

Refta[®]

CO2 LIGHT

CO2 SYSTEMS

R744

Technical Parameters
Power Range Sheet
Additional Options

V.3



ESTABLISHED IN 1994
44+ M TURNOVER
30 YEARS OF EXPERIENCE
PARTNERS IN
30+ COUNTRIES

2 FACTORIES
300+ EMPLOYEES
22 000 SQUARE METERS
OF PRODUCTION AREA

WE CAN MAKE IT SIMPLE

It is our promise to simplify the complex industry of refrigeration for our clients. Our expertise and dedication mean that you can rely on us to provide straightforward, efficient, and user-friendly cooling solutions. We are your partners in making the complex simple.

About us

Refra is an experienced European manufacturer of sustainable refrigeration and HVACR systems, specializing in advanced cooling and heating solutions with natural refrigerants. Founded in 1994, the company has over 30 years of engineering and manufacturing expertise.

Refra designs and manufactures high-quality, safe and energy-efficient refrigeration, air conditioning and heating systems for industrial and commercial applications. The company is known for its ability to deliver both standard and fully customized solutions, engineered to meet complex technical requirements and specific customer needs.

Green by choice, safe by design

Green by choice reflects our deliberate decision to choose natural refrigerants since 2011 — long before environmental regulations made it mandatory. With a strong focus on low-GWP refrigerants, Refra cooling systems offer significantly lower global warming potential and comply with EU F-Gas regulations.

Safe by design represents our approach to quality and reliability. Every system is developed using certified components and designed in accordance with EN378 safety standards, performance and efficiency in mind. Our commitment to a better tomorrow drives us to engineer cutting-edge refrigeration systems that provide our customers with the tools to make a positive impact on the planet.



Visit our
website and
browse 80+
product
catalogue



| Best quality parts

Refra units are manufactured using world-renowned, high-quality components, ensuring exceptional reliability, performance, and durability in every product we deliver. Using high-quality components is essential because it guarantees the reliability and longevity of our units, reducing the risk of malfunctions and minimizing maintenance costs. These toptier parts contribute to the overall performance, energy efficiency, and safety of the equipment, ensuring that our customers receive solutions that meet the highest industry standards.



| ATMO Approved

At Refra, sustainability is at the core of everything we do. Leveraging natural refrigerants like CO2 has been a driving force behind our efforts to minimize carbon emissions and enhance energy efficiency. Receiving the ATMO Approved Label was an honor and a testament to our unwavering commitment to environmental innovation and climate-friendly solutions.

Getting this certification is not just about recognition; it's about holding ourselves accountable to the highest standards in sustainability. As a 'Best in Class' natural refrigerants company, we continually refine our technologies, enhance efficiency, and deliver innovative solutions, all with the goal of creating a greener future for our customers, industry, and planet.

Leaders in sustainable cooling and heating

ATMO Approved is the world's leading industry label measuring and recognizing impact with natural refrigerants that power millions of refrigeration, chiller and heatpump systems worldwide. Each year 'Best in Class' manufacturers and contractors must meet strict criteria and demonstrate impact in order to 'become' ATMO Approved. Since 2022 over 80 companies have applied. To date only 18 have been (Re) Approved.



CO2 Systems

CO2 Light



Natural refrigerants available!
#R744

Choose CO2 and contribute to the environment!

DESCRIPTION

CO2 Light combines compact design with reliable operation, making it one of Refra's most efficient CO2 refrigeration systems for small food retail stores, gas stations, and cold rooms. Designed as a booster system, it provides from 2 kW to 14 kW for low temperature stage and from 8 kW to 34 kW for medium temperature stage, giving the flexibility to meet a wide range of refrigeration requirements.

Each unit can be equipped with up to three compressors, ensuring reliable operation under demanding conditions. The system also includes a 75-liter liquid receiver to support stable operation across applications. The powder-coated steel frame with durable insulation provides robust protection and effective noise reduction. Available in different frame options, CO2 Light can be installed indoors or outdoors and easily serviced.

CO2 Light is part of environmentally friendly Refra product group, delivering strong performance with minimal environmental impact. Using natural CO2 refrigerant with a low global warming potential, it is fully compliant with the latest F-Gas regulations, making it a sustainable and future-ready solution for commercial refrigeration.

