Product Specification

Asetek 6-Series All-in-One Liquid Coolers for SIs

Revision Log:

Version	Date	Notes	Author	Distribution
PS 1.0	Mar 17, 2023	Release of Product Specification	PCH	Asetek
PS1.1	May 4, 2023	Updated Regulator	BPA	Asetek

Table of Contents

1 Introduction

This document describes the specifications of the Asetek 6-Series SI liquid coolers. These coolers are based on the Asetek Sigrid (Gen7) platform and are available in different HEX (radiator) sizes.

1.1 Part Numbers & Descriptions

Item	Asetek SKU #	Prod Name	Prod Code	Product NRTL Key
1	35-102-0000489	612S-M2	C26	45-11-11-00
2	35-102-0000490	612X-M2	C27	45-11-11-00
3	35-102-0000491	624S-M2	C28	45-11-11-00
4	35-102-0000492	624T-M2	C29	45-11-11-00
5	35-102-0000493	628S-M2	C30	45-12-11-00
6	35-102-0000494	636S-M2	C31	45-11-11-00
7	35-102-0000480	636T-M2	C25	45-11-11-00

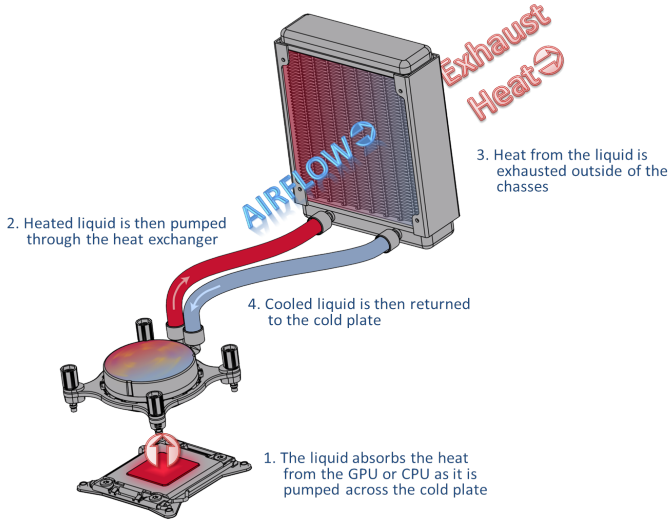
1.2 Liquid Cooler Ingredients

The liquid cooling solution consists of the major components listed below and numbered in the accompanying illustration:

1) Liquid coolant (inside cooler)
2) Pump & cold plate assembly
3) Pump Cap
4) Flexible tubing
5) Heat Exchanger (HEX)

The liquid cooler is delivered fully assembled, leak tested and filled with liquid coolant.

1.3 How Liquid Cooling Works



2 General Specifications

Specification	Value
Operating Temperature - local ambient at pump	2°C to 50°C
Working Liquid Temperature Range	2°C to 60°C
Storage Temperature Range	-40° to 70°C
Humidity Range	5% to 90% non-condensing
Permeation Lifetime	50,000 hours in typical use

3 Ingredient Specifications

3.1 Coolant

The coolant is a mixture of demineralized water and propylene glycol with the following benefits: Anti-Freeze, Anti-Corrosion, and Antibiological. Unlike automotive anti-freeze, the coolant is safe and environmentally friendly. The coolant may be recycled.

Specification	Value
Composition	22% Propylene Glycol: 78% RO Water
Inhibitors	Anti-Freeze Anti-Corrosion Antibiological
Toxicity	This coolant is not classified as dangerous according to EC or OSHA criteria. MSDS available.
EC Classification	This coolant does not require classification according to the criteria of the Commission of the European Union.

3.2 Cold Plate

Specification	Value
Material	Copper
Construction	Micro-channel

3.3 TIM (Thermal Interface Material)

TIM material is pre-applied on the cold plate and protected by a plastic cover during transportation.

Specification	Value
Brand & Model	Asetek standard (30mm ⌀)
Type	Thermal Grease

3.4 Pump

Specification	Value
Platform	Sigrid
Motor Type	1 -phase
Impeller Type	Centrifugal
Rated Voltage	12 VDC
Operating Voltage Range	10.8 – 13.2 VDC
Minimum Startup Voltage	7.5 VDC
Rated Power	4W at full speed
Power & Communications Cable	4-wire, flat ribbon cable, black, 330mm length from where it exits the pump cap; terminated in 4-pin fan connector Pin Out — Function - Pin1 — Ground - Pin2 — Power (12VDC) - Pin3 — TACH signal output - Pin4 — PWM signal input

