm module specifications

MA		29	38	51	59	77
Exchanger		Itex Ageo 29	Itex Ageo 38	Itex Ageo 51	Itex Ageo 59	Itex Ageo 77
Accelerator pump*		IPL 50/120-1.5/2 N°140B				
Max. power input	kW	1,85				
Max. current at 50 Hz/400 V	A	3,2				
Min water flow rate	m ³ /h	5	6,5	9	10	13,5
Max. pressure	mWC	11.5	10.9	11.9	11.4	12.8
Max water flow rate	m ³ /h	14	18	25	28	36
Min. pressure	mWC	8.6	5.8	10.1	9.1	8.4
Expansion vessel volume	l	12				
Electrical supply	V	3 ph - 50 Hz - 400 V (+10%/-10%) + earth				
Protection rating		IPX4D				
Hydraulic connections	Ø	1"1/2				2"
Dimensions		1201 x 798 x 883				
Height x Length x Depth	mm	1201 x 798 x 883				
Weight	Empty	kg	246	368		383
	In operation	kg	258	396		423

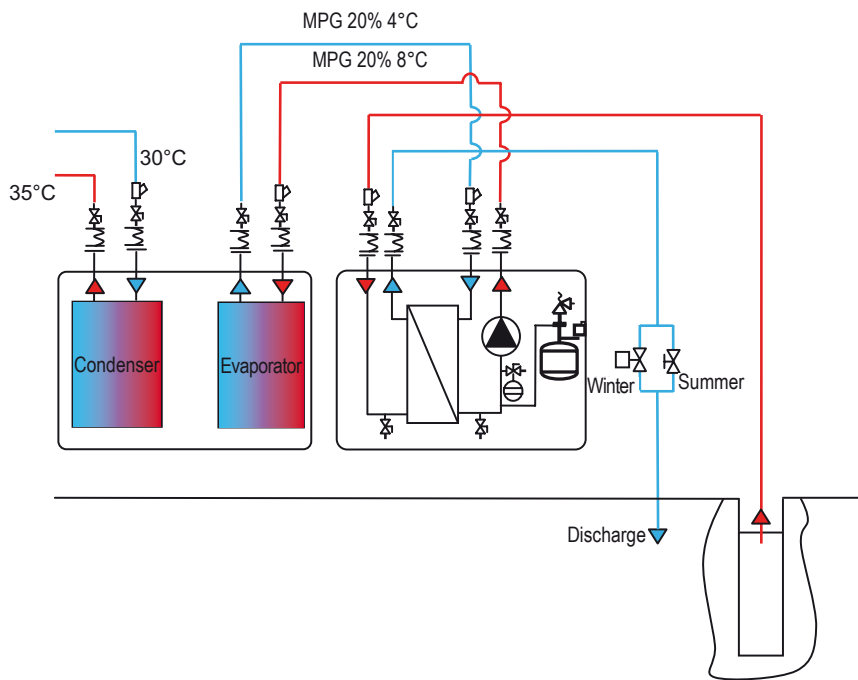
* 3-speed accelerator pump (factory set at medium speed)

WELL WATER INTERMEDIATE EXCHANGER SPECIFICATIONS

DYNACIAT ILG	Power exchanged* (kW)	Module MA	Primary operation water 10°C/6°C		Secondary operation MPG 20% 4/8°C
			Flow rate (m³/h)	Module pressure drop** (mWC)	Flow rate (m³/h)
120V	30.2	29	6.3	2.6	6.7
150V	39.2	38	8.2	3.6	8.7
200V	52.4	51	10.7	0.85	11.6
240V	60	59	13	1	13.3
300V	78.7	77	17.1	1.1	17.4

