Dry All®

Full Range of HVAC&R Line Products

3-IN-1 ALUMINIUM HEAT EXCHANGERS

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Introduction

Dry All 3-in-1 Aluminium Heat Exchanger are specially designed Heat Exchangers for Air Dryer application. These Heat Exchangers are a combination of the following three:

1. Pre-Cooler
2. Evaporator
3. Separator

This 3-in-1 Aluminium Heat Exchanger provides high thermal transfer performance in a compact size for your Air Dryer system.

Key Features

Multi-functional Compact Unit: Simplified design consolidates a pre-cooler, evaporator, and separator in a single high-integrity heat exchanger.

Saves Energy: Users reduce system operating costs as compressors work less because heat transfer performance is 3-5 times higher compared to traditional shell and tube type heat exchangers while also maintaining extremely low-pressure drop (less than 0.2 bar).

Saves time: 3-in-1 (air-to-air heat exchanger, refrigerant evaporator for air and air-water separator) design is compact and easier for the user to install compared to traditional heat exchangers used in air dryers.

Durable: The combination of high-quality corrosion-resistant aluminium body in junction with superior expertise in brazing technology makes for an extremely durable and reliable working unit.

Environment Friendly: Its reduced size and high efficiency require less refrigerant to operate when compared to traditional Air Dryer.

Flexible: Product specifications can be made according to different needs, helping users improve heat transfer efficiency and functioning within their system.

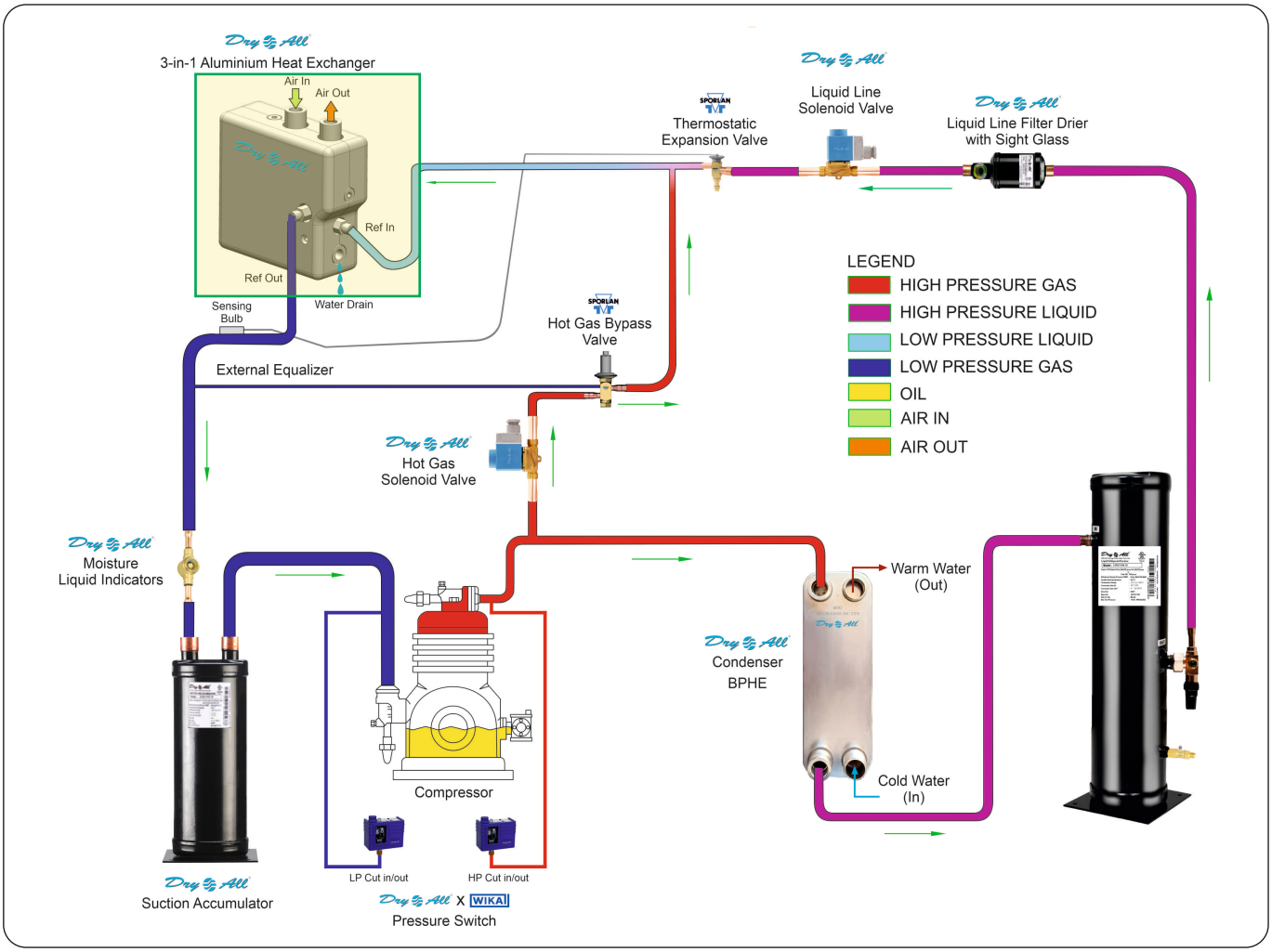
Application of Compressed Air

- Compressed air energy storage
- Air braking systems
- Refrigeration Unit using a vortex tube
- Air start systems in engines
- In operation and control of valves and instruments
- Spray painting
- Dental and medical services
- Pneumatic hammers and drills
- Pneumatic nail gun
- Sand-blasting
- Air blow-guns