AVAILABLE SYSTEMS:

CO2 transcritical rack MT 2x0
CO2 transcritical booster MT+LT 2x1

STANDARD EQUIPMENT:

Open type welded, powder coated frame;
Anti-vibration legs;
Carel controllers;
Reciprocating Bitzer compressors;
Frequency inverters on lead compressor;
Low level liquid switch;
Filters (strainers);
Filter (drier) on LL (liquid line);
75L Liquid receiver;
Internal heat exchanger (Superheater);
Liquid injection with AKV valve
Safety valves;
Manometers;
400 V / 3 phases / 50Hz;

Technical Parameters

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

Model		CL 140	CL 204	CL 274	CL 346	CL 422	CL 492	CL 530
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Standard version

Refrigerant	Type	R744						
Maximum MT capacity ¹	kW	17,6	22,3	28,9	34,6	43,8	49,2	56,1
Number of MT compressors	n	2	2	2	2	2	2	2
Receiver volume	L	75	75	75	75	75	75	75

Design pressure

High pressure	bar	120	120	120	120	120	120	120
Receiver pressure	bar	80	80	80	80	80	80	80
MT suction pressure	bar	60	60	60	60	60	60	60
LT suction pressure ²	bar	60	60	60	60	60	60	60

Electrical design

Power supply		400 V / 3 phases / 50Hz						
Max. Operating current	A	39,5	44,7	52,1	58,5	71,2	77,5	88,5
Main switch	A	63	63	63	63	125	125	125
Controller		Carel pR300T medium						

Cooling COP/EER ⁴		1,46	1,52	1,53	1,54	1,62	1,65	1,67
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Heat recovery module 40 plates (additional options)

10-60 °C ⁵	kW	21	26	32	37	45	50	55
25-45 °C ⁵	kW	20	25	31	36	44	48	54
HR frame information	mm	L820 x W720 x H1000						

Heat recovery module 120 plates (additional options)

10-60 °C ⁵	kW	24	30	37	44	53	59	66
25-45 °C ⁵	kW	23	28	36	42	52	58	64
HR frame information	mm	L820 x W720 x H1000						

¹ Ambient temperature +35 °C, Gas Cooler outlet +37 °C, Evaporating temperature MT/LT -10/-30 °C.

¹ Cooling capacity is specified for the lead compressor operating at 70 Hz. The second compressor is on/off.

² If LT compressor is selected as an option.

³ Sound pressure level at a distance of 10m in the free field and at the extended point, tolerance +/-2dB(A).

⁴ COP/EER according to compressor selection. Gas cooler and other components not included in this calculation.

⁵ Heat recovery simulation based on 60% mass flow, 110°C, 80 bar. capacity may vary with actual compressor pack.

CO2 Light frame types

OPEN TYPE FRAME

Open type frame provides maximum accessibility and flexibility for indoor installations. The open rack design allows easy access to all key components, simplifying installation, inspection, and maintenance. This configuration is ideal for technical rooms where space optimization and straightforward service are priorities, enabling efficient system integration and cost-effective project execution.



ENCLOSED TYPE FRAME

Enclosed frame with durable galvanized steel construction and high-quality insulation ensures reliable system protection and reduced noise levels. The powder-coated casing shields critical components from external influences while supporting stable and quiet operation. Front and side access points enable convenient servicing, while optional elongated anti-vibration legs allow flexible mounting and improved operational stability, making this solution suitable for both indoor and outdoor installations.



OUTDOOR AIR COOLED FRAME

Outdoor air cooled frame with factory-integrated gas cooler is a smart system configuration designed to simplify project execution and enhance overall efficiency. By combining key components into a single outdoor unit, it streamlines installation, optimizes heat rejection, and significantly reduces commissioning time. This solution minimizes equipment selection and on-site work, lowers total project costs and supports reliable, efficient CO2 system operation.



Frame dimensions

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

CO2 LIGHT WITH OPEN FRAME

Model		CL 140	CL 204	CL 274	CL 346	CL 422	CL 492	CL 530
Open frame dimensions								
Length	mm	1090	1090	1090	1090	1090	1090	1090
Width	mm	670	670	670	670	670	670	670
Height	mm	1845	1845	1845	1845	1845	1845	1845
Operating weight	kg	800	830	860	890	920	950	980
Sound pressure level in 10m ³	dB	53	53	53	54	59	62	62

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

CO2 LIGHT WITH ENCLOSED FRAME

Model		CL 140	CL 204	CL 274	CL 346	CL 422	CL 492	CL 530
Enclosed frame dimensions								
Length	mm	1200	1200	1200	1200	1200	1090	1090
Width	mm	800	800	800	800	800	670	670
Height	mm	2120	2120	2120	2120	2120	1845	1845
Operating weight	kg	920	950	980	1010	1040	1070	1100
Sound pressure level in 10m ³	dB	42	42	42	43	47	50	50