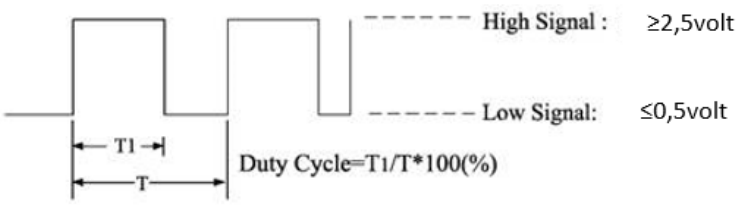
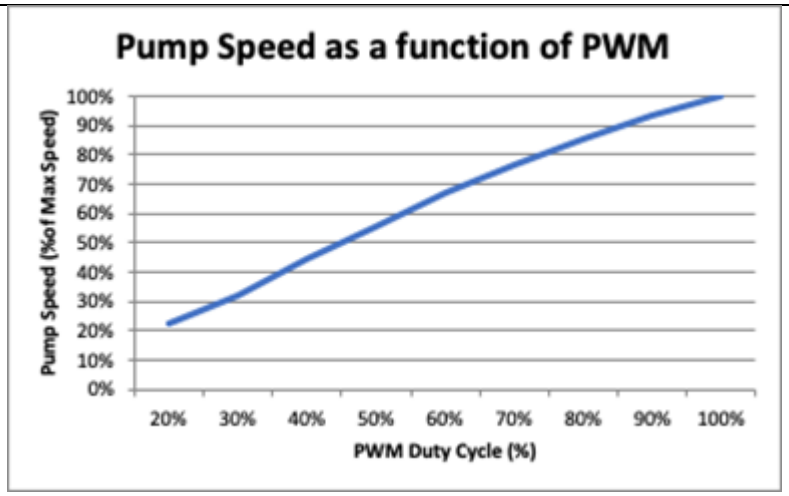
3.4.1 Pump Reporting

The pump reports its speed by means of a tach signal.

Specification	Value
Type	Open drain collector pin
Max voltage	20 VDC
Max power draw	10mA
Signal, during normal operation	Square wave, 4 waves per pump rotation RPM = Signal Frequency x 60/4

3.4.2 Pump Control

The speed of the pump may be controlled via a PWM signal. If no PWM signal is provided, pump will run at full speed.

Specification	Value
Nominal signal range	0V to 5.0V (signal is pulled up to 3.3 volts)
Nominal frequency	25 kHz
Allowable frequency range	21 kHz to 28 kHz
Max input voltage	6V
Signal wave form	
Pump Speed Response to PWM Signal	

3.5 Pump Cap

Specification	Value
Type	 Square-shape, modular black plain cap without logo. Logo can be printed as customized.

3.6 Supported Retention Kits

Socket	SKU
Intel 115x/1200 – Premium	35-150-0000014
Intel 1700 – Premium	35-150-0000021
AMD AM4/5 – Premium	35-150-1000056

3.7 Tubes

Specification	Value
Material	EPDM/IIR Tube
Sleeving	Braided, black
End Caps	Matte Black Plastic
Length, Supply (inlet) HEX to Pump Tube	400mm
Length, Return (outlet) Pump to HEX Tube	400mm
Cross-sectional Dimensions	Outer Diameter: 10.8mm (nominal)
Minimum Bend Radius	22mm

3.8 Heat Exchanger

Specification	Value
Material	Aluminum
Nominal Dimensions	120 x 120 x 27mm 120 x 120 x 49mm 120 x 240 x 27mm 120 x 240 x 38mm 140 x 280 x 27mm 120 x 360 x 27mm 120 x 360 x 38mm
Color	Matte Black

3.9 Fans

No fan(s) included.

4 Accessories

Accessories are packaged with but not connected to the liquid cooling module.

Parameter	Accessories
HEX Mounting Hardware	**Single Fan HEX - Models: 612S-M2 & 612T-M2** Qty 4 – UNC 6-32, 30mm; black, PH2 Qty 4 – UNC 6-32, 8mm; black, PH2 Qty 4 – UNC 6-32, 5mm; black, PH2 Qty 4 – Washers; black **Dual Fan HEX - Models: 624S-M2, 624T-M2 & 628S-M2** Qty 8 – UNC 6-32, 30mm; black, PH2 Qty 8 – UNC 6-32, 8mm; black, PH2 Qty 8 – UNC 6-32, 5mm; black, PH2 Qty 8 – Washers ; black **Triple Fan HEX - Models: 636S-M2 & 636T-M2** Qty 12 – UNC 6-32, 30mm; black, PH2 Qty 12 – UNC 6-32, 8mm; black, PH2 Qty 12 – UNC 6-32, 5mm; black, PH2 Qty 12 – Washers; black

5 Included Documentation

An Asetek Installation Manual is included with each carton of coolers.