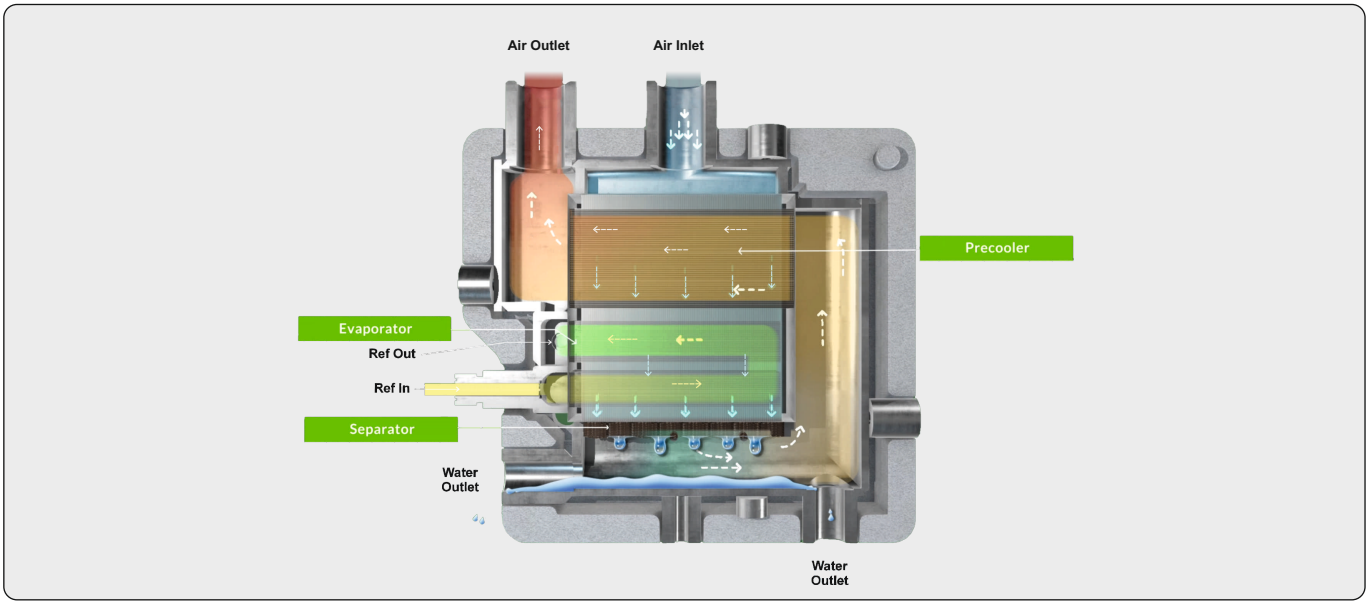
Benefits of using Dry Compressed Air

- Low maintenance costs
- Can handle high loads over long periods
- Easy to store and transport

Product Installed in Refrigeration System



Working Principle



- The working of Dry All 3-in-1 Aluminium Heat Exchanger begins with compressed hot and moist air entering the Pre-Cooler section. In the first stage of **Precooling**, this hot and moist air exchanges heat with treated cold air in the Pre-Cooler, preheating the incoming air to the working temperature.

- During the second stage of **Evaporation**, the cooled and moist air moves into the highly efficient Evaporator, where the temperature drops further, causing the water to condense out through evaporation.

- In the third stage of **Separation**, the air reaches the separator section, where centrifugal force and gravity work together to separate the condensate water, ensuring clog-free operation and easy maintenance. Finally, the cool and dry air returns to the pre-heater, completing the cycle.

Role and Importance of each part of 3-in-1 Aluminium Heat Exchanger

Precooler:
Saves energy by exchanging heat from inlet and outlet air temperature.
Outlet air can be used directly. It is preheated to the working temperature.

Evaporator:
Condense out moisture from the air through our high-efficiency Heat Exchanger.
High Efficiency, low dew point, and low-pressure drop.

Separator:
Centrifugal force and Gravity separate moisture from the air.
Clogging-free, easy to maintain.

Selection Parameter & Technical Data

Sr. No	Model No	Processing Flow		Cooling Capacity kW	Air Pressure Drop (Bar)	Heat Exchanger Area (m^2)	
		Nm^3 / min	CFM			Air Side	Ref. Side
1	DAHX-1N-34G-34RX34R	0.71	25	0.47	0.11	0.43	0.09
2	DAHX-1.6N-1G-34RX34R	1.14	40	0.75	0.11	0.76	0.18
3	DAHX-2.6N-1G-34RX34R	2.00	70	1.32	0.15	1.1	0.26
4	DAHX-3.8N-112G-34RX114R	2.57	90	1.7	0.14	1.67	0.38
5	DAHX-6.5N-112G-34RX114R	5.14	180	3.4	0.16	2.93	0.69
6	DAHX-8.5N-112G-34RX114R	6.29	220	4.15	0.15	3.68	0.88
7	DAHX-11.5N-2G-34RX114R	8.57	300	5.66	0.14	5.44	1.23
8	DAHX-13.5N-2G-34RX114R	10.00	350	6.6	0.16	6.48	1.48
9	DAHX-17N-212G-34RX134R	12.86	450	8.2	0.16	12.4	1.7
10	DAHX-20N-212G-34RX134R	15.71	550	10.02	0.17	14.4	1.99
11	DAHX-25N-3G-34RX134R	18.57	650	11.86	0.15	18.4	2.55
12	DAHX-35N-4C-134RX134R	22.86	800	14.58	0.12	36.88	4.09
13	DAHX-40N-4C-134RX134R	28.57	1000	18.21	0.14	41.08	4.57
14	DAHX-50N-4C-134RX134R	34.29	1200	21.89	0.13	51.58	5.77

