

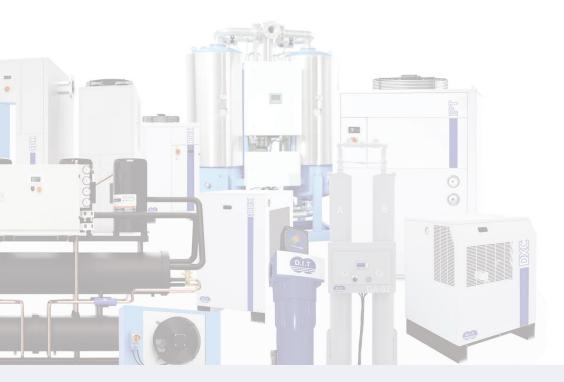


### DIRECT EXPANSION REFRIGERATED AIR DRYER CDK-CA Series

27 - 20,400 m³/h | 50Hz



www.airdit.com



### ABOUT DIT

DIT, Franco-Thai manufacturer with more than two decades of experience as an air treatment specialist, leverages its expertise to develop and design products tailored for industrial use in the compressed air field. DIT is constantly focused on achieving optimal performance and possesses several patents, ensuring a leading position in terms of innovation and an ongoing commitment to excellence in performance.

Emboldened by this expertise and in partnership with industry-leading component suppliers renowned for their cost-effective solutions, DIT provides you with a comprehensive selection of the most efficient products available on the market. Our technical office and commercial team possess the expertise to assist you worldwide with both standard projects and tailor-made solutions. Through valuable suggestions and in response to your preferences, our team excels at identifying the most fitting solutions to meet your specific requirements, enabling you to respond adeptly and globally to address various challenges with precision and expertise.

At DIT, our foremost mission revolves around ensuring client satisfaction. We take great pride in crafting and tailoring solutions that are uniquely designed to meet YOUR specific needs and requirements.

Our CDK line of direct expansion refrigerated air dryers is a valuable addition to our comprehensive range of compressed air treatment solutions. This line complements a wide array of products, including:

- Refrigeration dryers
- Adsorption dryers
- Compressed air treatment unit
- Filtration
- Drains
- Oil/Water separators
- After coolers

Together, these offerings provide a comprehensive suite of compressed air solutions to meet your unique client request with respect of all international standards dedicated to compressed air systems.



## OPERATING PRINCIPLE

#### Introduction to CDK Dryers and Refrigeration Principle

Our CDK dryers work by using a process called direct expansion refrigeration to effectively dry compressed air that comes from the network. With an efficient refrigeration system and our patented 3-in-1 heat exchanger, we achieve optimal drying by efficiently exchanging heat across the entire surface.

#### **Description of Heat Exchanger**

Our heat exchanger, made of stainless steel, has has three sections. The first section is an air/air exchanger, which cools down the moist, water-saturated air before it enters. The second section is an air/refrigerant fluid exchanger, which further cools the compressed air to a temperature of +4°C, removing moisture through a built-in separator. This patented heat exchanger, created in collaboration with the one of the largest heat exchanger manufacturer, ensures efficient cooling in various air conditions and ambient temperatures. It also minimizes resistance to the flow of compressed air, resulting in low pressure drop.

#### **Initial Cooling for Efficiency**

At the beginning of the process, the hot and moisture-laden compressed air undergoes preliminary cooling within the air/air heat exchanger. This reduces the cooling requirement in the air/refrigerant gas zone, increasing energy efficiency by more than 45%.

#### **Condensate Separation and Removal**

The moisture droplets separated within the separator are collected and gravity-fed to the condensate drain. The resulting condensate can be efficiently purged using a fully adjustable high-performance sequential drain or, for greater energy savings, a level-detection drain (available as an option starting from the CDK 0003 model).

#### **Continuous Supply of Dry Air**

After being dried and cooled in the air/refrigerant gas exchanger, the compressed air is reheated in the air/air exchanger before it continues through the compressed air network. This ensures a steady and uninterrupted supply of dry air for your processes.

