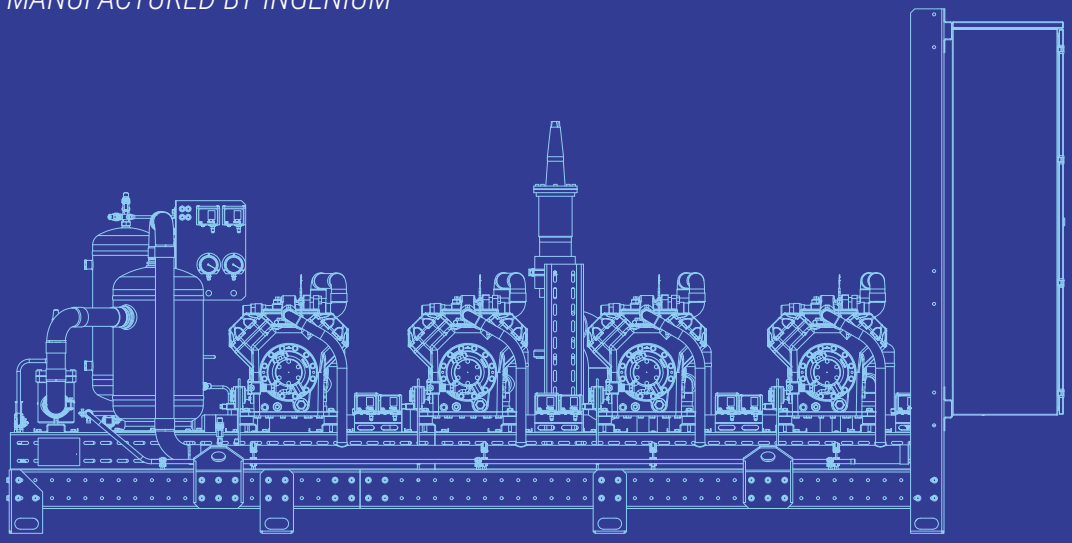
TECHNICAL CATALOGUE

INGENIUM

PRODUCT CATALOGUE

MANUFACTURED BY INGENIUM ™



ingenium-company.ru

REV. I. 08.2020

I-CU series cooling units

Semi-hermetic piston compressor type
units with cooling capacity from 1 kW to 460 kW

Semi-hermetic screw compressor type
units with cooling capacity from 12 to 1710 kW

Hermetic scroll compressor type
units with cooling capacity from 2 to 228 kW

Compressor-condenser unit
cooling capacity from 3 to 1500 kW

Heat pump unit
with capacity from 3 to 1500 kW

I-CC series cooling units

Liquid cooling systems - chillers

Semi-hermetic screw compressor type
units with cooling capacity from 65 to 1600 kW

Semi-hermetic piston compressor type
units with cooling capacity from 1,5 to 460 kW

Hermetic scroll compressor type
units with cooling capacity from 2 to 150 kW

I-RU series receiver units

I-PU series pumping units

Cooling units are completed with the original INGENIUM control panels

The company conforms ISO-2015 QMS

INGENIUM ™ equipment meets the EEU requirements

Field of Application

Food and Processing Industry
- *edible food and food raw material process cooling and freezing*
- *food storage maintenance (meat, poultry, fish, milk, cheese, vegetable oil, beer, beverages, bread, confectionary products and etc.)*
- *vegetable and fruit long-term CA-storage maintenance (vegetable and fruit storehouse type implementation)*
- *handling and storage*
- *process air-conditioning of manufacturing areas*

Chemical Industry
clean ethylene, propane, propylene content intake from petroleum and natural gas refinery, synthetic material and nitrogenous fertilizers industrial manufacturing

Construction
indoor climate control systems

Nuclear Industry
cooling units

Mining Industry
soil freezing in hole drilling process

Sports facilities
ice rinks and arenas, winter sports

Data processing centers
temperature control in enclosed space within desired limits