Models Above are rated for Standard rating condition:

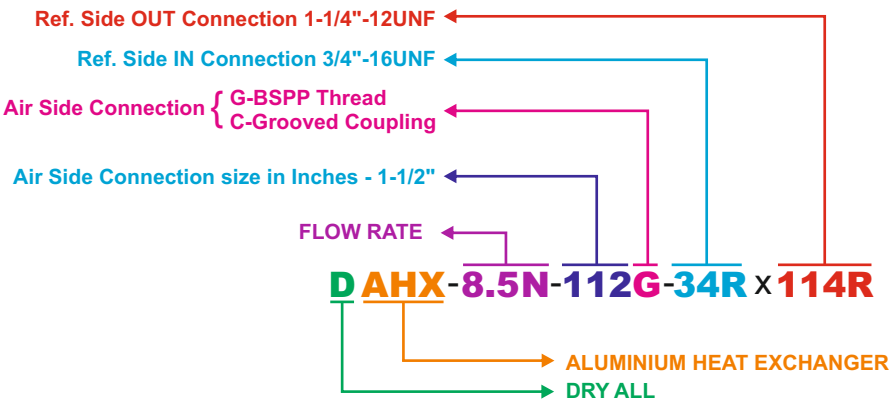
a. Inlet Air Temperature= 45°C

b. Inlet Air Pressure=7 Bar

c. Dew Point Temperature=3°C

d. Refrigerant=R134a

Nomenclature



Correction Factor For Flow Rate								
Ambient Temp °C	30	35	40	45	50	55	–	–
Factor (A)	1.20	1.05	1.00	0.91	0.79	0.60	–	–
Inlet Temp°C	30	35	40	45	50	–	–	–
Factor (B)	1.48	1.36	1.18	1	0.84	–	–	–
Dew Point Temp°C	1	2	3	5	7	10	–	–
Factor (C)	0.80	0.90	1.00	1.15	1.25	1.50	–	–
Working Pressure Barg	1	3	5	7	9	11	13	15
Factor (D)	0.50	0.74	1.00	1.00	1.10	1.20	1.30	1.70

Selection of Model:

Ex. If Rated Air Flow rate from Compressor is 35 CFM, use below method to calculate Actual air flow rate after processing from 3-in-1 Aluminium Heat Exchanger -

Rated Air Flow rate (RAFR) – 35 CFM
Ambient temperature (AT) – 30°C
Inlet Air Temperature (IAT) – 50°C
Dew Point Temperature (DPT) – 7°C
Working Air Pressure (WAP) – 3 bar

Actual air flow rate = RAFR X Correction factor (AT) X Correction factor (IAT) X Correction factor (DPT) X Correction factor (WAP)

= 35 X 1.20 X 0.84 X 1.25 X 0.74

Actual air flow rate = 32.6 CFM

Please select Air Dryer model with higher value of Processing Flow (CFM), if the calculated actual air flow rate is between the two values.
If Processing Flow is given as 32.6 CFM, please choose Air Dryer Model - DAHX-1.6N-1G-34RX34R.

Sr. No	Model No	Processing Flow		Cooling Capacity kW	Air Pressure Drop (Bar)	Heat Exchanger Area (m^2)	
		Nm^3 / min	CFM			Air Side	Ref. Side
1	DAHX-1N-34G-34RX34R	0.71	25	0.47	0.11	0.43	0.09
2	DAHX-1.6N-1G-34RX34R	1.14	40	0.75	0.11	0.76	0.18

Technical Details

Parameter	Values
Working Pressure - Air side (DAHX-1N to DAHX-13.5N)	16 Bar
Working Pressure - Air side (DAHX-17N to DAHX-50N)	13 Bar
Working Pressure - Ref. side	30 Bar
Max Working Temperature - Air side	0°C to + 65°C
Max Working Temperature - Ref. side	-10°C to + 65°C

