Dry All®

Full Range of HVAC&R Line Products

Battery Thermal Management System (BTMS)
Brazed Plate Heat Exchanger

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Introduction

Dry All Brazed Plate Heat Exchanger, DA-BTMS series are used in battery thermal management systems to manage and regulate the temperature of batteries in electric vehicles or other battery-powered applications. It's designed to transfer heat between two different fluid circuits, effectively cooling or heating the battery as needed.

Some key points about this Brazed Plate Heat Exchangers used in battery thermal management systems:

Key Features

Dry All, DA-BTMS Series offer several advantages when used in Battery Thermal Management Systems (BTMS) for electric vehicles or other battery-powered applications:

1. High Heat Transfer Efficiency
2. Compact Design
3. Durable and Reliable Structure
4. Improved Battery Performance
5. Energy Efficient
6. Higher Volume Capacity
7. Reduced Environment Impact
8. High pressure application
9. Compatible of most refrigerants

Application

1. Battery Thermal Management System
2. Electric Bus air-conditioning
3. Process chillers
4. Light commercial air-conditioning
5. Precision Cooling
6. Cold Room
7. Test Chambers

Working

- A battery thermal management system (BTMS) in a vehicle that uses a brazed plate heat exchanger (BPHE) as a chiller operates to maintain optimal battery temperature for performance, safety, and longevity.

- During operation due to internal resistance and electro chemical reaction, batteries generate heat. Excessive heat can reduce battery efficiency, degrade materials, and pose safety risks.

- A coolant (usually a mixture of water and glycol) is circulated through the battery pack. This coolant absorbs the heat generated by the batteries.

- The heated coolant then flows through the BPHE. The BPHE is designed with multiple thin plates that create channels for the coolant and refrigerant to flow in close proximity but without mixing. A refrigerant is circulated through the BPHE by the vehicle's refrigeration system. The refrigerant absorbs heat from the coolant due to the temperature difference between them. As the refrigerant absorbs the heat, it evaporates, cooling the coolant in the process.

- Cooled coolant exits the BPHE and is recirculated back through the battery pack to continue absorbing heat.

- The heated refrigerant moves to the vehicle's compressor, which increases its pressure and temperature. It then flows through a condenser where it releases the absorbed heat to the outside air and condenses back into a liquid. The refrigerant is then expanded and cooled before returning
- to the BPHE to repeat the cycle.

- This process ensures that the battery temperature is kept within an optimal range, enhancing performance, safety, and battery life. The BPHE is effective because it provides a large surface area for heat exchange in a compact design, making it ideal for automotive applications where space and efficiency are crucial.

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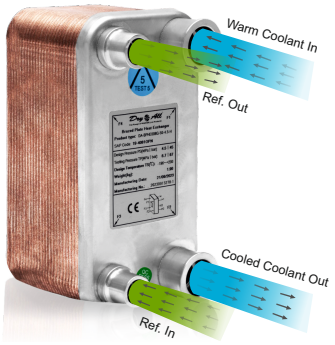
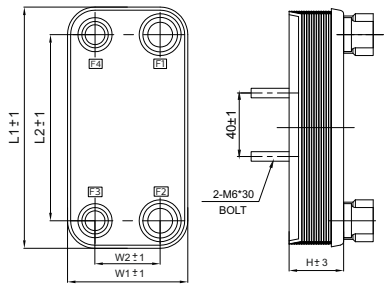


As Evaporator

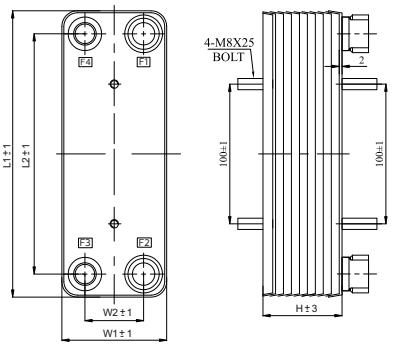
Model Available

Sr. No.	Model No.	Capacity in TR Evaporator	Capacity in KW Evaporator	No of Plates	Total Heat Transfer Area(m^2)	Weight (kg)	Max Working Pressure (Bar)	Volume (Ltr)	
								F1F2 Side	F3F4 Side
1	DA-BTMS08-50-4.5-H	3.42	12	50	0.48	1.90	45	0.21	0.20
2	DA-BTMS08-60-4.5-H	4.28	15	60	0.58	2.18	45	0.255	0.247
3	DA-BTMS014-60-3.0-H	-	-	60	0.81	-	30	0.60	0.58

Dimensional Detail



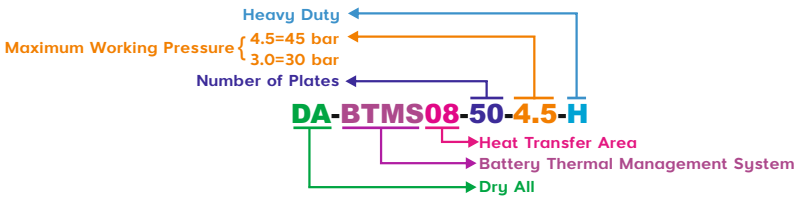
Drawing - 1



Drawing - 2

Sr. No.	Model No.	L1(mm)	L2(mm)	W1(mm)	W2(mm)	H Thickness (mm)	F1/F2	F3/F4	Refer Drawing No.
1	DA-BTMS08-50-4.5-H	153	120	75	42	73	3/4" ODF	1/2" ODF	1
2	DA-BTMS08-60-4.5-H	153	120	75	42	85	3/4" ODF	1/2" ODF	
3	DA-BTMS014-60-3.0-H	205	172	75	42	146	7/8" ODF	5/8" ODF	2

Nomenclature



Selection Parameters

Technical Data	
Maximum working pressure (Bar)	30/45 Bar
Maximum Test Pressure (Bar)	45/67 Bar
Design Temperature	-196°C/+200°C
Plate Material	SS316L
Connection Material	SS304
Cover Plate Material	SS304
Brazing Material	Copper

Performance Data

Sr. No.	Model No.	Refrigerant	Coolant Flow rate (LPM)	ΔT°C Temperature Drop	Evaporation Temperature (°C)
1	DA-BTMS08-50-4.5-H	R410A	10	17	5
2			20	10	5
3			30	6	5
4			40	4.5	5
5	DA-BTMS08-60-4.5-H		10	17	5
6			20	10	5
7			30	6	5
8			40	4.5	5
9	DA-BTMS014-60-3.0-H	R134A	40	4.5	5

"Dry All" Battery Thermal Management System (BTMS) Brazed Plate Heat Exchanger are designed to deliver enhanced performance with maximum heat transfer that ensure enduring resilience and longer life of batteries.

Check Hologram for Genuine Product

Manufactured by:

Dry All®

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