6 Packaging

Specification	612S-M2	612X-M2	624S-M2	624T-M2
Package Type	Bulk Packaging	Bulk Packaging	Bulk Packaging	Bulk Packaging
Units per Carton	12pcs	12pcs	8pcs	8pcs
Carton Dimensions	588x498x290mm 23.1x19.6x11.4in	588x498x290mm 23.1x19.6x11.4in	637x447x270mm 25.1x17.6x10.6in	637x447x270mm 25.1x17.6x10.6in
Carton Gross Weight	10.7kg 23.5lbs	13.4kg 29.5lbs	9.0kg 19.8lbs	11.1kg 24.4lbs
Units per Pallet	144pcs	144pcs	96pcs	96pcs
Loaded Pallet Dimensions	1219x1016x1170mm 48x40x46.1in	1219x1016x1170mm 48x40x46.1in	1120x1120x1010mm 44.1x44.1x39.8in	1120x1120x1010mm 44.1x44.1x39.8in
Pallet Gross Weight	142.3kg 313.8lbs	174.9kg 385.5lbs	122.6kg 270.3lbs	147.7kg 325.6lbs

Specification	628S-M2	636S-M2	636T-M2
Package Type	Bulk Packaging	Bulk Packaging	Bulk Packaging
Units per Carton	8pcs	8pcs	8pcs
Carton Dimensions	607x417x310mm 23.9x16.4x12.2in	637x447x270mm 25.1x17.6x10.6in	637x447x270mm 25.1x17.6x10.6in
Carton Gross Weight	10.3kg 22.8lbs	10.2kg 22.4lbs	12.7kg 28.1lbs
Units per Pallet	96pcs	96pcs	96pcs
Loaded Pallet Dimensions	1120x1120x1010mm 44.1x44.1x39.8in	1120x1120x1010mm 44.1x44.1x39.8in	1120x1120x1010mm 44.1x44.1x39.8in
Pallet Gross Weight	138.7kg 305.7lbs	136.8kg 301.5lbs	167.5kg 369.2lbs

7 Labeling

The following labels are used on the product.

7.1 Label, Asetek Serial Number and Regulatory Marks

This label is placed on the bottom of the HEX. Dimensions are 70x13mm. It contains the following information:

Information	Remark
Serial Number	Standard Asetek format
Brand	Asetek
Patent website	pat.www.ip-mark.com
Regulatory marks	CE, UKCA
Product Key	Refer to Section 1.1
Voltage	12VDC
Power	4.0W