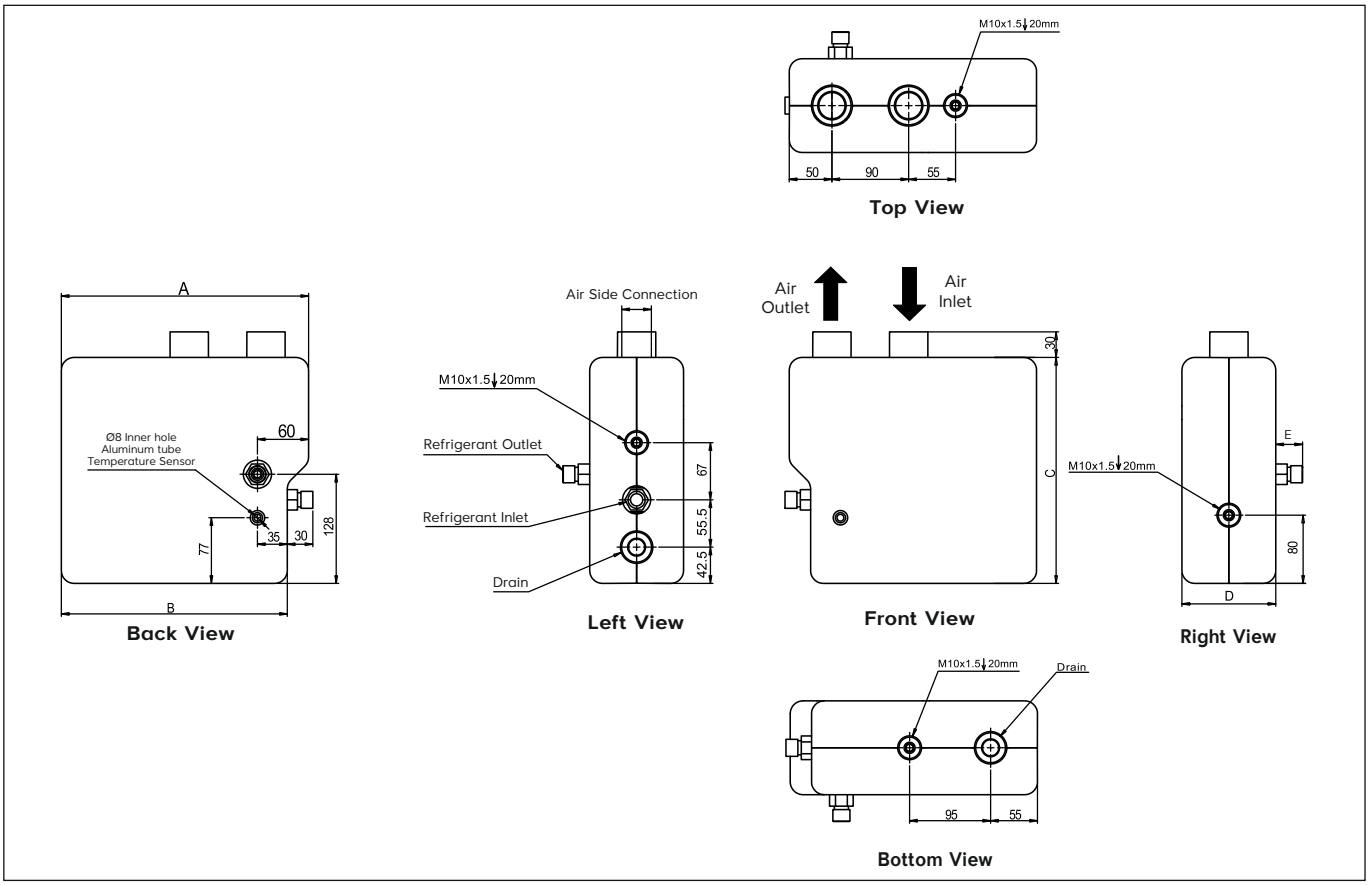
Some Important Instruction

- Liquid Line Filter Drier is a must to be installed before 3-in-1 Aluminium in Heat Exchanger.
- The Dew Point Range should be between 3°C to 10°C.
- Air Inlet Temperature Range should be between 35°C to 50°C
- Dust Filter should be installed before Air Inlet of the Evaporator.

Conditions required for Air Dryer Selection

1. Air pressure (Barg)
2. Air inlet temperature (°C)
3. Dew point temperature (°C)
4. Flow rate of Air (CFM)

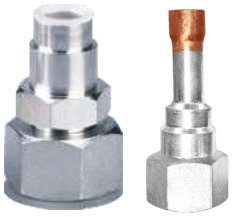
Product Views



Sr. No	Model No.	Dimensions (mm)					Refrigerant Connection		Air Side Connection In & Out	Water Drain Size	Weight (Kgs)
		A	B	C	D	E	In	Out			
1	DAHX-1N-34G-34RX34R	290	265	265	110	32.5	3/4"-16UNF	3/4"-16UNF	G3/4"	G1/2"	3.50
2	DAHX-1.6N-1G-34RX34R	290	265	265	110	31.5	3/4"-16UNF	3/4"-16UNF	G1"	G1/2"	4.50
3	DAHX-2.6N-1G-34RX34R	290	265	265	110	30.5	3/4"-16UNF	3/4"-16UNF	G1"	G1/2"	5.30

Adaptors for Refrigerant side connections

S/N	Model No.	Connection size	ORFS Thread
		A	B
1	*DSAS34-16F-3S	3/8" ODF	3/4"-16UNF
2	DSAS34-16F-4S	1/2" ODF	
3	*DSAS34-16F-4S	1/2" ODF	
4	DSAA34-16F-3S	3/8" ODF	
5	DSAA34-16F-3F	3/8" Flare	
6	DSAA34-16F-4F	1/2" Flare	