* Condenser mode 30/35°C

**Necessary for sizing the well pump

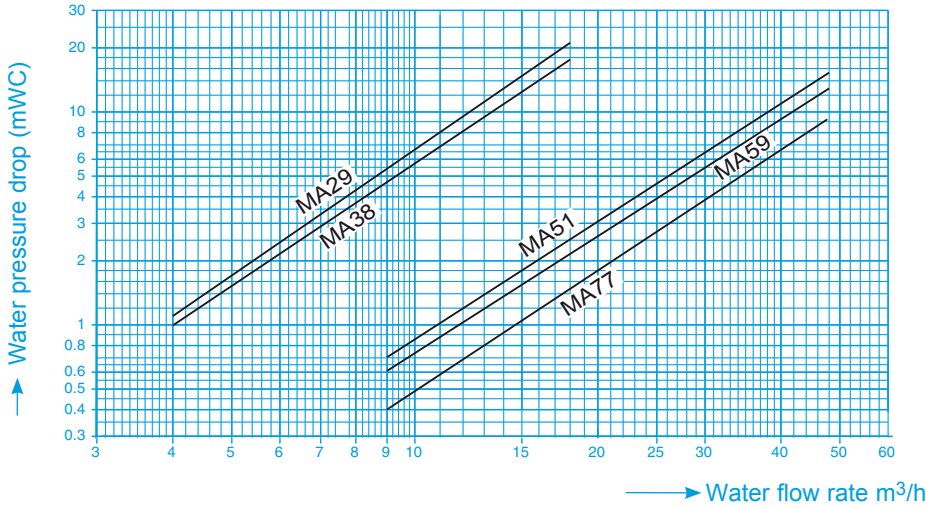


⊙ ITEX AGEO intermediate exchanger

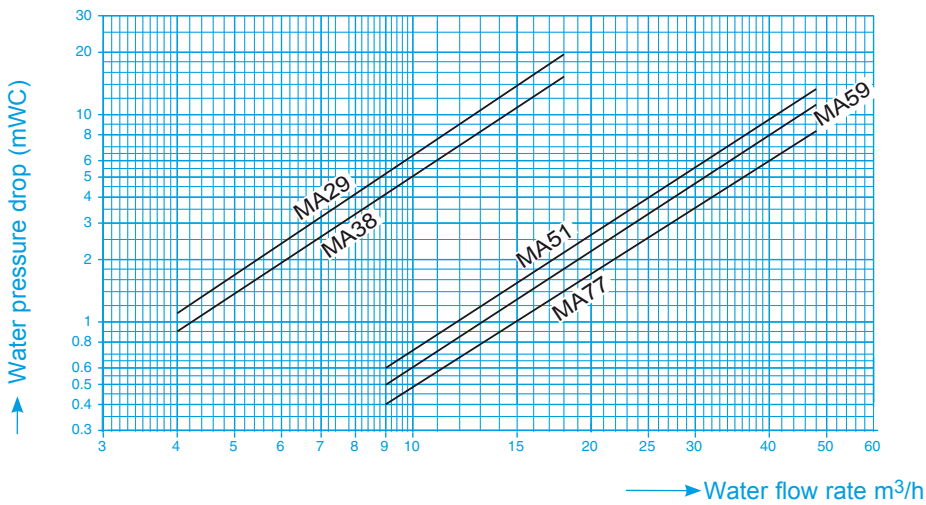


WATER PRESSURE DROP

Pressure drop for modules connected to ground water

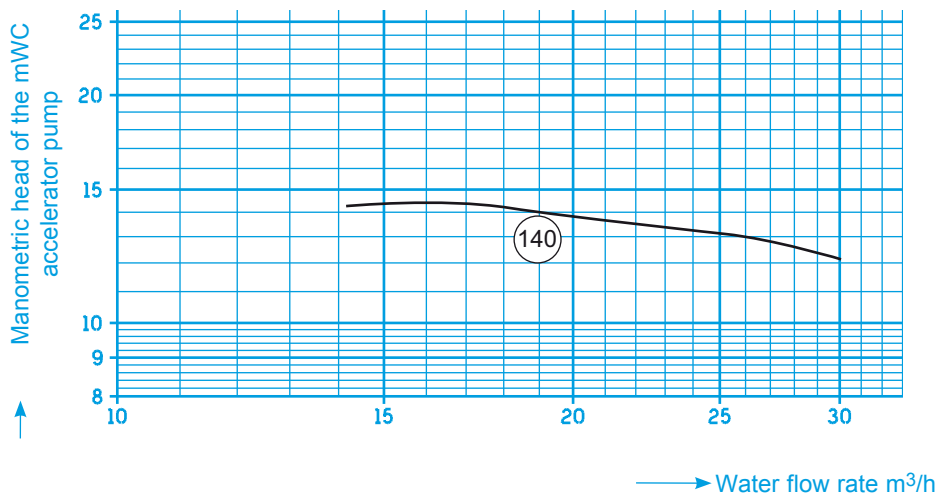


Pressure drop for modules connected to a heat pump



Operating pressure of the Aquatherm module accelerator pump (between the heat pump and the module)

Does not take into account the pressure drop inside the Aquatherm module and the heat pump



COOLING CAPACITIES - COOLING MODE



DYNACIAT ILG

R410A	ILG	Evaporator water outlet temperature (°C)	CONDENSER WATER OUTLET TEMPERATURE (°C)											
			30		35		40		45		50		55	
			Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
			kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
120V	Water	5	28.9	7.1	27.3	7.9	25.6	8.8	23.8	9.9	21.8	11.1	19.8	12.3
		7	31.0	7.1	29.2	8.0	27.4	8.9	25.5	9.9	23.4	11.1	21.4	12.3
		12	36.5	7.2	34.5	8.0	32.5	8.9	30.5	9.9	28.2	11.1	25.9	12.3
		15	40.0	7.3	38.0	8.0	36.0	8.9	33.5	9.9	31.0	11.1	28.7	12.3
		18	43.5	7.3	41.5	8.1	39.5	8.9	37.0	9.9	34.5	11.1	32.0	12.3
150V	Water	5	37.0	9.2	35.5	10.1	33.5	11.3	31.5	12.6	29.3	14.0	27.0	15.4
		7	40.0	9.2	38.0	10.2	35.9	11.4	33.8	12.7	31.5	14.1	29.0	15.5
		12	47.0	9.3	45.0	10.3	42.6	11.4	40.0	12.8	37.5	14.3	34.8	15.7
		15	51.5	9.4	49.0	10.3	46.5	11.5	44.0	12.8	41.0	14.3	38.5	15.8
		18	56.5	9.5	54.0	10.4	51.0	11.5	48.3	12.8	45.0	14.3	42.0	15.8
200V	Water	5	50.2	12.3	47.4	13.8	44.2	15.6	41.0	17.6	37.4	19.9	33.8	22.2
		7	53.6	12.4	50.8	13.9	47.4	15.6	44.0	17.6	40.4	19.9	36.8	22.2
		12	63.7	12.5	60.2	13.9	56.8	15.6	52.8	17.6	48.6	19.9	44.6	22.2
		15	70.0	12.5	66.0	14.0	62.5	15.6	58.4	17.6	54.0	19.9	49.6	22.2
		18	76.0	12.6	72.0	14.0	68.0	15.7	64.0	17.7	59.6	19.9	55.0	22.2
240V	Water	5	58.6	14.2	55.4	15.8	51.9	17.6	48.2	19.8	44.2	22.2	40.4	24.6
		7	62.0	14.2	59.1	15.8	55.6	17.6	51.8	19.8	47.6	22.2	43.4	24.6
		12	73.6	14.4	70.0	16.0	66.0	17.8	62.0	19.8	57.2	22.2	52.4	24.6
		15	81.0	14.4	77.0	16.0	73.0	17.8	68.3	19.8	63.0	22.2	58.2	24.4
		18	88.0	14.6	84.0	16.0	80.0	17.8	75.2	19.8	69.6	22.2	64.0	24.4
300V	Water	5	76.0	18.2	72.0	20.2	68.0	22.4	64.0	25.0	59.4	28.0	55.0	30.6
		7	80.7	18.2	77.0	20.2	73.0	22.6	68.7	25.2	64.0	28.0	59.0	30.8
		12	95.0	18.6	91.0	20.4	86.0	22.8	81.0	25.4	75.6	28.4	70.7	31.2
		15	104.0	18.8	100.0	20.6	95.0	22.8	89.2	25.4	83.7	28.4	78.0	31.4
		18	113.5	19.0	109.0	20.8	104.0	23.0	98.0	25.6	92.0	28.6	86.0	31.4

Cc: Gross cooling capacity
Pi: Compressors gross power input.

