

Heat Exchanger Instruction Manual

HX-0020J Series

Safety precautions

WARNING Incorrect handling may cause death or injury.

- Before connecting with the fittings, check if no damage or problems are found on the fittings. Connect properly and make sure that leak test is conducted before actual operation to prevent fluid from leaking into the atmosphere (Hereinafter, the fluid used is referred as "gas" or "fluid").
- DO NOT** apply any fluids corrosive to materials exposed to gas. Corrosion may cause fluid to leak into the atmosphere. Please confirm the physical properties of fluid before using.
- This device is not designed as an explosion-proof structure. **DO NOT** use this device in a place where explosion-proof structure are required. Doing so may cause fire or explosion.
- Prepare temperature controller unit when operating Vaporizer/Heat Exchanger and do not set the temperature over than maximum operating temperature. Wrong temperature setting may cause fire or destruction of the device. It is recommended to add abnormal overheating detector if necessary.
- This device must be earthed before use. Otherwise, there is the risk of electric shock.
- Thermal switch is equipped in Vaporizer/Heat Exchanger to prevent overheating. However, the operating temperature of thermal switch would vary due to operating conditions and ambient temperature.
- Attach/remove connector and terminals, please make sure that power supply turning off. It may cause fire or shock hazard.

CAUTION Incorrect handling can cause medium or slight injury or may cause damage to, or loss of, facilities or equipment.

- Observe the listed in the WARNING (above).
- Use out-of-spec power supply will cause electric shock, fire, and malfunction of device.
- This device is not designed to be waterproof. **DO NOT** locate this device outdoors or in a place where it may be splashed with water. Doing so may cause fire, trouble, or malfunction of the device.
- DO NOT** modify this device. Modification may result in fire or failure of the device.
- A warm-up period of 60 minutes is recommended after reaching the set temperature. Otherwise, the output gas temperature will be low.
- This device is a precious device, please handle it carefully. Dropping down or handing it carelessly will cause damage. Please use assist instrument while moving or setting the device.
- Please use a screw with depth of 5mm or less from the case surface when mounting HX by the hole on the surface (M3). It will crush the internal surface of the product, and lead the break.
- The surface of device gets high temperature while heating up. Please wrap up the device to prevent careless touch. Please be careful to deal with the device while it is working because of the risk of burning from high temperature. Please conduct replacement after checking that the device has cooled down.

1. Introduction

This manual explains basic operation of the HX-0020J Series (Hereinafter referred as "HX"). Please read through this manual carefully to familiarize yourself with the features of HX.

2. Summary

HX is an ultra-clean high efficiency fluid heat exchanger unit employing Lintec's high efficiency liquid vaporization technology with maximum operating temperature up to 200 °C and maximum heat exchange rate up to 10SLM. This apparatus is employed over a wide range of applications from semiconductor industries to other major manufacturing sectors.

3. Features

RoHS compliant.