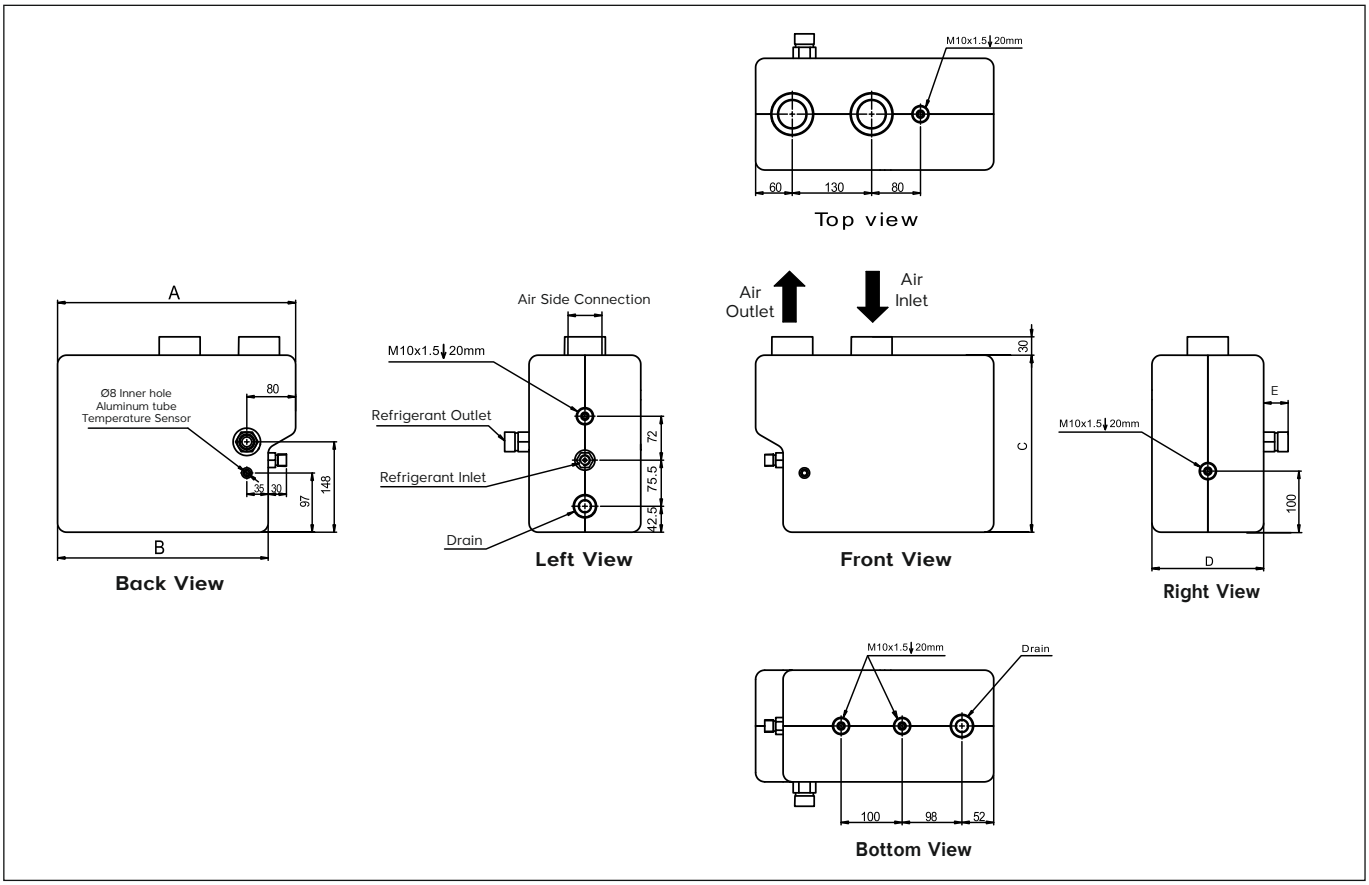


DSAS Series

DSAA Series

Note: [*] Denotes connections are of Copper.

Product Views



Sr. No	Model No.	Dimensions (mm)					Refrigerant Connection		Air Side Connection In & Out	Water Drain Size	Weight (Kgs)
		A	B	C	D	E	In	Out			
1	DAHX-3.8N-112G-34RX114R	390	345	290	183	40	3/4"-16UNF	1-1/4"-12UNF	G1-1/2"	G1/2"	7.50
2	DAHX-6.5N-112G-34RX114R	390	345	290	183	39.5	3/4"-16UNF	1-1/4"-12UNF	G1-1/2"	G1/2"	10.60
3	DAHX-8.5N-112G-34RX114R	390	345	290	183	40	3/4"-16UNF	1-1/4"-12UNF	G1-1/2"	G1/2"	11.50