Logistics and Retail
low-temperature food storage facilities, distribution centers, wholesale distribution centers, hypermarkets, industrial freezers and freezing chambers

Pharmaceutical Industry
Industrial freezing facilities in drug manufacturing

Metallurgical engineering
cooling systems in processing: wet blast furnace gas cleaning system

Plastic products
plastic and polymeric materials processing, PET manufacturing, PVC processing, PAP manufacturing, plastic window profile, packing units, cooling systems in injection molding machines and process extrusion lines processing, calender rollers and extruders operating

Shipbuilding Industry
cooling units for fishery products freezing and storage maintenance

Nomenclature

Manufacturer (INGENIUM)	Production batch (Type of products)		Temperature characteristics	Quantity of compressor units		Compressor model	Oil type	Possible options		Refrigerant coolant
I	– CU	–	M	– N	x	4PES15	Y	XX...X		R507A

CU	compressor unit	H	high temperature	Y	synthetical
CC	liquid cooling systems	M	medium temperature		
RU	receiver units	L	low temperature		
PU	pumping units				

Compressor in stock

End-to-end options description

Option A – vibration dampers
- ***A1*** *– vibration isolators set for each compressor*
- ***A2*** *– vibrating bearings set under frame-mounted compressor unit*

Option B – economizer, liquid and steam injector
- ***B1*** *– mechanically controlled TEV economizer*
- ***B2*** *– electronically controlled TEV economizer*
- ***B3*** *– liquid injection system*
- ***B4*** *– steam injection system*

Option C – check valve
- ***C1*** *– discharge reinforced check valve for each compressor unit*
- ***C2*** *– discharge line check valve following the oil separator*

Option D – liquid level sensor
- ***D1*** *– refrigerant receiver LLS*
- ***D2*** *– refrigerant receiver LLS*
- ***D3*** *– oil receiver tank LLS*
- ***D4*** *– oil receiver tank HLS*
- ***D5*** *– oil separator chamber LLS*

Option E – control panel
- ***E1*** *– control cabinet without controller. Suitable for units without capacity control options*
- ***E2*** *– control cabinet with a controller for stepwise capacity regulation. Applies to options Q1 and Q2*
- ***E5*** *– ontrol cabinet with a controller for smooth performance control. Applies to option Q5*

Option F – cylinder heads blowdown fan

Option H – hot gas delivery line for operating the consumers defrosting system

Option K – oil cooling set
- ***K1*** *– ODAF system*
- ***K2*** *– thermosyphon-type oil cooling system*
- ***K3*** *– liquid-type oil cooling system*

Option L – heat insulated liquid separator on suction line for each compressor

Option M – high- and low-pressure gauge

Option O – oil separator chamber equipped with heater, shutoff valve, filter and inspection window
- ***O1*** *– oil level indication line equalization line*
- ***O2*** *– oil level electrically controlled adjusters*

Option P – high- and low-pressure switch on suction and discharge line manifold
- ***P1*** *– high pressure control switch for condensing fans cooling, single item*
- ***P2*** *– high pressure control switch for condensing fan cooling, two items*
- ***P3*** *– high pressure control switch for condensing fan cooling, three items*

Option Q – capacity control
- ***Q1*** *– compressor capacity regulation per one cylinder block (50..100%)*
- ***Q2*** *– compressor capacity regulation for two cylinder blocks (10..100%)*
- ***Q3*** *– master compressor capacity control for three cylinders' modules*
- ***Q4*** *– compressor capacity digital control*
- ***Q5*** *– frequency control of compressor capacity*
- ***Q6*** *– two master compressors' capacity frequency control unit*

Option R – receiver module and liquid channel
- ***R1*** *– receiver unit equipped with shutoff valves, one relief damper, filter drain, inspection window and liquid flow line frame-mounted shutoff valve*
- ***R2*** *– receiver unit equipped with shutoff valves, two relief dampers and three-way valve, as well as with filter drain, inspection window and liquid line frame-mounted shutoff valve*
- ***R3*** *– two relief dampers with three-way valve mounted on refrigerant receiver*