Standard conditions
Glycol/water mix mandatory
Calculated fouling: 0.00005 m² °C/W

HEATING CAPACITIES - HEATING MODE

DYNACIAT ILG



ILG		Evaporator water outlet temperature (°C)	CONDENSER WATER OUTLET TEMPERATURE (°C)												
			30		35		40		45		50		55		
			Hc kW	Pi kW	Hc kW	Pi kW	Hc kW	Pi kW	Hc kW	Pi kW	Hc kW	Pi kW	Hc kW	Pi kW	
120V	Glycol/water mix	-8	26.9	6.5	26.4	7.3	25.7	8.3	24.8	9.1					
		-4	30.2	6.5	29.5	7.2	28.8	8.2	28.0	9.1	27.1	10.3			
		2	35.9	6.6	35.2	7.3	34.3	8.1	33.4	9.2	32.6	10.3	31.2	11.9	
	Pure water	5	39.9	6.6	38.9	7.3	38.0	8.1	36.9	9.1	35.9	10.2	34.8	11.4	
		7	42.2	6.6	41.1	7.3	40.1	8.2	38.9	9.1	37.6	10.2	36.5	11.4	
		10	45.6	6.7	44.5	7.4	43.4	8.2	42.1	9.1	40.8	10.1	39.3	11.4	
		12	48.5	6.8	47.3	7.5	46.0	8.2	44.6	9.1	43.1	10.1	41.7	11.4	
	150V	Glycol/water mix	-8	34.6	8.2	34.0	9.2	33.5	10.3	32.7	11.4				
			-4	38.7	8.3	38.0	9.2	37.4	10.4	36.6	11.5	35.9	12.9		
			2	46.3	8.4	45.3	9.3	44.5	10.5	43.8	11.7	42.8	13.0	41.5	14.5
		Pure water	5	51.4	8.5	50.4	9.4	49.4	10.5	48.4	11.7	47.0	13.1	45.9	14.8
7			54.2	8.6	53.2	9.9	52.2	10.5	50.8	11.7	49.5	13.1	48.5	14.8	
10			58.8	8.7	57.6	9.6	56.3	10.6	54.8	11.8	53.3	13.2	51.7	14.8	
12			62.4	8.9	61.2	9.7	59.7	10.6	58.1	11.8	56.6	13.1	54.8	14.8	
200V		Glycol/water mix	-8	46.4	11.1	45.0	12.7	44.1	14.4	43.3	16.3				
			-4	52.3	11.1	50.9	12.6	50.2	14.3	49.1	16.2	47.7	18.2		
			2	62.3	11.3	60.9	12.7	59.6	14.3	58.0	16.1	56.1	18.0	54.7	20.6
		Pure water	5	69.6	11.4	67.9	12.8	66.2	14.3	64.5	16.0	62.8	18.2	61.1	20.2
	7		73.1	11.5	71.3	12.8	69.6	14.3	67.9	16.1	66.0	18.2	64.1	20.1	
	10		79.5	11.6	77.8	12.9	75.4	14.4	73.5	16.2	71.0	18.2	68.7	20.0	
	12		83.7	11.7	82.2	13.0	80.2	14.4	78.0	16.1	75.4	18.1	73.0	19.9	
	240V	Glycol/water mix	-8	53.1	13.1	52.3	14.6	51.7	16.6	50.5	18.6				
			-4	59.8	13.0	58.6	14.6	57.8	16.5	56.5	18.6	55.4	20.9		
			2	71.3	13.2	69.9	14.7	68.4	16.5	66.8	18.5	65.6	20.8	63.8	23.3
		Pure water	5	80.8	13.2	78.8	14.6	76.8	16.3	74.3	18.2	72.1	20.4	69.9	22.9
7			85.0	13.3	83.2	14.7	81.1	16.3	78.6	18.1	76.1	20.4	73.6	22.8	
10			92.4	13.5	89.6	14.9	87.7	16.4	85.5	18.2	82.7	20.3	79.6	22.8	
12			98.2	13.7	96.1	15.0	93.5	16.5	90.9	18.2	87.3	20.3	84.2	22.8	
300V		Glycol/water mix	-8	69.1	16.5	67.7	18.3	66.4	20.6	65.1	23.0				
			-4	77.7	16.7	76.6	18.4	75.0	20.7	73.7	23.2	72.2	25.7		
			2	92.6	16.9	91.1	18.6	89.5	20.8	87.8	23.4	85.5	26.0	83.1	28.9
		Pure water	5	103.3	17.0	101.4	18.8	99.4	20.9	97.2	23.3	94.5	26.0	91.5	29.7
	7		107.9	17.1	106.3	18.8	104.1	20.9	101.5	23.3	98.9	26.1	95.1	29.8	
	10		117.2	17.4	114.6	19.1	112.1	21.1	109.1	23.4	106.2	26.2	101.6	29.9	
	12		124.1	17.5	121.3	19.3	118.6	21.3	115.7	23.4	112.5	26.3	107.7	29.9	