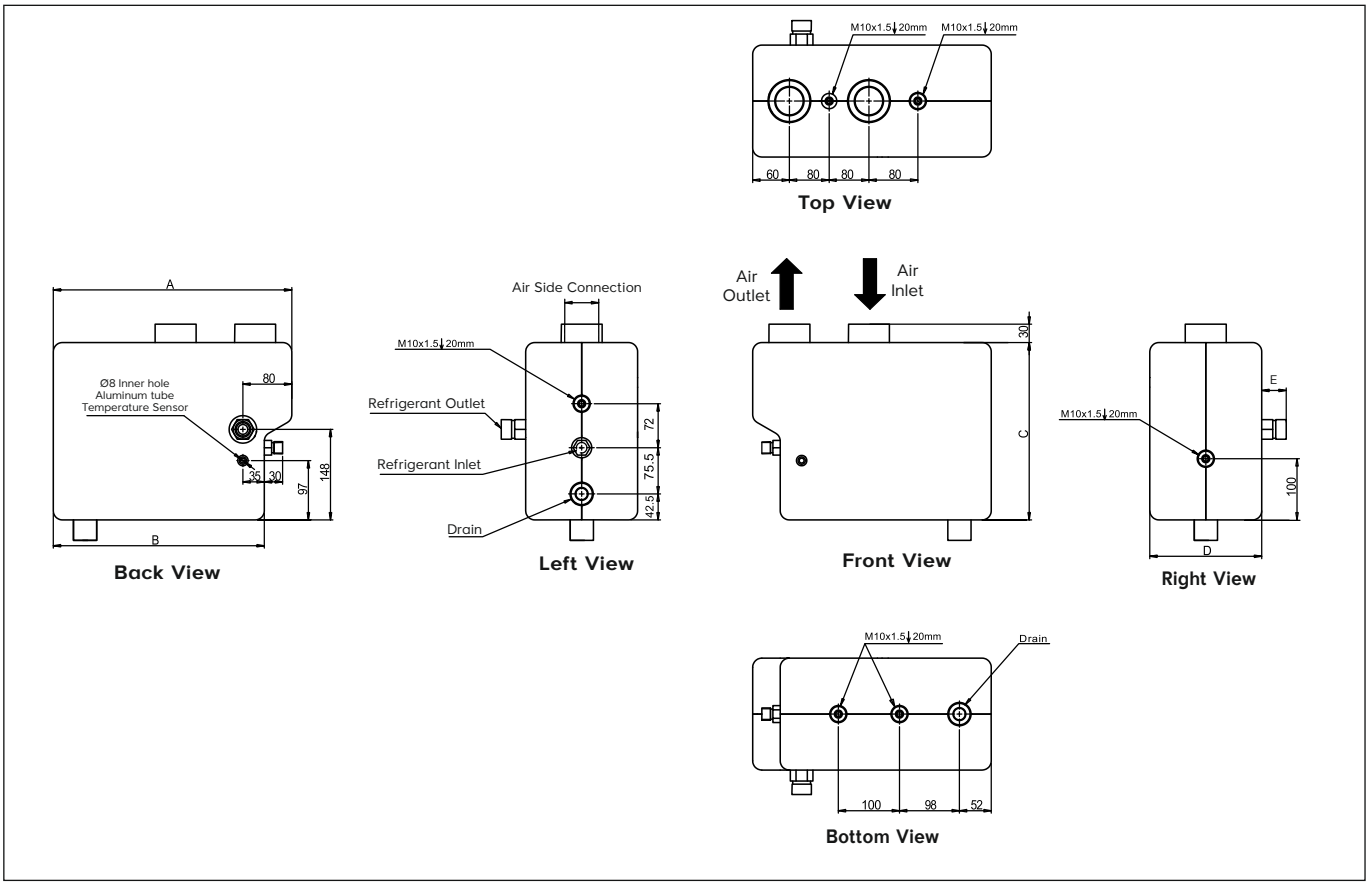
Adaptors for Refrigerant side connections

S/N	Model No.	Connection size	ORFS Thread
		A	B
1	*DSAS34-16F-3S	3/8" ODF	3/4"-16 UNF
2	DSAS34-16F-4S	1/2" ODF	
3	DSAA34-16F-3F	3/8" Flare	
4	*DSAS34-16F-4S	1/2" ODF	
5	DSAA34-16F-3S	3/8" ODF	
6	DSAA34-16F-4F	1/2" Flare	
7	DSAA114-12F-5S	5/8" ODF	1-1/4"-12 UNF
8	DSAA114-12F-6S	3/4" ODF	

S/N	Model No.	Connection size	ORFS Thread
		A	B
9	DSAA114-12F-7S	7/8" ODF	1-1/4"-12 UNF
10	DSAA114-12F-9S	1-1/8" ODF	
11	DSAA114-12F-11S	1-3/8" ODF	
12	DSAA114-12F-13S	1-5/8" ODF	
13	DSAS114-12F-5S	5/8" ODF	
14	DSAS114-12F-6S	3/4" ODF	
15	DSAS114-12F-7S	7/8" ODF	
16	DSAS114-12F-9S	1-1/8" ODF	

Note: [*] Denotes connections are of Copper.

Product Views



Sr. No	Model No.	Dimensions (mm)					Refrigerant Connection		Air Side Connection In & Out	Water Drain Size	Weight (Kgs)
		A	B	C	D	E	In	Out			
1	DAHX-11.5N-2G-34RX114R	470	450	330	219	39.5	3/4"-16UNF	1-1/4"-12UNF	G2"	G1/2"	17.50
2	DAHX-13.5N-2G-34RX114R	470	450	330	219	40.5	3/4"-16UNF	1-1/4"-12UNF	G2"	G1/2"	19.40