### PERFORMANT, USER-FRIENDLY AND ECOLOGIC

Every product in the range is equipped with a standard intelligent Carel controller, which provides several features. These include displaying the dew point under pressure, managing the timing of condensate purging (how long it stays open and how often it opens), protecting the compressor and heat exchanger from freezing through electronic safety mechanisms before being mechanically triggered by a low-pressure switch, and various other attributes that enhance safety and optimize the unit's performance.



### **PRODUCT FEATURES**





#### **3-in-1 Heat exchanger**

Constructed with stainless steel brazed plates (AISI316), this heat exchanger offers significant energy savings through its economizer pre-exchanger, minimal pressure drops, and highperformance separator. The stainless-steel plates used in its construction protect against moisture-related corrosion, ensuring exceptional longevity in the market.

#### Compressors

These hermetic refrigeration compressors (including pistons, rotary, and scroll types) efficiently generate cold air to maintain the dew point under all conditions and usage scenarios.

#### Controller

For models from CDK 0003 to 0250, the 'Easy' controller ensures optimal dryer control, providing a dew point display, managing condensate purge, and ensuring the refrigeration circuit's proper communication RS485 for CDK 0300 and beyond, the PGD+PLD controller manages multiple refrigeration circuits simultaneously through a centralized regulator and displays alarms and faults in text format.

#### **Hot Gas Valves**

The next-generation direct expansion dryer includes a hot gas valve, enhancing dew point stability during winter and periods of no heat load. This valve ensures high responsiveness and flexibility in the refrigeration circuit. Its robust design enables operation within a wide range of ambient temperatures, up to  $43^{\circ}$ C and allows for compressed air intake up to  $80^{\circ}$ C.



#### **Cost Efficient Energy Usage**

Our 3-in-1 heat exchanger design ensures exceptional performance with an extremely minimal pressure drop of just 0.15 bar at the specified flow rate.

#### **Easy Setup and Operation**

Our direct expansion refrigeration dryer is a plug-and-play product, with all components seamlessly integrated for straightforward use. CDK dryers come equipped with a power cable, allowing for hassle-free commissioning without the need to access the dryer's internals.

#### **Durability and Sturdiness**

The dryer's robust body, coated with baked epoxy paint, guarantees long-term durability, even in harsh and dusty environments. Its high-efficiency condenser, featuring durable fins, ensures easy cleaning and exceptional longevity.

#### **Streamlined Maintenance**

Maintenance is simplified with easy access via a single panel, facilitating optimal and quick dryer device maintenance. The CDK dryers are designed for direct access to all components, and technical diagnostics are made easier with pressure taps within the refrigeration circuit and a low-pressure gauge on the condenser side.



# **CDK-CA** (WITH AFTERCOOLER )

#### UL/CE After cooler & Condenser Fan

Provide qualified cooling fans with UL/CE safety certification for long using life.

#### **Reliable Solenoid Valve**

#### Easy to Operate CAREL Control Panel

DIT's reliable solenoid valve is standard in all models. The discharge and pause timers are adjustable via the CAREL control panel. The flexible and adaptable operation of the valve ensures effective discharge of condensates.



#### **Stainless Steel Plate Heat Exchanger**

UL / CE / PED Certified Long life time durability Corrosion Resistant High Thermal Transfer Efficiency Compact Easy Installation Proven and Reliable Quality Flexible Flows and Temp / Monitor Option

#### **High Quality Refrigerant Compressor**

Hermetic, suction gas is cooled and protected against thermal and current overloads. The compressor is mounted on anti-vibration rubber supports to ensure quiet running of the dryer.

The advance digital display allows DIT's dryer operation to be easily monitored at a glance.