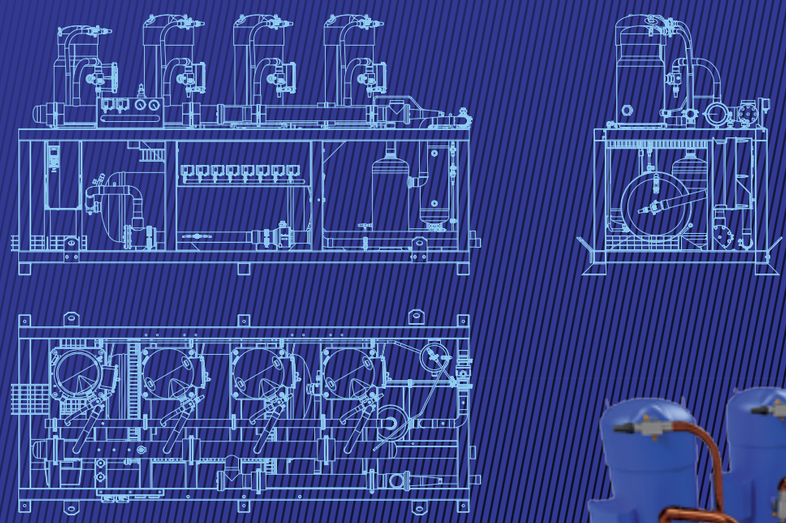
Option S – UV rays shielded insulation, IP55-compliant pressure switch protection, additional compressor crankcase heating

Option T – tubular electric heating element, heating
- ***T1*** *– refrigerant receiver heating system*

Option V – shutoff valves set

Option W – condensing pressure control system for discharge line

Hermetic scroll compressor type multi-compressor units



«INGENIUM» • MANUFACTURED REFRIGERATING UNITS

SERIES

I-CU

Compressor units item names

I-CU – M – 3 x MLZ66T – E1MVW R507A

1 | 2 | 3 | 4 | 5 | 6

1. ***Unit type***
   I-CU *– Ingenium compressor unit*
2. ***Temperature level***
   (evaporation temperature)
   L/M/H *– Low/Medium/High*
3. ***Compressor units' quantity***
   No number marking in case of single item
4. ***Compressor unit short name***
   In case of different compressor types usage, the marking is indicated with " / "
5. ***Options***
   refer to "End-to-end options description"
6. ***Refrigerant used***
   (optional)

Hermetic scroll compressor type multi-compression units
(standard package + options)

Standard item list
Hermetic scroll compressor equipped with shutoff valves, crankcase heater and engine protection gear, and high- and low- pressure safety switch per each compressor unit as well
Suction manifold
Oil separator chamber equipped with heater, shutoff valve, filter and inspection window
Receiver unit equipped with shutoff valves, pressure differential valve and one shutoff valve separating oil receiver unit and suction manifold. Shutoff valve to be installed on the oil delivery line, and electrically operated oil level regulator to be provided for each compressor unit
Suction line cleaning filter
Heat insulated suction manifold
Painted metal frame
Documentation set

Additional options

Item name	Marking
Vibration isolator set per 1 compressor unit	A1
Vibrating bearings set under frame-mounted compressor unit	A2
Liquid injection system	B3
Steam injection system	B4
Discharge line reinforced check valve per 1 compressor unit	C1
Discharge line check valve following the oil separator	C2
Control panel	E
Heat insulated liquid separator within each compressor unit suction line	L
High- and low- pressure gauges	M
Suction and discharge manifold equipped with low- and high- pressure switches	P
One high-pressure switch to control condensing fans	P1
Two high-pressure switches to control condensing fans	P2
Three high-pressure switches to control condensing fans	P3
UV rays shielded insulation, IP55-compliant pressure switch protection, additional compressor crankcase heating	S
Shutoff valves set	V
Condensing pressure control system on the discharge line	W

Compressor units can be equipped with extra-standard items with additional options to be provided on request