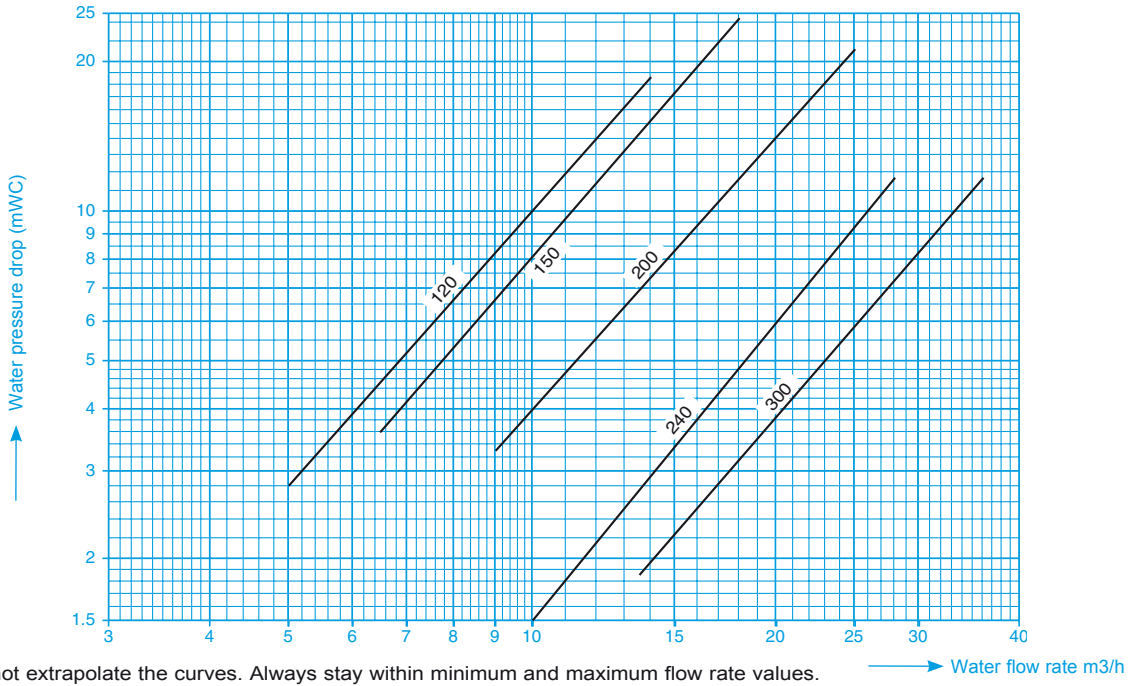
Hc: Gross heating capacity
Pi: Compressor gross power input.

Standard conditions
Glycol/water mix required.
Calculated fouling: 0.00005 m² °C/W

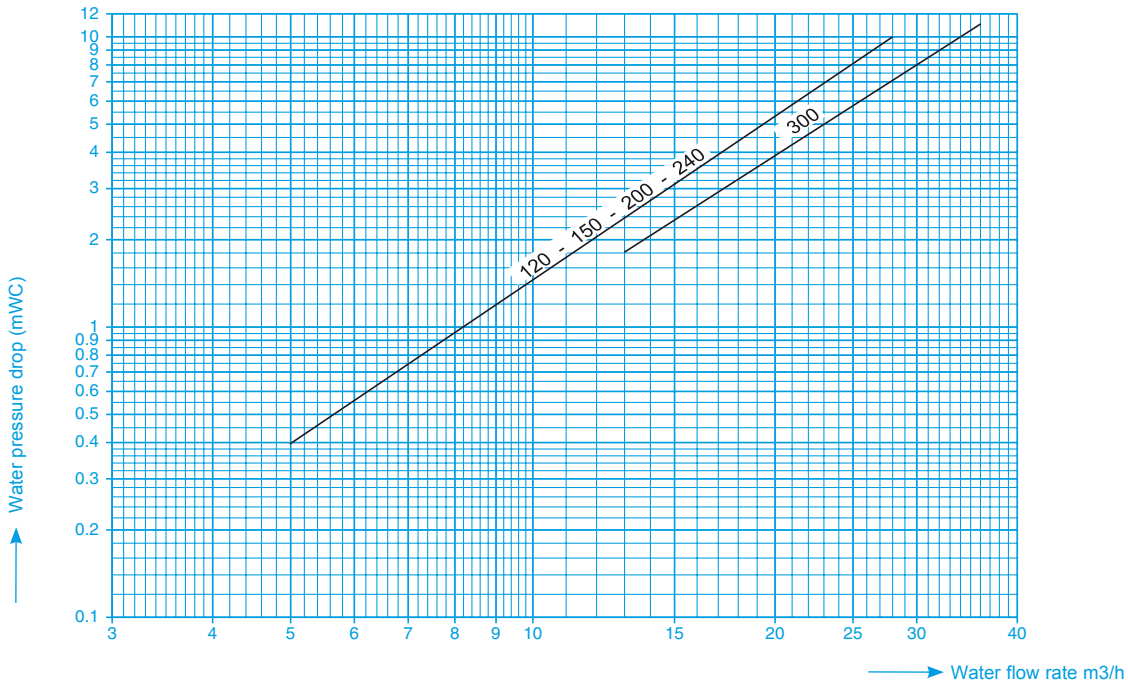
WATER PRESSURE DROP

ILG 120 - 300

In the evaporator (use prohibited beyond these limits)
INDOOR AND OUTDOOR CIRCUITS



Filter - ILG (mandatory)