#### **TECHNICAL SPECIFICATIONS: CDK-CA AIR COOLED DRYER**

Rated		Rated flow		Connections	Power supply	Dime	ensions(	mm)	Weight	Cooling Datas	Pressure
Part model	m3/h	m3/min	cfm	BSPP	V/Ph/Hz	W	L	Н	kg	Refrigerant	Bar(Max.)
CDK-0005 CA	39	0.65	23	1/2"	230V / 1 Ph / 50Hz	380	500	750	60	R134a	16
CDK-0008 CA	54	0.9	32	1/2"	230V / 1 Ph / 50Hz	380	500	750	65	R134a	16
CDK-0010 CA	84	1.4	49	1"	230V / 1 Ph / 50Hz	388	718	880	80	R134a	16
CDK-0015 CA	108	1.8	64	1"	230V / 1 Ph / 50Hz	388	718	880	88	R134a	16
CDK-0020 CA	162	2.7	95	1"	230V / 1 Ph / 50Hz	388	718	880	91	R134a	16
CDK-0030 CA	258	4.3	152	1-1/2"	230V / 1 Ph / 50Hz	388	868	1200	97	R134a	16
CDK-0040 CA	330	5.5	194	1-1/2"	230V / 1 Ph / 50Hz	388	868	1200	113	R134a	16
CDK-0050 CA	408	6.8	240	1-1/2"	230V / 1 Ph / 50Hz	388	868	1200	128	R407C	16
CDK-0060 CA	486	8.1	286	2"	230V / 1 Ph / 50Hz	450	1200	1350	137	R407C	16
CDK-0075 CA	660	11	388	2"	230V / 1 Ph / 50Hz	450	1200	1350	150	R407C	16
CDK-0100 CA	900	15	530	2-1/2"	400V / 3 Ph / 50Hz	600	1200	1600	200	R407C	16
CDK-0125 CA	1080	18	636	2-1/2"	400V / 3 Ph / 50Hz	600	1200	1600	230	R407C	16
CDK-0150 CA	1380	23	812	2-1/2"	400V / 3 Ph / 50Hz	600	1200	1600	250	R407C	16
CDK-0175 CA	1680	28	989	2-1/2"	400V / 3 Ph / 50Hz	600	1200	1600	260	R407C	10
CDK-0200 CA	1800	30	1059	3"	400V / 3 Ph / 50Hz	1000	1500	1850	380	R407C	10
CDK-0250 CA	2160	36	1271	3"	400V / 3 Ph / 50Hz	1000	1500	1850	420	R407C	10
CDK-0300 CA	2580	43	1518	DN 100	400V / 3 Ph / 50Hz	1000	1800	2000	480	R407C	10
CDK-0350 CA	2880	48	1695	DN 100	400V / 3 Ph / 50Hz	1000	1800	2000	520	R407C	10
CDK-0400 CA	3660	61	2154	DN 100	400V / 3 Ph / 50Hz	1000	1800	2000	580	R407C	10

#### Specifications

Unit operating limits	Ambient temperatures from +5°C to +43°C- pressure from 4 bar to 16 bar (10bar over 1680 m3/h)
Design conditions	Ambient temperatures +35°C, inlet air temperatures +55°C, pressure dew point +4°C, pressure 7 bar(g)
Refrigerant type	R134a up to 330m3/h and over R407c

The advertised product weights are net without packaging and expressed in kilograms.

The maximum operating pressure is 16 bar (232psi)

The maximum compressed air inlet temperature is 80°C

The correction factors details are available from our sales and technical teams, or are specified within our selection software, below is an extract of main values

#### Dryer maximum airflow = Dryer airflow x K1 x K2 x K3 x K4

Correction Factor															
K1 Working pressure	(barg)	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Correction factor	(K1)	0.57	0.72	0.82	0.92	1	1.06	1.08	1.11	1.14	1.18	1.19	1.21	1.24	1.26
K2 Ambient temperature	(°C)	28	30	32	35	38	40	42	43	-	-	-	-	-	-
Correction factor	(K2)	1.14	1.10	1.06	1	0.94	0.91	0.88	0.86	-	-	-	-	-	-
K3 Air inlet temperature	(°C)	45	50	55	70	80	-	-	-	-	-	-	-	-	-
Correction factor	(K3)	1.48	1.18	1	0.83	0.71	-	-	-	-	-	-	-	-	-
K4 Dew point	(°C)	-	3	4	5	6	7	8	10	-	-	-	-	-	-
Correction factor	(K4)	-	0.96	1	1.02	1.03	1.06	1.07	1.09	-	-	-	-	-	-