Hermetic scroll compressor type multi-compressor units

Meduim temperature units

R404A/R507A, t_k= 45°C, t_o= −10°C, SH=10K, SC=2K

Model	Cooling capacity, kW	Power consumption, kW	Maximum current rating, A	Overall dimensions, LxWxH, mm	Weight, kg	Discharge line, mm	Condensing unit drain line, mm	Suction line, mm
I-CU-M-2xMLZ15T	6,4	3,6	15,0	1350x600x950	270	12	16	18
I-CU-M-2xMLZ19T	8,6	4,4	20,0	1350x600x950	270	12	16	18
I-CU-M-2xMLZ21T	9,2	4,6	20,0	1350x600x950	270	12	16	18
I-CU-M-2xMLZ26T	11,2	5,8	21,0	1350x600x950	270	16	16	22
I-CU-M-2xMLZ30T	13,6	6,8	27,0	1350x600x1100	285	16	16	22
I-CU-M-2xMLZ38T	16,4	7,8	31,0	1350x600x1100	285	16	16	28
I-CU-M-2xMLZ45T	19,8	9,8	31,0	1350x600x1100	285	18	18	28
I-CU-M-2xMLZ48T	21,8	10,8	33,0	1350x600x1100	285	18	18	35
I-CU-M-2xMLZ58T	25,0	13,0	41,0	1350x600x1300	310	22	22	35
I-CU-M-2xMLZ66T	29,0	14,0	49,0	1350x600x1300	310	22	22	35
I-CU-M-2xMLZ76T	33,4	15,8	51,0	1350x600x1300	310	22	22	35
I-CU-M-2xSZ148-4	40,4	19,0	65,0	1500x800x1300	520	28	28	42
I-CU-M-2xSZ161-4	42,6	22,0	65,0	1500x800x1300	520	28	28	42
I-CU-M-2xSZ175-4	45,8	23,4	71,0	1500x800x1300	580	28	28	42
I-CU-M-2xSZ185-4	49,2	25,0	71,0	1500x800x1300	580	28	28	42
I-CU-M-3xMLZ15T	9,6	5,4	22,0	1800x600x950	335	16	16	18
I-CU-M-3xMLZ19T	12,9	6,6	29,5	1800x600x950	335	16	16	22
I-CU-M-3xMLZ21T	13,8	6,9	29,5	1800x600x950	335	16	16	22
I-CU-M-3xMLZ26T	16,8	8,7	31,0	1800x600x950	335	16	16	28
I-CU-M-3xMLZ30T	20,4	10,2	40,0	1800x600x1100	380	18	18	35
I-CU-M-3xMLZ38T	24,6	11,7	46,0	1800x600x1100	380	22	22	35
I-CU-M-3xMLZ45T	29,7	14,7	46,0	1800x600x1100	380	22	22	35
I-CU-M-3xMLZ48T	32,7	16,2	49,0	1800x600x1100	380	22	22	35
I-CU-M-3xMLZ58T	37,5	19,5	61,0	1800x600x1300	440	28	28	42
I-CU-M-3xMLZ66T	43,5	21,0	73,0	1800x600x1300	440	28	28	42
I-CU-M-3xMLZ76T	50,1	23,7	76,0	1800x600x1300	440	28	28	42
I-CU-M-3xSZ148-4	60,6	28,5	97,0	1900x800x1300	760	28	35	54
I-CU-M-3xSZ161-4	63,9	33,0	97,0	1900x800x1300	760	28	35	54
I-CU-M-3xSZ175-4	68,7	35,1	106,0	1900x800x1300	850	35	35	54
I-CU-M-3xSZ185-4	73,8	37,5	106,0	1900x800x1300	850	35	35	54
I-CU-M-4xMLZ15T	12,8	7,2	30,0	2250x600x950	410	16	16	22
I-CU-M-4xMLZ19T	17,2	8,8	40,0	2250x600x950	410	16	16	28
I-CU-M-4xMLZ21T	18,4	9,2	40,0	2250x600x950	410	18	18	35
I-CU-M-4xMLZ26T	22,4	11,6	42,0	2250x600x950	410	22	22	35
I-CU-M-4xMLZ30T	27,2	13,6	54,0	2250x600x1100	470	22	22	35
I-CU-M-4xMLZ38T	32,8	15,6	62,0	2250x600x1100	470	22	22	35
I-CU-M-4xMLZ45T	39,6	19,6	62,0	2250x600x1100	470	28	28	42
I-CU-M-4xMLZ48T	43,6	21,6	66,0	2250x600x1100	470	28	28	42
I-CU-M-4xMLZ58T	50,0	26,0	82,0	2250x600x1300	550	28	28	42
I-CU-M-4xMLZ66T	58,0	28,0	98,0	2250x600x1300	550	28	35	54
I-CU-M-4xMLZ76T	66,8	31,6	102,0	2250x600x1300	550	35	35	54
I-CU-M-4xSZ148-4	80,8	38,0	130,0	2400x800x1300	1000	35	35	54
I-CU-M-4xSZ161-4	85,2	44,0	130,0	2400x800x1300	1000	35	42	67
I-CU-M-4xSZ175-4	91,6	46,8	142,0	2400x800x1300	1120	42	42	67
I-CU-M-4xSZ185-4	98,4	50,0	142,0	2400x800x1300	1120	42	42	67
I-CU-M-5xMLZ15T	16,0	9,0	37,0	2550x600x950	490	16	16	28
I-CU-M-5xMLZ19T	21,5	11,0	49,5	2550x600x950	490	16	16	28
I-CU-M-5xMLZ21T	23,0	11,5	49,5	2550x600x950	490	22	22	35
I-CU-M-5xMLZ26T	28,0	14,5	52,0	2550x600x950	490	22	22	35
I-CU-M-5xMLZ30T	34,0	17,0	67,0	2550x600x1100	565	28	28	42
I-CU-M-5xMLZ38T	41,0	19,5	77,0	2550x600x1100	565	28	28	42