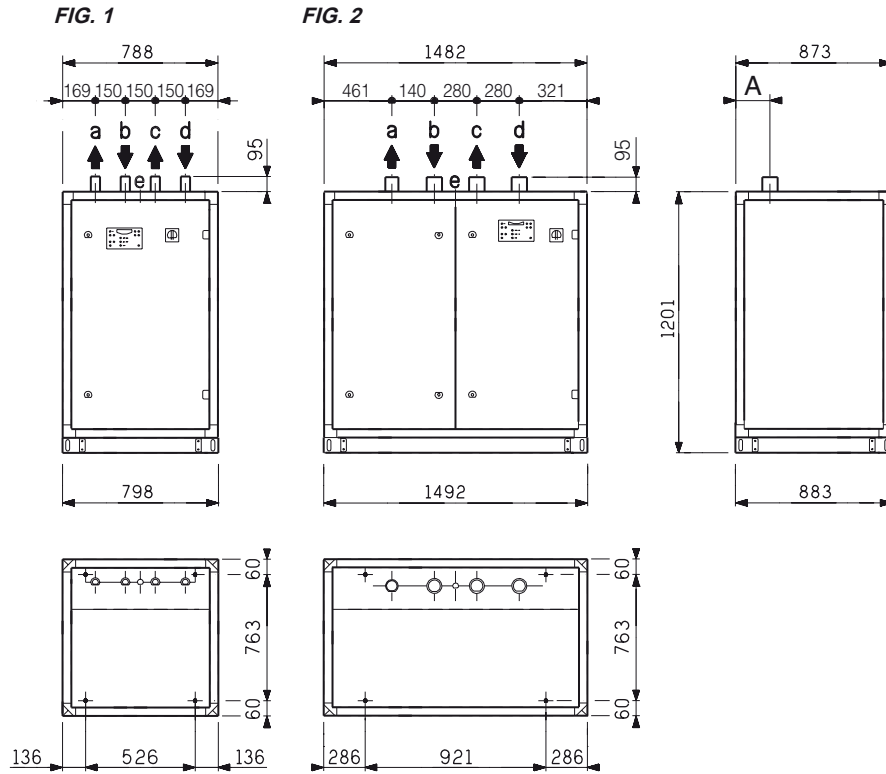


Unit conversion formulae

kPa	= bar x 100	Foot (ft)	= mm x 0.0032808
bar	= mWC x 0.0981	Pound (lb)	= kg x 2.205
kg/cm ²	= bar x 1.0197	Cubic feet per minute (cfm)	= m ³ /h x 0.5885
Pound per square inch (psi)	= bar x 14.504	US gallons	= m ³ x 264.2
Inch (in)	= mm x 0.0394	UK gallons	= m ³ x 220

DIMENSIONS

DYNACIAT ILG 120 - 300

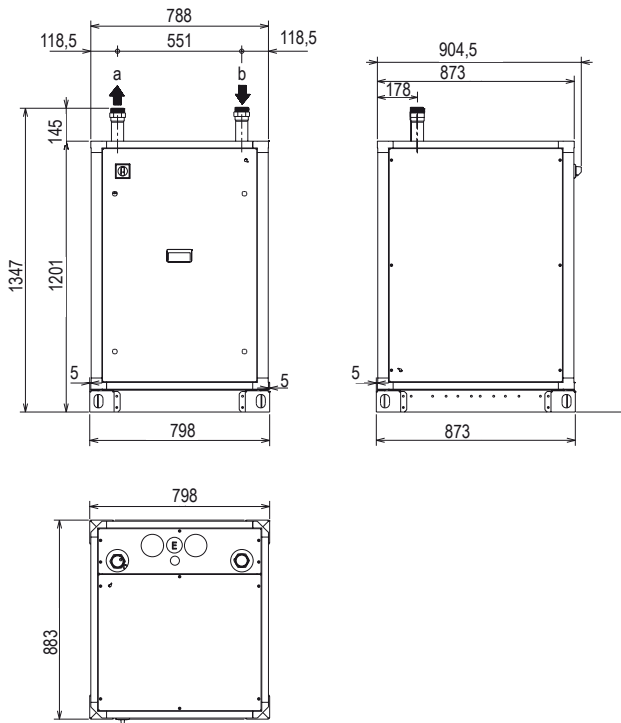


- a: Indoor circuit water outlet
- b: Indoor circuit water inlet
- c: Outdoor circuit water outlet
- d: Outdoor circuit water inlet
- e: Power supply

ILG	120	150	200	240	300	
Figure	1			2		
	Sleeves (Male)					
a - b	G 1" 1/2				G 2"	
c - d						
A	127			126		
Weight (kg)	Empty	226	289	379	452	595
	In operation	237	301	394	468	622