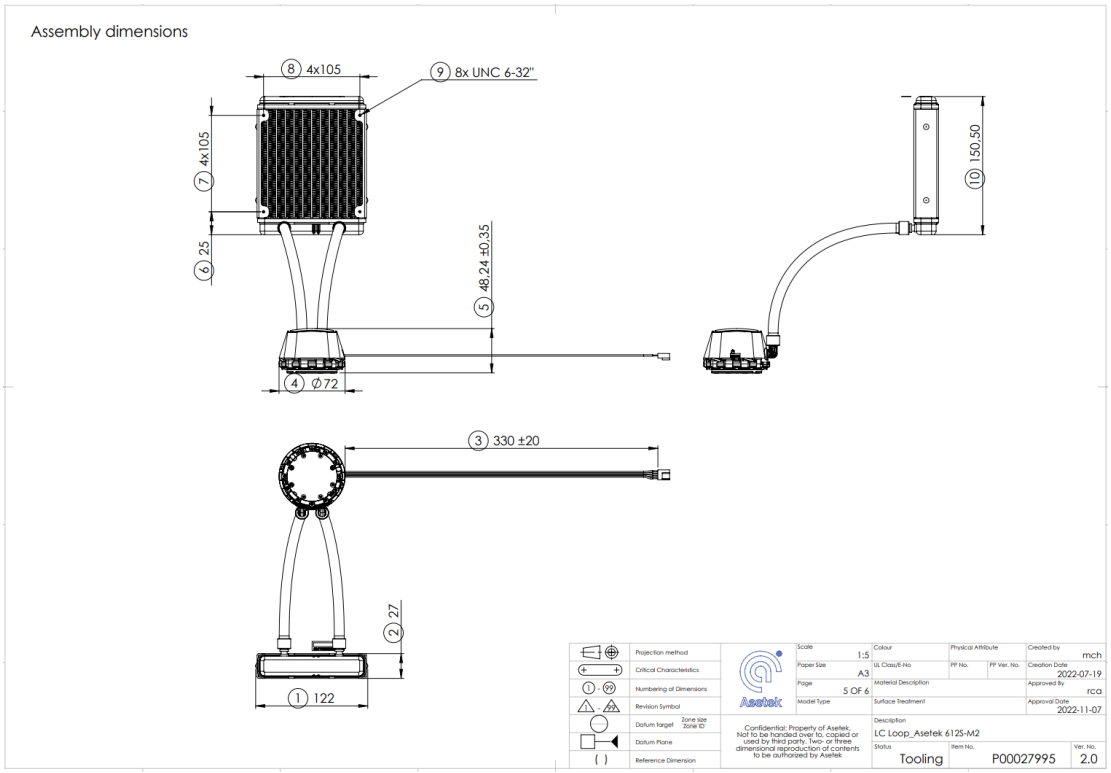
7.2 Compliance with Standards

This product complies with the following standards:

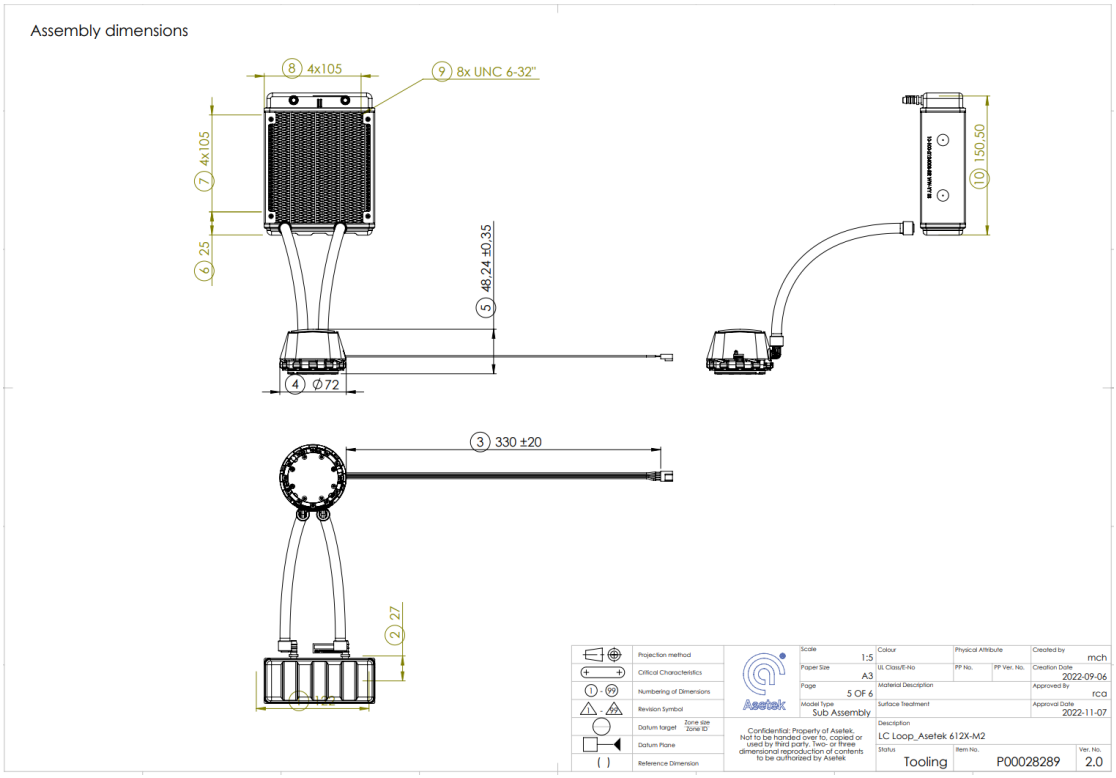
Specification	Value
Safety	IEC/EN/UL 62368-1
Environmental	RoHS, REACH, California Prop 65
EMC	Tested according to following standards: US FCC Part 15, Class B EN 55022: Radiated Disturbances EN 61000-3-2: Harmonic Current Test EN 61000-3-3: Voltage Fluctuations and Flicker Test EN 61000-4-2: Electrostatic discharge Immunity EN 61000-4-3: Radiated Susceptibility EN 61000-4-4: Electrical Fast Transient/Burst Immunity EN 61000-4-5: Surge Immunity EN 61000-4-6: Conducted Susceptibility EN 61000-4-11: Voltage Dips, Short Interruptions Immunity
Packaging	ISTA Standard