#### **TECHNICAL SPECIFICATIONS: CDK-CW WATER COOLED DRYER**

		Rated flow		Connections	Power supply	Dim	ensions(	nsions(mm)		Cooling Datas	Pressure
Part model	m3/h	m3/min	cfm	BSPP	V/Ph/Hz	W	L	Н	kg	Refrigerant	Bar(Max.)
CDK-0100 CW	900	15	530	2"	400V / 3 Ph / 50Hz	450	1200	1350	165	R407C	16
CDK-0125 CW	1080	18	636	2-1/2"	400V / 3 Ph / 50Hz	450	1200	1350	198	R407C	16
CDK-0150 CW	1380	23	812	2-1/2"	400V / 3 Ph / 50Hz	450	1200	1350	208	R407C	16
CDK-0175 CW	1680	28	989	2-1/2"	400V / 3 Ph / 50Hz	450	1200	1350	225	R407C	10
CDK-0200 CW	1800	30	1059	3"	400V / 3 Ph / 50Hz	600	1200	1600	256	R407C	10
CDK-0250 CW	2160	36	1271	3"	400V / 3 Ph / 50Hz	600	1200	1600	380	R407C	10
CDK-0300 CW	2580	43	1518	DN 100	400V / 3 Ph / 50Hz	600	1200	1600	400	R407C	10
CDK-0350 CW	2880	48	1695	DN 100	400V / 3 Ph / 50Hz	600	1200	1600	450	R407C	10
CDK-0400 CW	3660	61	2154	DN 125	400V / 3 Ph / 50Hz	650	1204	1350	510	R407C	10
CDK-0500 CW	4320	72	2542	DN 125	400V / 3 Ph / 50Hz	650	1204	1350	930	R407C	10
CDK-0600 CW	5340	89	3143	DN 150	400V / 3 Ph / 50Hz	800	1500	1900	1050	R407C	10
CDK-0700 CW	5760	96	3390	DN 150	400V / 3 Ph / 50Hz	800	1500	1900	1120	R407C	10
CDK-0800 CW	7320	122	4308	DN 150	400V / 3 Ph / 50Hz	800	1800	1900	1260	R407C	10
CDK-1000 CW	8640	144	5085	DN 200	400V / 3 Ph / 50Hz	1200	1850	2000	1580	R407C	10
CDK-1200 CW	10200	170	6003	DN 200	400V / 3 Ph / 50Hz	1200	1850	2000	1860	R407C	10
CDK-1500 CW	11100	185	6532	DN 250	400V / 3 Ph / 50Hz	1200	1850	2000	2290	R407C	10
CDK-2000 CW	17100	285	10063	DN 300	400V / 3 Ph / 50Hz	1200	2400	2100	2400	R407C	10
CDK-2500 CW	20400	340	12005	DN 300	400V / 3 Ph / 50Hz	1200	2400	2100	2890	R407C	10

Specifications	
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Design conditions	Ambient temperatures +35°C, inlet air temperatures +45°C, pressure dew point +4°C, pressure 7 bar(g)
Refrigerant type	R407c

The advertised product weights are net without packaging and expressed in kilograms.

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Correction factor	(K1)	0.57	0.72	0.82	0.92	1	1.06	1.08	1.11	1.14	1.18	1.19	1.21	1.24	1.26
K2 Water temperature	(°C)	25	26	28	30	32	34	36	37	-	-	-	-	-	-
Correction factor	(K2)	1.14	1.10	1.06	1	0.94	0.91	0.88	0.86	-	-	-	-	-	-
K3 Air inlet temperature	(°C)	45	50	55	70	80	-	-	-	-	-	-	-	-	-
Correction factor	(K3)	1.20	1.10	1	0.91	0.83	-	-	-	-	-	-	-	-	-
K4 Dew point	(°C)	-	3	4	5	6	7	8	10	-	-	-	-	-	-
Correction factor	(K4)	-	0.96	1	1.02	1.03	1.06	1.07	1.09	-	-	-	-	-	-

#### SUSTAINABLE AIR & WATER SOLUTIONS FOR INDUSTRIAL APPLICATIONS



#### **DRYER INDUSTRIAL (THAILAND) CO., LTD.**

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