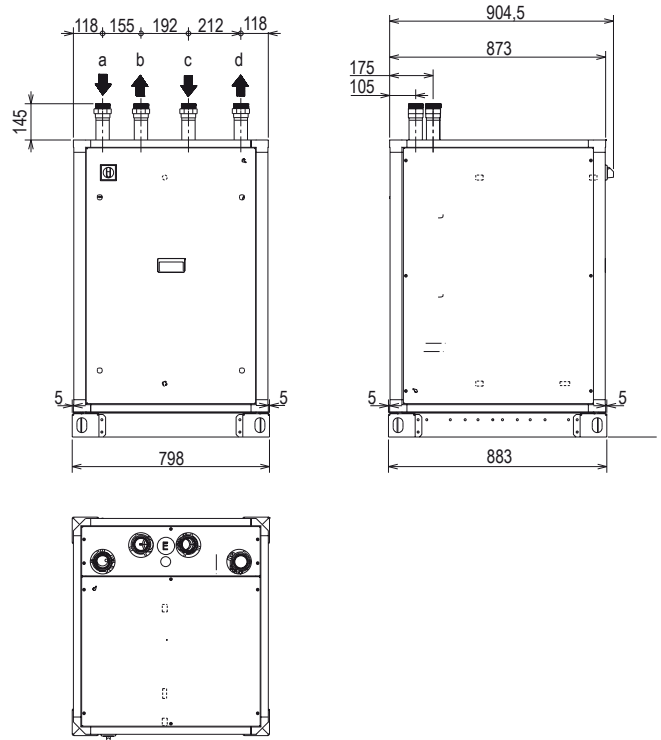
DIMENSIONS

Hydraulic module



- a: Water outlet
- b: Water inlet
- e: Power supply

Aquatherm module



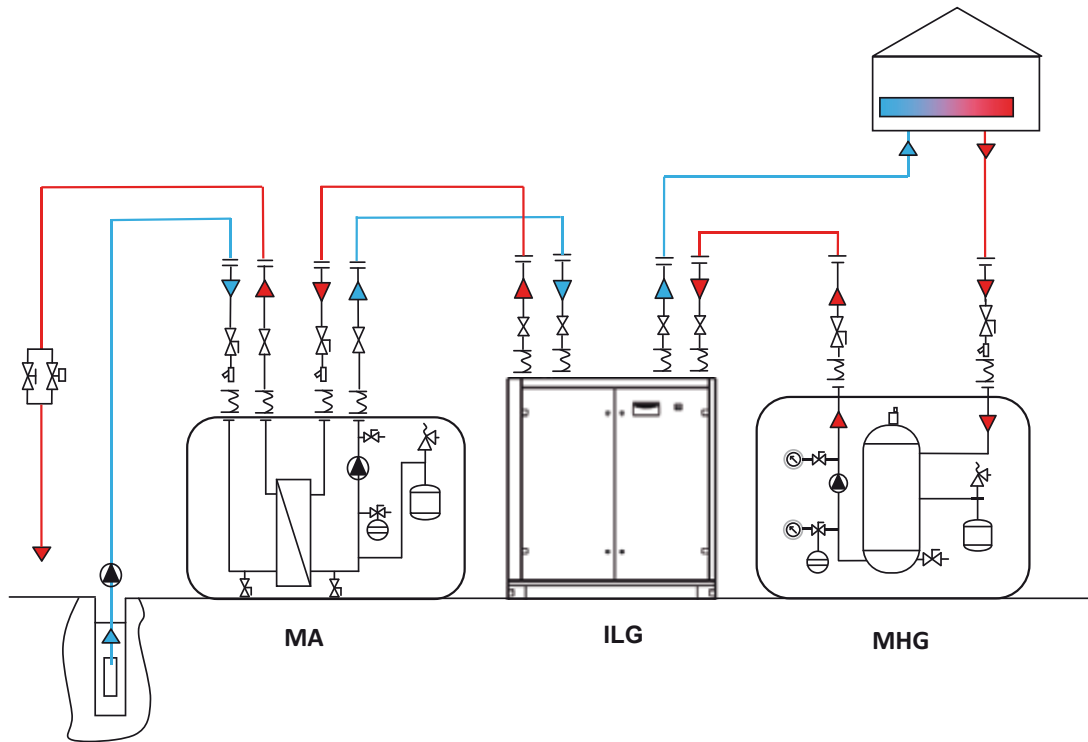
- a: Outdoor circuit water inlet
- b: Outdoor circuit water outlet
- c: Indoor circuit water inlet
- d: Indoor circuit water outlet
- e: Power supply

MHG	40	41	42	43	46
Hydraulic connection a - b	Ø 1"1/2 - 2" - 2"1/2				
Weight	Empty	kg 285			
	In operation	kg 535			

MA	29	38	51	59	77
Hydraulic connection a - b - c - d	Ø G 1"1/2				
Weight	Empty	kg 235	kg 357	kg 372	
	In operation	kg 247	kg 385	kg 412	