8 Dimensional Drawing

612S-M2



612X-M2



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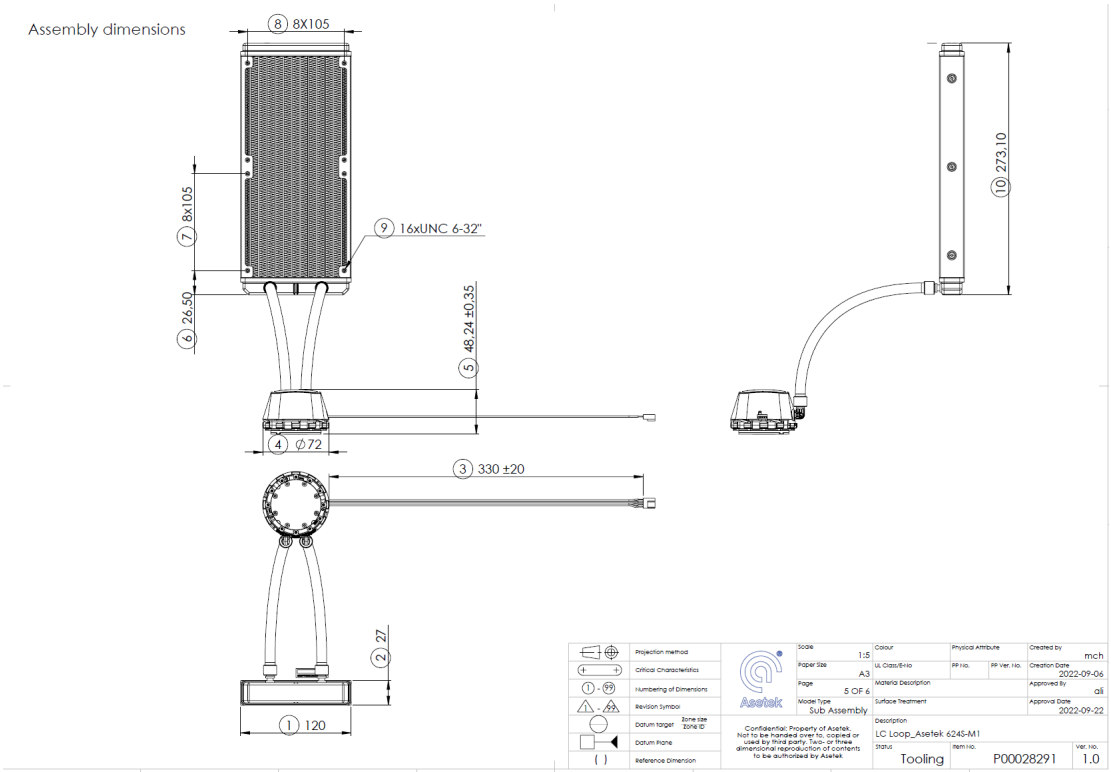

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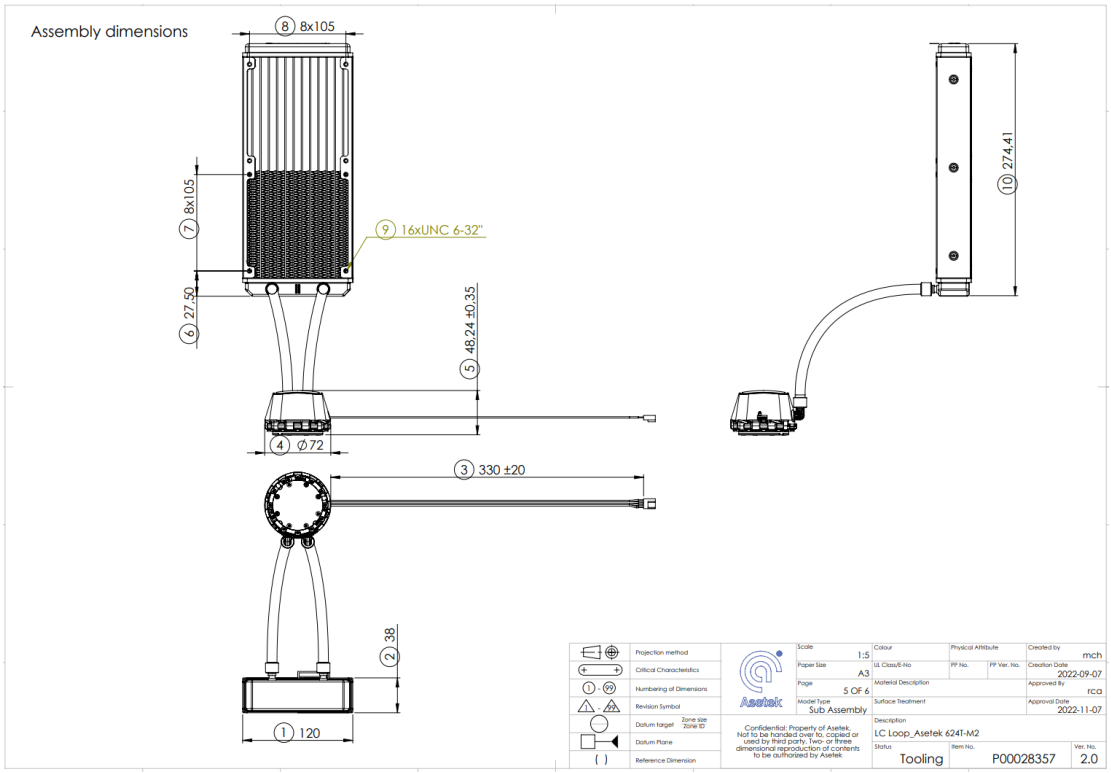