Hermetic scroll compressor type multi-compressor units

Model	Cooling capacity, kW	Power consumption, kW	Maximum current rating, A	Overall dimensions, LxWxH, mm	Weight, kg	Discharge line, mm	Condensing unit drain line, mm	Suction line, mm
I-CU-M-5xMLZ45T	49,5	24,5	77,0	2550x600x1100	565	28	28	42
I-CU-M-5xMLZ48T	54,5	27,0	82,0	2550x600x1100	565	28	35	54
I-CU-M-5xMLZ58T	62,5	32,5	102,0	2550x600x1300	665	28	35	54
I-CU-M-5xMLZ66T	72,5	35,0	122,0	2550x600x1300	665	35	35	54
I-CU-M-5xMLZ76T	83,5	39,5	127,0	2550x600x1300	665	35	42	67
I-CU-M-5xSZ148-4	101,0	47,5	162,0	2700x800x1300	1220	42	42	67
I-CU-M-5xSZ161-4	106,5	55,0	162,0	2700x800x1300	1220	42	42	67
I-CU-M-5xSZ175-4	114,5	58,5	177,0	2700x800x1300	1370	42	42	67
I-CU-M-5xSZ185-4	123,0	62,5	177,0	2700x800x1300	1370	42	42	67
I-CU-M-6xMLZ15T	19,2	10,8	44,0	3000x600x950	585	16	16	28
I-CU-M-6xMLZ19T	25,8	13,2	59,0	3000x600x950	585	22	22	35
I-CU-M-6xMLZ21T	27,6	13,8	59,0	3000x600x950	585	22	22	35
I-CU-M-6xMLZ26T	33,6	17,4	62,0	3000x600x950	585	28	28	42
I-CU-M-6xMLZ30T	40,8	20,4	80,0	3000x600x1100	680	28	28	42
I-CU-M-6xMLZ38T	49,2	23,4	92,0	3000x600x1100	680	28	28	42
I-CU-M-6xMLZ45T	59,4	29,4	92,0	3000x600x1100	680	28	35	54
I-CU-M-6xMLZ48T	65,4	32,4	98,0	3000x600x1100	680	28	35	54
I-CU-M-6xMLZ58T	75,0	39,0	122,0	3000x600x1300	790	35	35	54
I-CU-M-6xMLZ66T	87,0	42,0	146,0	3000x600x1300	790	35	42	67
I-CU-M-6xMLZ76T	100,2	47,4	152,0	3000x600x1300	790	35	42	67
I-CU-M-6xSZ148-4	121,2	57,0	194,0	3200x1000x1300	1440	42	42	67
I-CU-M-6xSZ161-4	127,8	66,0	194,0	3200x1000x1300	1440	42	42	67
I-CU-M-6xSZ175-4	137,4	70,2	212,0	3200x1000x1300	1620	42	54	80
I-CU-M-6xSZ185-4	147,6	75,0	212,0	3200x1000x1300	1620	42	54	80