SCHEMATIC INSTALLATION DIAGRAM

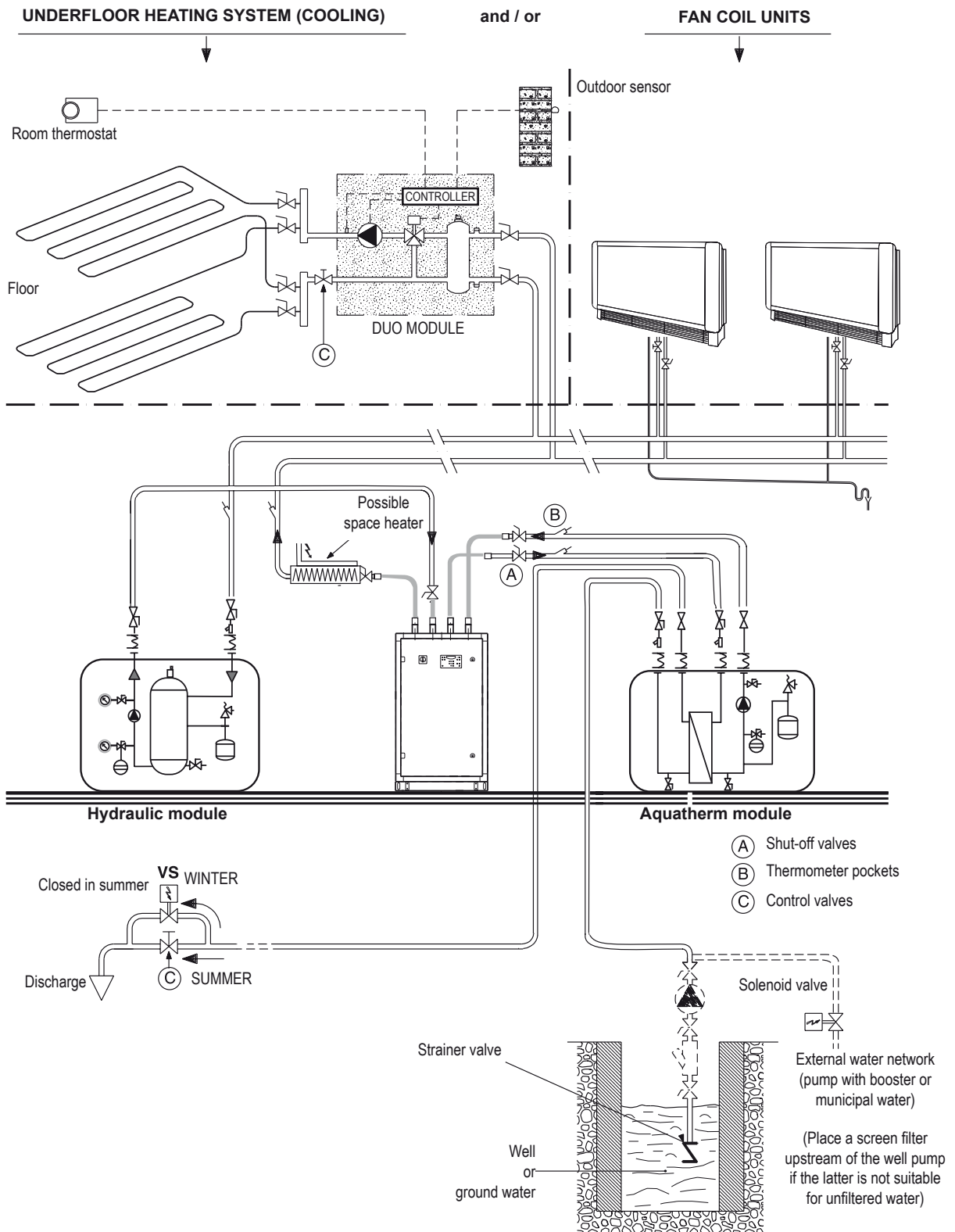
Heating/cooling



Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams.

SCHEMATIC INSTALLATION DIAGRAM WITH WELL OR GROUND WATER AND HYDRAULIC MODULE

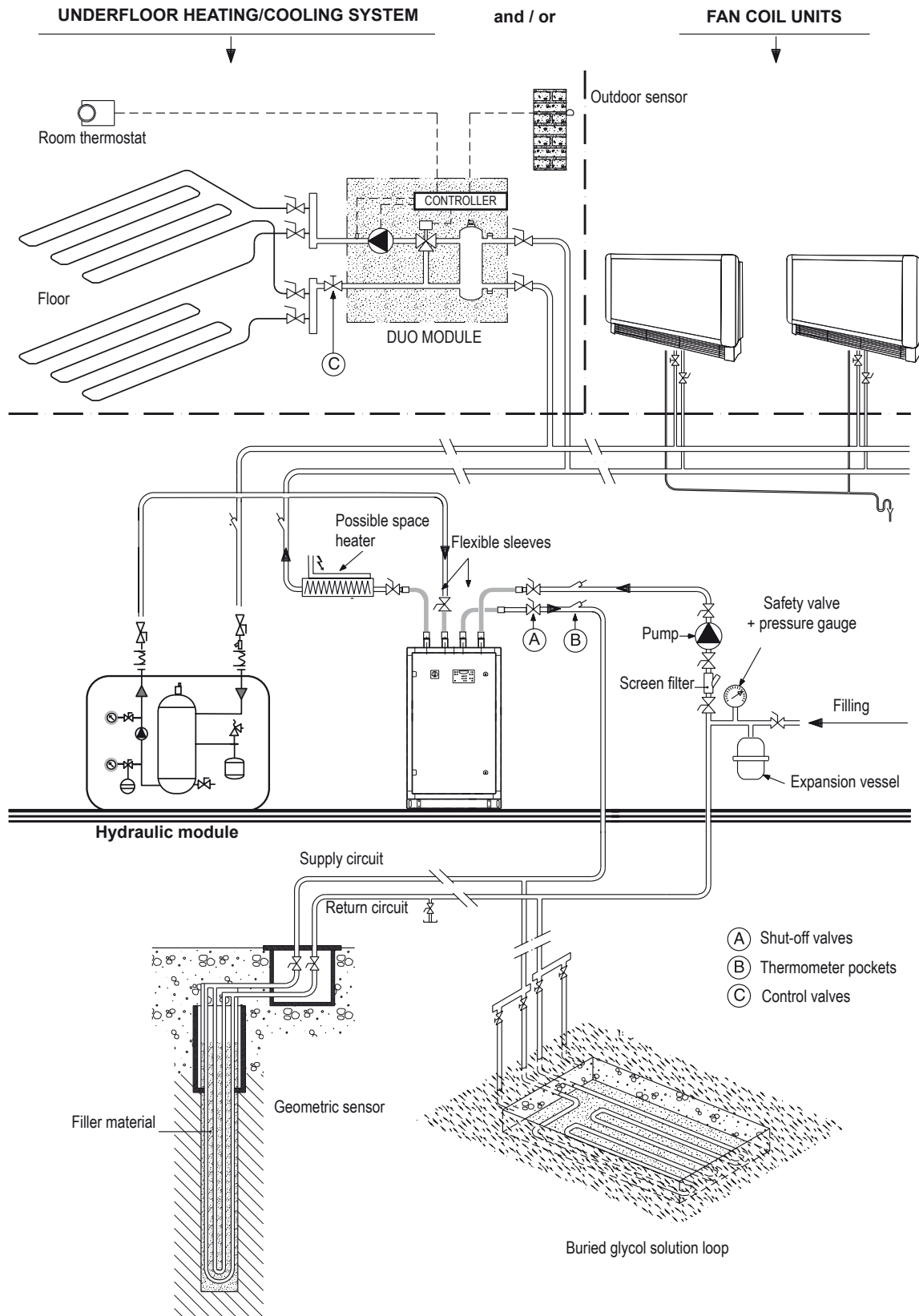
Heating/cooling operation



Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams.

SCHEMATIC GEOTHERMAL INSTALLATION WITH HYDRAULIC MODULE DIAGRAM

Heating/cooling operation



Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams.