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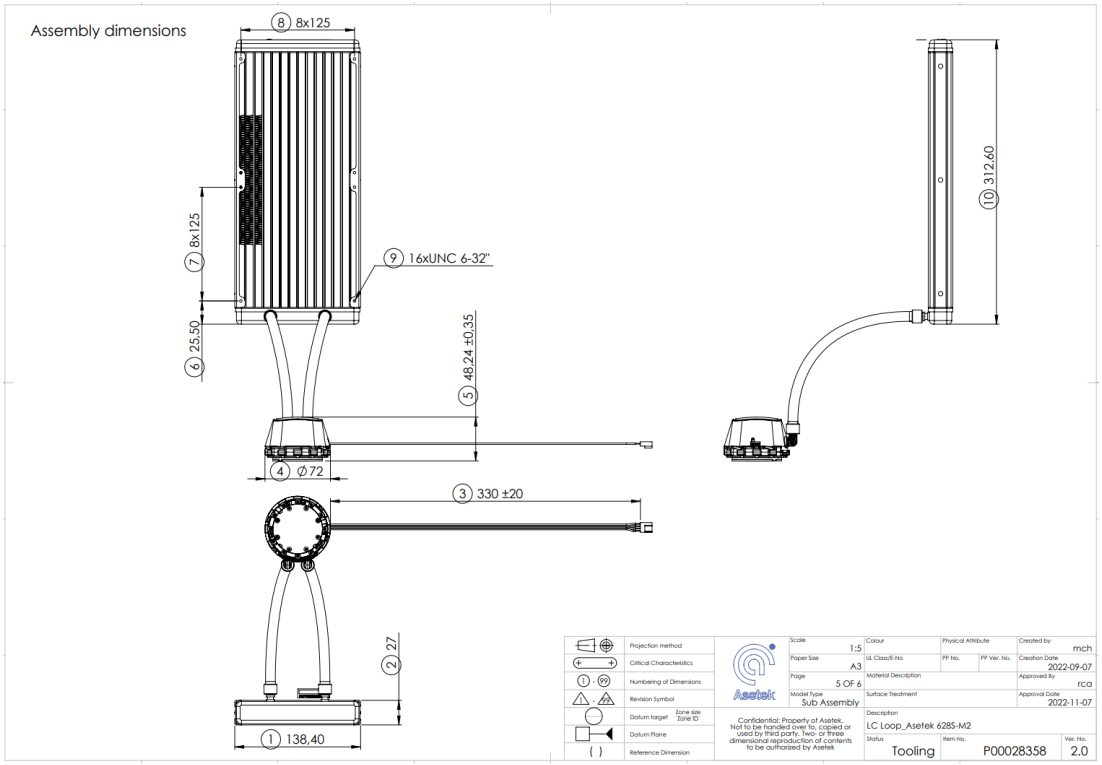