Low temperature units

R404A/R507A, t_k= 45°C, t_o= −25°C, SH=10K, SC=2K

I-CU-L-2xLLZ013T4	7,4	5,8	25,0	1350x600x1300	290	12	16	28
I-CU-L-2xLLZ015T4	8,8	7,0	31,0	1350x600x1300	290	12	16	28
I-CU-L-2xLLZ018T4	10,4	7,8	31,0	1350x600x1300	295	16	16	35
I-CU-L-2xLLZ024T4	13,4	9,8	43,0	1350x600x1300	310	16	16	35
I-CU-L-2xLLZ034T4	18,0	13,6	53,0	1350x600x1300	335	18	18	42
I-CU-L-3xLLZ013T4	11,1	8,7	37,0	1800x600x1300	395	16	16	35
I-CU-L-3xLLZ015T4	13,2	10,5	46,0	1800x600x1300	395	16	16	35
I-CU-L-3xLLZ018T4	15,6	11,7	46,0	1800x600x1300	405	16	16	35
I-CU-L-3xLLZ024T4	20,1	14,7	64,0	1800x600x1300	425	18	18	42
I-CU-L-3xLLZ034T4	27,0	20,4	79,0	1800x600x1300	425	22	22	42
I-CU-L-4xLLZ013T4	14,8	11,6	50,0	2250x600x1300	500	16	16	35
I-CU-L-4xLLZ015T4	17,6	14,0	62,0	2250x600x1300	500	16	16	35
I-CU-L-4xLLZ018T4	20,8	15,6	62,0	2250x600x1300	510	18	18	42
I-CU-L-4xLLZ024T4	26,8	19,6	86,0	2250x600x1300	540	22	22	42
I-CU-L-4xLLZ034T4	36,0	27,2	106,0	2250x600x1300	540	22	22	54
I-CU-L-5xLLZ013T4	18,5	14,5	62,0	2550x600x1300	605	16	16	35
I-CU-L-5xLLZ015T4	22,0	17,5	77,0	2550x600x1300	605	18	18	42
I-CU-L-5xLLZ018T4	26,0	19,5	77,0	2550x600x1300	620	22	22	42
I-CU-L-5xLLZ024T4	33,5	24,5	107,0	2550x600x1300	655	22	22	54
I-CU-L-5xLLZ034T4	45,0	34,0	132,0	2550x600x1300	655	28	28	67
I-CU-L-6xLLZ013T4	22,2	17,4	74,0	3000x600x1300	710	18	18	42
I-CU-L-6xLLZ015T4	26,4	21,0	92,0	3000x600x1300	710	22	22	42
I-CU-L-6xLLZ018T4	31,2	23,4	92,0	3000x600x1300	725	22	22	42
I-CU-L-6xLLZ024T4	40,2	29,4	128,0	3000x600x1300	770	28	28	54
I-CU-L-6xLLZ034T4	54,0	40,8	158,0	3000x600x1300	770	35	35	67

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