DYNACIAT ILG SERIES

Installation recommendations

■ Water quality criteria to be respected

Warning: It is essential that an 800-micron water filter be placed on the unit's water inlet during installation.

The quality of the water used has a direct impact on the correct operation of the unit and its service life. This is particularly true if the water used clogs or corrodes components or promotes the growth of algae or micro-organisms.

The water must be tested to determine whether it is suitable for the unit and whether chemical treatment will suffice to make it of acceptable quality and if a water softening/demineralising system should be installed.

The results of the analysis must confirm whether the site's water is compatible with the various materials used on the CIAT unit's circuit:

- 99.9% copper tubes brazed with copper and silver,
- threaded bronze couplings or flat steel flanges, depending on the unit model,
- plate heat exchangers and AISI 316/DIN 1.4401 stainless steel connections brazed with copper and silver.

Warning: failure to follow these instructions will result in the immediate voiding of the unit warranty.

■ Lifting and handling operations

The strictest safety precautions must be taken when lifting and handling the unit.

Always follow the lifting diagram on the unit and in the instruction manual.

Before attempting to lift the unit, make sure the path leading to its intended location is free from obstacles.

Always keep the unit vertical when moving it. Never tip it or lie it on its side.

■ Choosing a location for the unit

DYNACIAT units are designed for installation in a machine room.

Precautions should be taken to protect them from freezing temperatures.

Special attention should be paid to ensure sufficient free space (including at the top) to allow maintenance.

The unit must be placed on a perfectly level, fireproof surface strong enough to support it when ready for operation.

Noise pollution from auxiliary equipment such as pumps should be studied thoroughly.

Depending on the room and its structure, potential noise transmission routes should be studied, with assistance from an acoustical engineer if necessary, before the unit is installed.

Flexible couplings **MUST** be placed over pipes (available as options).

■ Machine room ventilation

In accordance with the regulations in force in the place in which the machine is to be installed, the machine room must comply with certain ventilation rules for fresh air to ensure there is no risk of discomfort or hazard in the event of a refrigerant leak.

■ Fitting accessories supplied separately

A number of optional accessories may be delivered separately and installed on the unit on site.

You must follow the instructions in the manual.

■ Electrical connections

You must follow the instructions in the manual and the wiring diagrams on the unit. The unit must be connected according to industry standards and the norms and regulations in force.

Electrical connections to be made on site:

- . unit's electrical supply,
- . outdoor operation authorisation (optional),
- . information feedback (optional).

It should be noted that the unit's electrical system is not protected against lightning strikes.

Therefore components to protect against transient voltage surges must be installed on the system and inside the electrical supply unit.

■ Pipe connections

You must follow the instructions in the user manual.

All pipes must be correctly aligned and slope toward the system's drain valve.

Pipes must be installed to allow sufficient access to the panels and fitted with heat insulation.

Pipe mountings and clamps must be separate to avoid vibrations and pressure on the unit.

Water shut-off and control valves must be fitted when the unit is installed.

- Pipe connections to be made on site:
 - . system water supply with pressure-reducing valve,
 - . evaporator, condenser and drain,
- Accessories essential to any hydraulic system must also be installed, such as:
 - a thermostatically-controlled valve for controlling the flow rate of cooling water placed at the condenser water inlet or outlet.
 - . water expansion vessel,
 - . drain nozzles at pipe low points,
 - . exchanger shut-off valves equipped with filters,
 - . air vents at pipe high points,
 - check the system's water capacity (install a buffer water tank if necessary),
 - . flexible couplings on exchanger inlets and outlets,
 - . thermometers on each water inlet and outlet to allow all the necessary checks during start-up and maintenance.

N.B.:

- Pressure in the water circuits below 4.0 bar.
- Place the expansion vessel before the pump.
- Do not place any valves on the expansion vessel.
- Make sure the water circulation pumps are placed directly at the exchanger inlets.
- Make sure the pressure of the water drawn in by the circulation pumps is greater than or equal to the required minimum NPSH, particularly if the water circuits are "open".
- Test the water quality in accordance with the relevant technical requirements.
- Take the necessary precautions to protect the unit and hydraulic system from freezing temperatures (e.g. allow for the possibility of draining the unit). If glycol is added to prevent freezing, check its type and concentration beforehand.
- Before making any final hydraulic connections, flush the pipes with clean water to remove any debris in the network.

■ Commissioning

DYNACIAT units must be commissioned by CIAT or a CIAT-approved firm.

You must follow the instructions in the manual.

Partial list of precommissioning checks:

- Correct positioning of unit,
- Power supply protections,
- Phases and direction of rotation,
- Wiring connections on unit,
- Direction of water flow in unit,
- Cleanliness of water circuit,
- Adjusting water flow rate to specified value,
- Pressure in the refrigeration circuit,
- Direction of rotation of compressors,
- Water pressure drops and flow rates,
- Operating readings.

■ Maintenance operations

Specific preventive maintenance operations must be carried out regularly on the unit by CIAT-approved firms.

The operating parameters are read and noted on a "CHECK LIST" form to be returned to CIAT.

It is essential to comply with the Instructions, Installation, Operation, Commissioning and Maintenance Manual.

You must take out a maintenance contract with a CIAT-approved refrigeration equipment specialist. Such a contract is required even during the warranty period.



→ Heat pumps

DYNACIAT ILG

This document is non-contractual. As part of its policy of continual product improvement, CIAT reserves the right to make any technical modification it feels appropriate without prior notification.

Head office

700 Avenue Jean Falconnier - B.P. 14
01350 - Culoz - France
Tel.: +33 (0)4 79 42 42 42
Fax: +33 (0)4 79 42 42 10
www.ciat.com



Compagnie Industrielle d'Applications Thermiques - S.A. with a registered capital of 26 728 480 € - R.C.S. Bourg-en-Bresse B 545 620 114