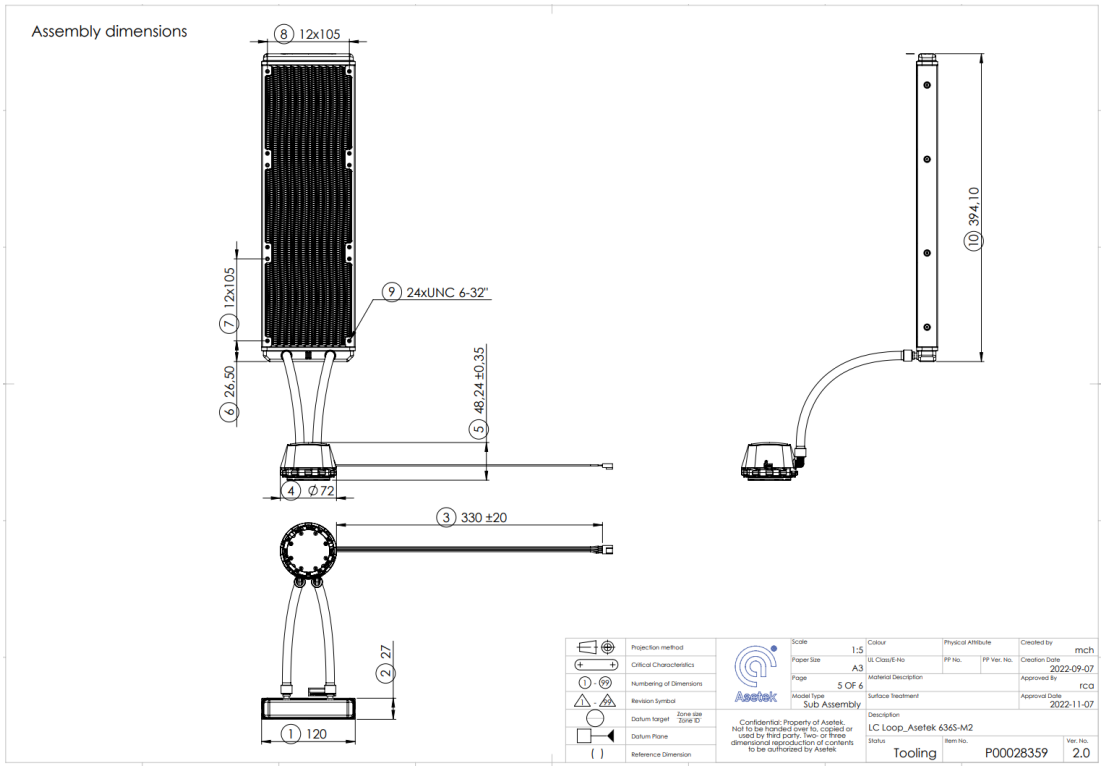
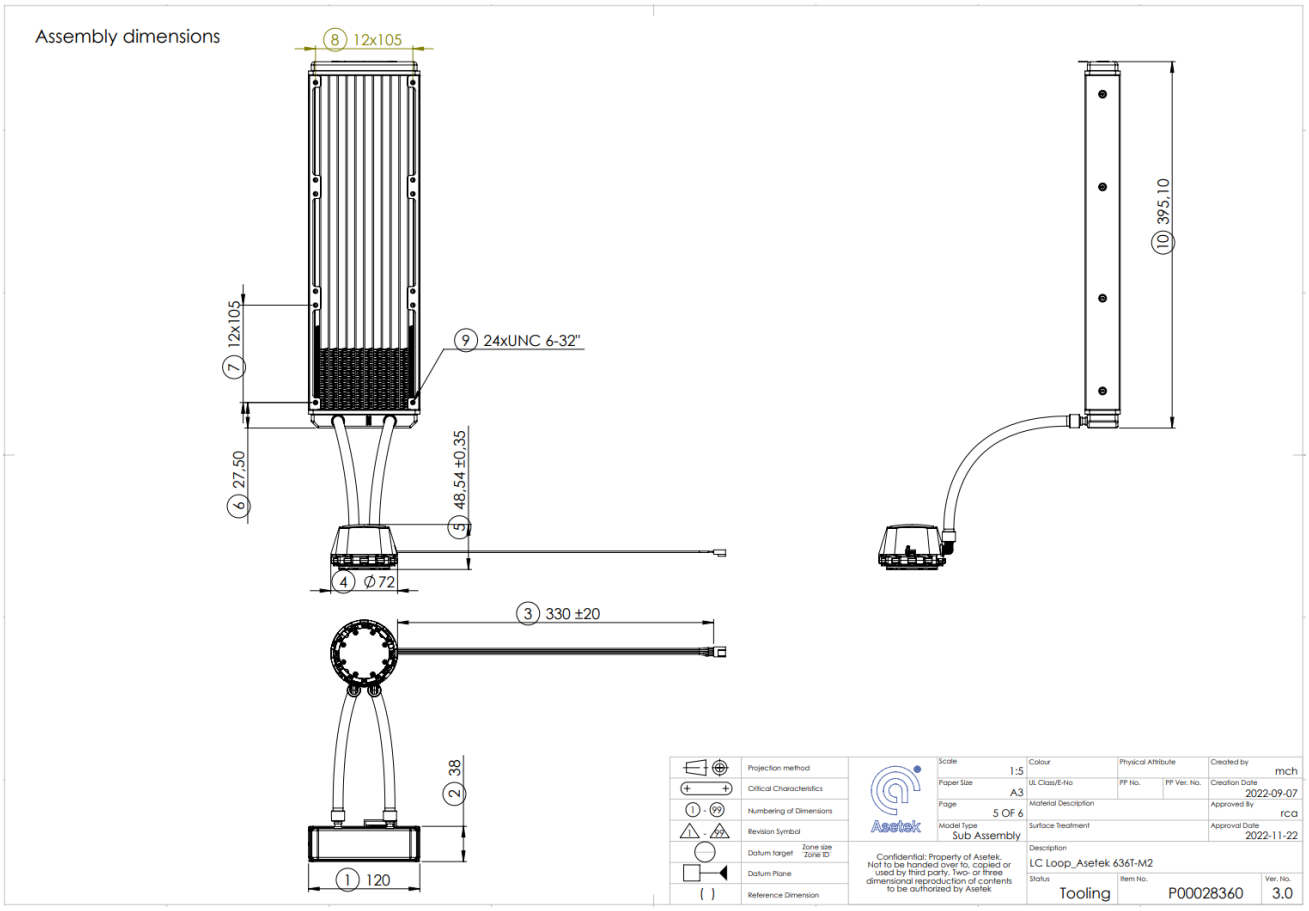