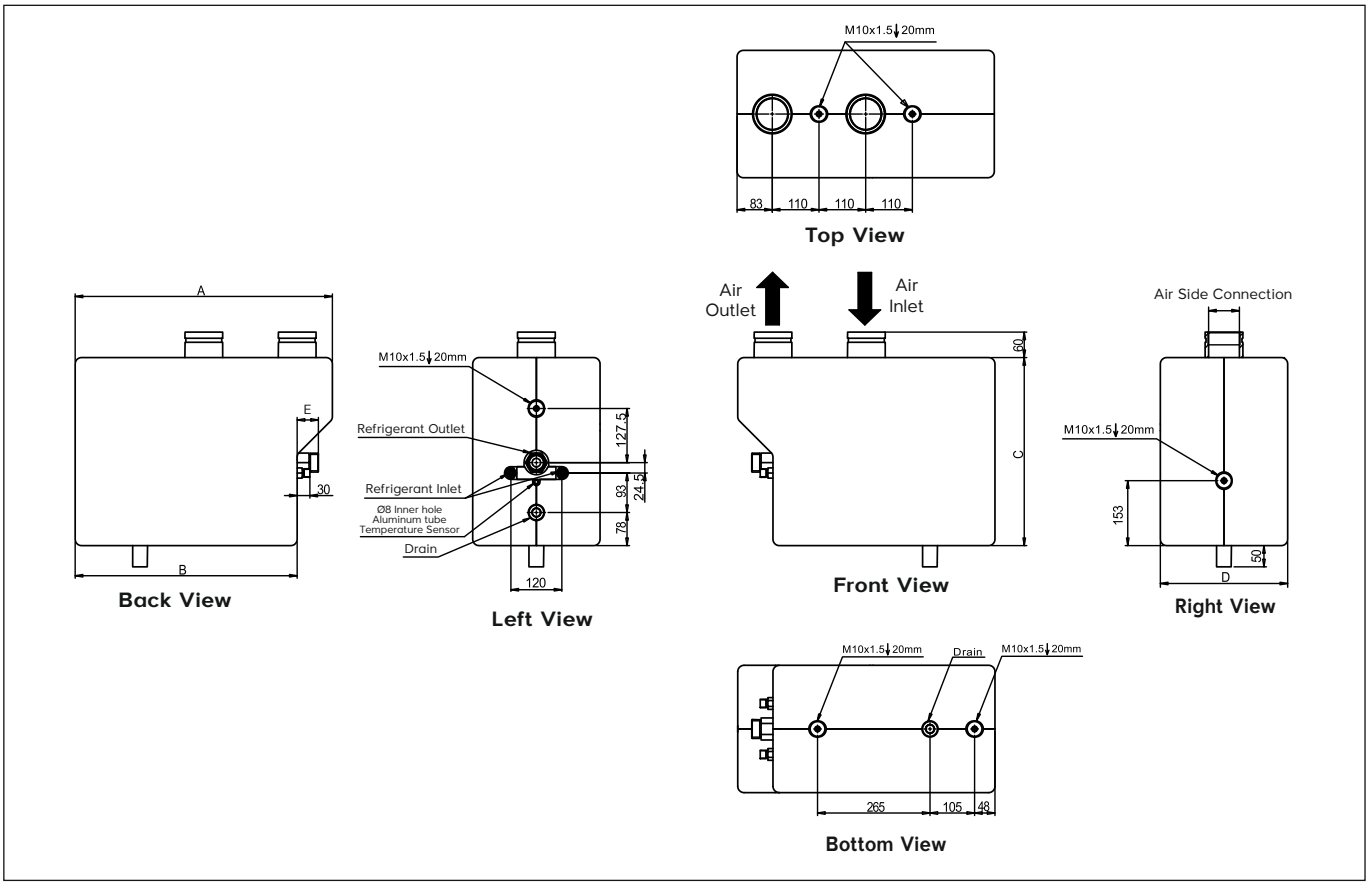
Adaptors for Refrigerant side connections

S/N	Model No.	Connection size	ORFS Thread
		A	B
1	*DSAS34-16F-3S	3/8" ODF	3/4"-16 UNF
2	DSAS34-16F-4S	1/2" ODF	
3	DSAA34-16F-3F	3/8" Flare	
4	*DSAS34-16F-4S	1/2" ODF	
5	DSAA34-16F-3S	3/8" ODF	
6	DSAA34-16F-4F	1/2" Flare	
7	DSAA114-12F-5S	5/8" ODF	1-1/4"-12 UNF
8	DSAA114-12F-6S	3/4" ODF	

S/N	Model No.	Connection size	ORFS Thread
		A	B
9	DSAA114-12F-7S	7/8" ODF	1-1/4"-12 UNF
10	DSAA114-12F-9S	1-1/8" ODF	
11	DSAA114-12F-11S	1-3/8" ODF	
12	DSAA114-12F-13S	1-5/8" ODF	
13	DSAS114-12F-5S	5/8" ODF	
14	DSAS114-12F-6S	3/4" ODF	
15	DSAS114-12F-7S	7/8" ODF	
16	DSAS114-12F-9S	1-1/8" ODF	

Note: [*] Denotes connections are of Copper.

Product Views



Sr. No	Model No.	Dimensions (mm)					Refrigerant Connection		Air Side Connection In & Out	Water Drain Size	Weight (Kgs)
		A	B	C	D	E	In	Out			
1	DAHX-17N-212G-34RX134R	606	526	443	300	50	2 x 3/4"-16UNF	1-3/4"-12UNF	G2-1/2"	G1/2"	28
2	DAHX-20N-212G-34RX134R	606	526	443	300	50	2 x 3/4"-16UNF	1-3/4"-12UNF	G2-1/2"	G1/2"	31
3	DAHX-25N-3G-34RX134R	606	526	443	300	50	2 x 3/4"-16UNF	1-3/4"-12UNF	G3"	G1/2"	38

Adaptors for Refrigerant side connections

S/N	Model No.	Connection size	ORFS Thread
		A	B
1	*DSAS34-16F-3S	3/8" ODF	3/4"-16 UNF
2	DSAS34-16F-4S	1/2" ODF	
3	DSAA34-16F-3F	3/8" Flare	
4	*DSAS34-16F-4S	1/2" ODF	
5	DSAA34-16F-3S	3/8" ODF	
6	DSAA34-16F-4F	1/2" Flare	
7	DSAA134-12-6S	3/4" ODF	1-3/4"-12 UNF
8	DSAA134-12-7S	7/8" ODF	

S/N	Model No.	Connection size	ORFS Thread
		A	B
9	DSAA134-12-9S	1-1/8" ODF	1-3/4"- 12 UNF
10	DSAA134-12-11S	1-3/8" ODF	
11	DSAA134-12-13S	1-5/8" ODF	
12	DSAS134-12-6S	3/4" ODF	
13	DSAS134-12-7S	7/8" ODF	
14	DSAS134-12-9S	1-1/8" ODF	
15	DSAS134-12-11S	1-3/8" ODF	
16	DSAS134-12-13S	1-5/8" ODF	