CALCULATIONS ARE MADE FOR BASIC UNITS WITHOUT ADDITIONAL OPTIONS

CO2 LIGHT WITH OUTDOOR AIR COOLED FRAME

Model		CL 140	CL 204	CL 274	CL 346	CL 422	CL 492	CL 530
Outdoor air cooled frame dimensions								
Length	mm	2620	2620	2620	2620	2620	2620	2620
Width	mm	1300	1300	1300	1300	1300	1300	1300
Height	mm	2520	2520	2520	2520	2520	2520	2520
Operating weight	kg	1480	1510	1540	1590	1640	1670	1700
Sound pressure level in 10m ³	dB	44	44	44	45	49	52	52

Power Range Sheet | co2 Light

Technical data for capacity selection CO2 Light					
LT Capacity kW at ‘ Evap. -30°C *		MT Capacity kW at evap. -10°C, Gas Cooler outlet ¹			
	LT Model	MT Model	34°C	37°C	42°C
0 kW		CL 140	19,1	17,6	15,4
0 kW		CL 204	24,1	22,3	19,5
0 kW		CL 274	31,3	28,9	25,5
0 kW		CL 346	37,4	34,6	30,5
0 kW		CL 422	47,1	43,8	38,9
0 kW		CL 492	52,7	49,2	44,1
0 kW		CL 530	60,2	56,1	50,1
4,5 kW	LTME042	CL 140	13,7	12,2	10,1
4,5 kW	LTME042	CL 204	18,7	16,9	14,2
4,5 kW	LTME042	CL 274	25,9	23,6	20,2
4,5 kW	LTME042	CL 346	32,1	29,3	25,2
4,5 kW	LTME042	CL 422	41,7	38,4	33,6
4,5 kW	LTME042	CL 492	47,4	43,9	38,8
4,5 kW	LTME042	CL 530	54,8	50,8	44,8
7,5 kW	LTME067	CL 140	10,2	8,7	x
7,5 kW	LTME067	CL 204	15,2	13,4	10,8
7,5 kW	LTME067	CL 274	22,3	20,1	16,7
7,5 kW	LTME067	CL 346	28,5	25,8	21,7
7,5 kW	LTME067	CL 422	38,2	34,9	30,1
7,5 kW	LTME067	CL 492	43,8	40,4	35,3
7,5 kW	LTME067	CL 530	51,3	47,3	41,3

* Cooling capacity is specified for the LT compressor operating at 70 Hz.
¹ Cooling capacity is specified for the lead compressor operating at 70 Hz. The second compressor is on/off.

Power Range Sheet | co2 Light

Technical data for capacity selection CO2 Light					
LT Capacity kW at ‘ Evap. -30°C *		MT Capacity kW at evap. -10°C, Gas Cooler outlet ¹			
	LT Model	MT SModel	34°C	37°C	42°C
9,5 kW	LTME091	CL 140	7,8	6,4	x
9,5 kW	LTME091	CL 204	12,8	11	x
9,5 kW	LTME091	CL 274	19,9	17,7	14,3
9,5 kW	LTME091	CL 346	26,1	23,4	19,3
9,5 kW	LTME091	CL 422	35,8	32,6	27,8
9,5 kW	LTME091	CL 492	41,4	38	33
9,5 kW	LTME091	CL 530	48,9	44,9	39
12,4 kW	LTME119	CL 140	4,6	3,23	x
12,4 kW	LTME119	CL 204	9,6	7,89	x
12,4 kW	LTME119	CL 274	16,7	14,5	11,2
12,4 kW	LTME119	CL 346	23	20,3	16,2
12,4 kW	LTME119	CL 422	32,6	29,4	24,6
12,4 kW	LTME119	CL 492	38,2	34,8	29,8
12,4 kW	LTME119	CL 530	45,7	41,7	35,8
14,6 kW	LTME140	CL 140	2	x	x
14,6 kW	LTME140	CL 204	7	5,3	x
14,6 kW	LTME140	CL 274	14,1	11,9	x
14,6 kW	LTME140	CL 346	23,8	17,6	13,7
14,6 kW	LTME140	CL 422	30	26,8	22,1
14,6 kW	LTME140	CL 492	35,7	32,3	27,3
14,6 kW	LTME140	CL 530	43,1	39,1	33,3

* Cooling capacity is specified for the LT compressor operating at 70 Hz.
¹ Cooling capacity is specified for the lead compressor operating at 70 Hz. The second compressor is on/off.

Additional Options

AVAILABLE ADDITIONAL OPTIONS FOR CO2 LIGHT



LT ME Compressor

ME compressor series combine high standstill pressures, high efficiency, smooth running and high reliability in combination with the CO2 refrigerant (100/100 bar).