636S-M2



636T-M2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8 12x105
9 24xUNC 6-32"
7 12x105
6 27,50
5 48,54 ±0,35
4 Ø72
3 330 ±20
2 38
1 120
10 395,10
Projection method
Critical Characteristics
Numbering of Dimensions
Revision Symbol
Datum target
Zone size
Zone ID
Datum Plane
Reference Dimension
Asetek
Scale 1:5
Paper Size A3
Page 5 OF 6
Model Type Sub Assembly
Colour
Physical Attribute
PP No.
PP Ver. No.
Material Description
Surface Treatment
Created by mch
UL Class/E-No
Creation Date 2022-09-07
Approved By rca
Approval Date 2022-11-22
Confidential: Property of Asetek. Not to be handed over to, copied or used by third party. Two- or three dimensional reproduction of contents to be authorized by Asetek
Description LC Loop_Asetek 636T-M2
Status Tooling
Item No. P00028360
Ver. No. 3.0

9 Regulatory Approvals

Ref. Certif. No.

DK-138095-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	CPU Liquid cooling device
Name and address of the applicant	ASETEK DANMARK A/S ASSENSVEJ 2 AALBORG EAST 9220 Denmark
Name and address of the manufacturer	ASETEK DANMARK A/S ASSENSVEJ 2 AALBORG EAST 9220 Denmark
Name and address of the factory Note: *When more than one factory, please report on page 2*	XIAMEN INTRETECH INC No. 100, Dongfu West Road, Haicang District Xiamen, Fujian, 361027 China ☐ Additional Information on page 2
Ratings and principal characteristics	12 Vdc
Trademark / Brand (if any)	
Customer's Testing Facility (CTF) Stage used	
Model / Type Ref.	612S-M2, 612X-M2, 624S-M2, 624T-M, 628S-M2 ☒ Additional Information on page 2
Additional information (if necessary may also be reported on page 2)	**Additionally evaluated to:** EN 62368-1:2014, EN 62368-1:2014/A11:2017 ☐ Additional Information on page 2
A sample of the product was tested and found to be in conformity with	IEC 62368-1:2014
As shown in the Test Report Ref. No. which forms part of this Certificate	E306950-A6015-CB-1 issued on 2023-02-24

This CB Test Certificate is issued by the National Certification Body

UL Solutions

☐ UL Solutions (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☒ UL Solutions (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL Solutions (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL Solutions (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2023-02-24

Signature: Jan-Erik Storgaard

	Ref. Certif. No.
IEC IECEE	**DK-138095-UL**

Additional Model Detail(s): 636S-M2, 636T-M2
PRODUCT KEY: 45-BB-CC-DD, - Where BB is the heat exchanger family and can be 00, a number between and including 10-12 or 30-32
- Where CC is the tube family and can be 10 or 11, 40 or 41
- Where DD is the fan and can be a 00

General use: if no component is used in the key categories use "00", if different components from same category is used in the product, use a "/" as separator between components. E.g.. "5C/5C-10/12-10-00

Additional information (if necessary)

UL Solutions

☐ UL Solutions (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☒ UL Solutions (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL Solutions (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL Solutions (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2023-02-24

Signature:

Jan-Erik Storgaard