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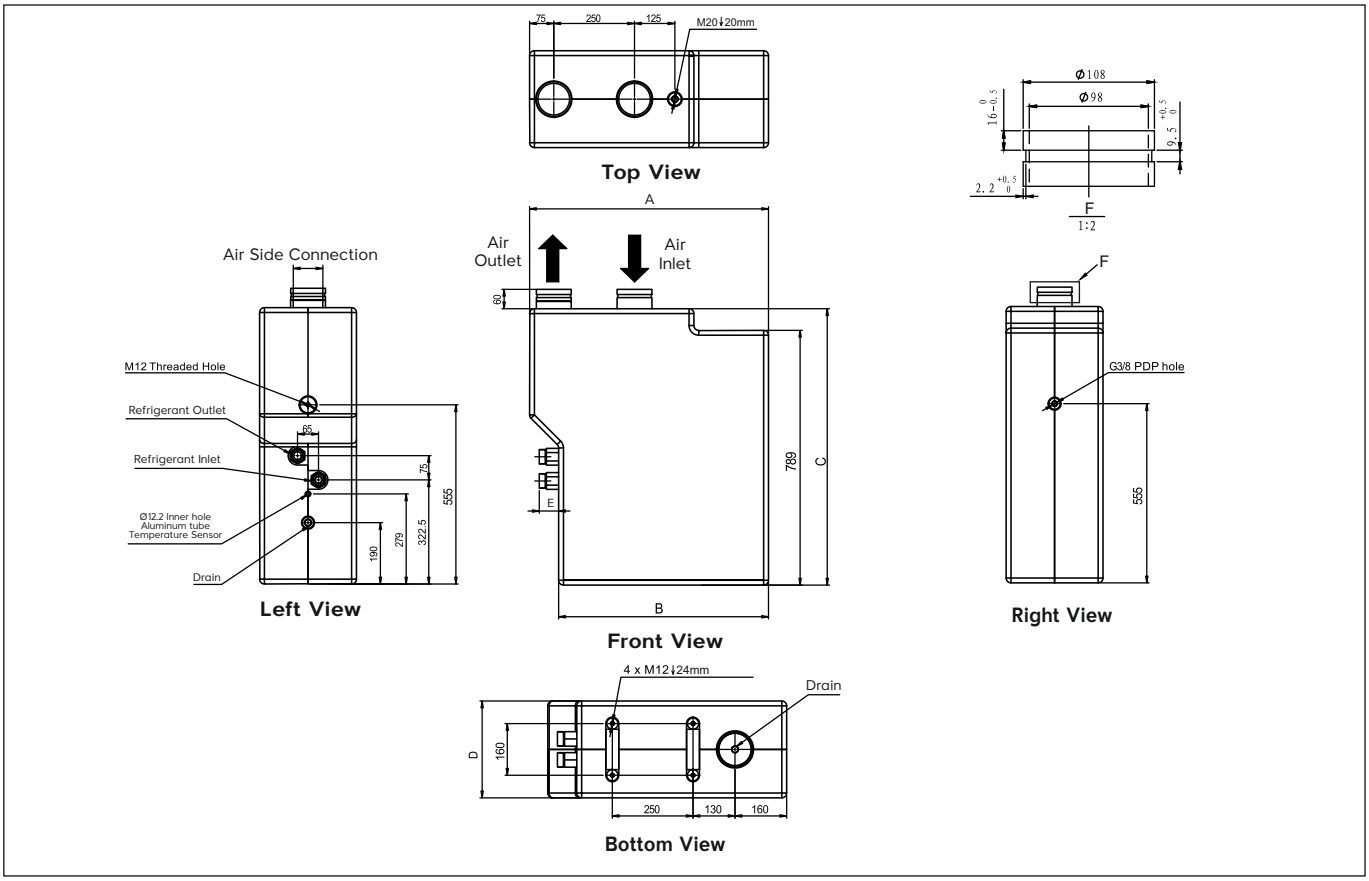
Product Views



Sr. No	Model No.	Dimensions (mm)					Refrigerant Connection		Air Side Connection In & Out	Water Drain Size	Weight (Kgs)
		A	B	C	D	E	In	Out			
1	DAHX-35N-4C-134RX134R	740	650	856	300	60	1-3/4"-12UNF	1-3/4"-12UNF	OD Ø108mm	G1/2"	60
2	DAHX-40N-4C-134RX134R	740	650	856	300	60	1-3/4"-12UNF	1-3/4"-12UNF	OD Ø108mm	G1/2"	66
3	DAHX-50N-4C-134RX134R	740	650	856	300	60	1-3/4"-12UNF	1-3/4"-12UNF	OD Ø108mm	G1/2"	78

Adaptors for Refrigerant side connections

S/N	Model No.	Connection size	ORFS Thread
		A	B
1	DSAA134-12-6S	3/4" ODF	1-3/4"- 12 UNF
2	DSAA134-12-7S	7/8" ODF	
3	DSAA134-12-9S	1-1/8" ODF	
4	DSAA134-12-11S	1-3/8" ODF	
5	DSAA134-12-13S	1-5/8" ODF	
6	DSAS134-12-6S	3/4" ODF	
7	DSAS134-12-7S	7/8" ODF	
8	DSAS134-12-9S	1-1/8" ODF	
9	DSAS134-12-11S	1-3/8" ODF	1-3/4"- 12 UNF
10	DSAS134-12-13S	1-5/8" ODF	

Check Hologram for Genuine Product

Manufactured by:

Dry All®

Full Range of HVAC&R Line Products

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