MT Compressor with LSPM

Offers enhanced efficiency and reliable performance of transcritical CO2 systems. Equipped with advanced Line-Start Permanent-Magnet (LSPM) technology that fully exploits the high motor efficiency and low heat input into the refrigerant, this reciprocating compressor delivers efficient performance and 14% higher SEPR.



Wurm Animus controller

Monitors and regulates the temperature of refrigeration system providing advanced features such as energy management, remote monitoring, and data logging. This allows to optimize performance, reduce energy consumption, and troubleshoot issues.



Danfoss MiniPack controller

AK-PC 572 MiniPack controller provides a reliable, compact and cost-effective set of solutions for CO2 systems. All essential functionality comes with a with a pre-configured wizard, optimized for the fast and simple setup of CO2 systems, resulting in reduced complexity and ease of use.



Eliwell EWCM controller

EWCM 9000 PRO (HF) controller is designed for temperature and humidity control applications. Advanced features and flexible programming options allow precise regulation and monitoring of environmental conditions, thus helping identify issues and maintain optimal operation of CO2 systems.



Energy meter kit

Measures the electrical energy consumption of the compressor and other electrical components in a refrigeration system. It provides valuable data on the system's operating efficiency and can help identify opportunities for energy savings.



High level liquid switch

Designed to detect the liquid level of CO2 refrigerant to help maintain proper system operation. The switch works by using a float that rises and falls with the liquid level and sends a signal to a control system, when the level reaches a certain point.



Safety Valve Collector

Helps to protect the system from over-pressure and ensures safe operation by collecting the discharge from multiple safety relief valves and routes it to a safe location, preventing damage to the system and ensuring safe venting of refrigerant.

Additional Options

AVAILABLE ADDITIONAL OPTIONS FOR CO2 LIGHT



Enclosed frame

Galvanized steel frame, with epoxy-polyester powder coating and reliable insulation material protects the refrigeration system and reduces noise levels. Two access points at the front and from the side enables fast and convenient service while additional, elongated legs provide anti-vibration features and can be mounted by the customer on demand.



Heat recovery module

Consisting of a heat exchanger, on/off three-way valve and heat temperature sensors the module efficiently captures and utilizes waste heat from a refrigeration system, maximizing energy efficiency by recovering and repurposing waste heat, reducing energy consumption and promoting sustainability.



Outdoor air cooled frame

Outdoor air cooled frame simplifies system installation and lowers overall project costs. Factory-integrated gas cooler eliminates the need for separate components, optimizes heat rejection, and shortens commissioning time. This solution reduces equipment selection effort and minimizes on-site work.



Gas Cooler

Wide capacity range gas cooler series, created for transcritical CO2 systems with high pressure. Available heat capacity is up to 500 kW upon nominal conditions (when Tin is 115°C, Tout is 33°C and Tamb is 35°C and pressure is 91,7 bar). Sound pressure level is <=45 dB(A) at 10 m.



HT Discharge Line Insulation

Additional protection for the discharge line and work safety. The insulation reduces the risk of corrosion under insulation (CUI) and has a built-in UV-resistance for long service life. It is a flexible closed-cell elastomeric foam insulation for use in high-temperature applications of up to 150°C.



UD Full Unit Insulation

Flexible technical insulation material with fire class BL-s1,d0 that exhibits 10 times less smoke in a fire than a standard elastomeric foam. Because of its low thermal conductivity and high resistance to water vapour diffusion, it ensures reliable condensation control and high energy savings in the long-term.



Varipack

Intelligent frequency inverter that controls AC motors efficiently and intelligently, allowing for precise speed regulation.

Register the Varipack product code along with the Bitzer compressor code and get a 2-year compressor warranty! <https://bit.ly/BitzerWarranty>



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| Go Green

With a strong emphasis on environmental responsibility and sustainable practices Refra is leading the way in reducing global warming and embracing natural cooling technology. **We are on a mission to make a positive impact in the refrigeration industry since 2011 – that's when Refra became a pioneering company with an unwavering commitment to environmental sustainability and started producing refrigeration equipment with natural refrigerants.**

Our commitment to a better tomorrow drives us to engineer cutting-edge systems that provide our customers with the tools to make a positive impact on the planet. **At Refra, we envision a future where all of our products are powered by natural refrigerants, contributing to a world that's not just cooler, but also greener.**

🌿 R744

As we witness the growing demand for natural refrigeration systems, we are inspired to push the boundaries of innovation and develop technologically advanced refrigeration solutions with CO₂.

Green by choice, safe by design