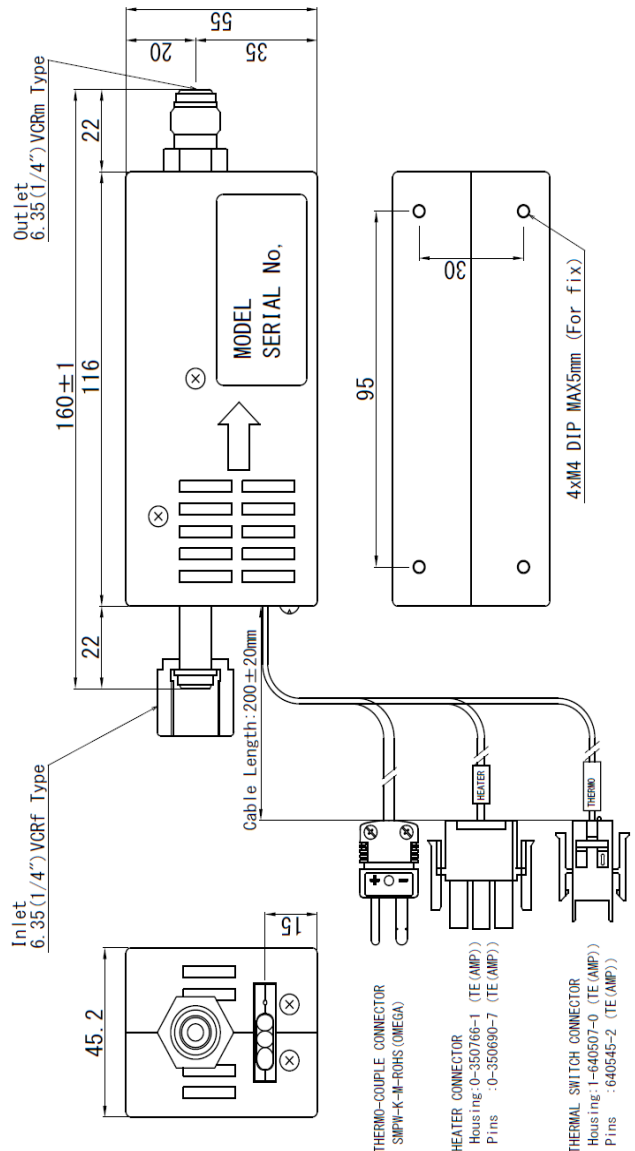
4. Specification/ Dimensions

(1) Specification

Product name	Heat Exchanger	
Model	HX-0020J Series	
Flow rate (N2)	10SLM	
Pressure loss(N2)	24kPa (10SLM, 200°C)	
Withstand pressure (Gauge pressure)	1 MPa(G)	
Leak integrity	Less than 1×10^{-11} Pa·m ³ /sec (He)	
Operating condition	Continuous operation	
Operating temperature	15 to 50°C (Without dew condensation)	
Maximum operating temperature	200°C	
Recommended temperature control method	PID control	
Material exposed to gas	Stainless steel 316L / Stainless steel 316L(EP)	
Fitting	Inlet: 6.35mm (1/4") VCR type female Outlet: 6.35mm (1/4") VCR type male	
Heater	120V 100W (100V 69.4W)	240V 100W (200V 69.4W)
Power source	AC100 to 120V	AC200 to 240V
Thermocouple	K type 1pc	
Thermal switch Specification (Note1)	Over 230±10°C OPEN Return operating temperature 200±15°C CLOSE Electrical rating (With resistance load) DC42V/200mA, Min:10mA	
Mounting position	Free, Except Upright with the connectors on the top	
Weight	Approx.1kg	
Standard accessories	None	

Note1) In actual operation, there may be a difference between the temperature at the temperature control point and the temperature at which the thermal switch operates.

(2) Dimensions



5. Ordering information

HX-0020J-44 TK3 N L03 T23 NNN
 [1] [2] [3] [4] [5] [6] [7]

[1] Series Model:

HX: Heat Exchanger Series

[2] Fitting size

44: IN 6.35mm (1/4in), OUT 6.35mm (1/4in)

[3] Fitting type

TK3: VCR type [IN female, OUT male]

[4] Internal treatment

N: No polishing (※ Standard Specification)

E: Electrical polishing (※ Option)

[5] Heater type

L03: AC120V 100W

L04: AC240V 100W

[6] Thermal switch

T23: 230 ±10 °C

[7] Option

NNN: Standard specification

※Notation other than NNN means customer options. The specification will be different from this specification sheet, please refer to specific specification sheet please notice that the pin assignment may be different as well.

6. Connection

(1) Heater Connectors

Housing : 0-350766-1 (TE(AMP))

Pin : 0-350690-7 (TE(AMP))

Pin No.	Signal name
1	L03:120V 100W
2	L04:240V 100W
3	Case Gnd.

(2) Thermal switch Connectors

Housing : 1-640507-0 (TE(AMP))

Pin : 640545-2 (TE(AMP))

Pin No.	Signal name
1	Thermal switch
2	

(3) Thermocouple Connectors

Equipped Connector : SMPW-K-M-ROHS (OMEGA)

Applicable Connector : SMPW-K-F-ROHS (OMEGA)

Pin No.	Signal name
K	K Type Thermocouple (-)
+	K Type Thermocouple (+)

7. Preparation and Operational Procedure

- Please prepare temperature control unit.120V100W(240V100W) heaters is used. Please take care with respect to the heater capacities. In addition, temperature control unit with built-in safety mechanisms is recommended for temperature control point. As the built-in thermocouple is K type, please select unit which is compatible with this type of thermocouple.
- Please be sure to use safety devices such as circuit breakers to prevent surge currents and short circuits.
- Please be careful to attach this device in the direction of the gas flow. In order to prevent a decrease in the gas temperature after heat exchange has taken place, please heat the piping between the gas outlet and the next piece of machinery.
- Please carry out connections according to the connector table. This device has a built-in 230°C thermal switch.
- The heater can be affected by humidity during storage. Ensure that insulation resistance is above 20M ohm. If the insulation resistance drops below 20M ohm, dry the HX and ensure that insulation resistance is above 20M ohm.
- Supply power, set the temperature to the desired value using the temperature control units and allow 60 minutes for the device to stabilize after the set temperature has been reached. Even though the temperature control unit display temperature may be stable the temperature of the body of the device is not. In order to achieve good heat exchange efficiency please allow this device to stabilize before use.
- Estimated gas temperatures can be found from the graphs in the upper right. However, this data is for nitrogen gas and should not be applied as is to gases other than nitrogen. Please use this data only as a guide.

8. Product reference data

Since this data is for nitrogen, it cannot be applied directly to gases other than nitrogen. Please use as a guide.

(1) Heat exchanger outlet gas temperature

< Measurement conditions >

•Heat exchanger set temperature: 50, 100, 150, 200°C

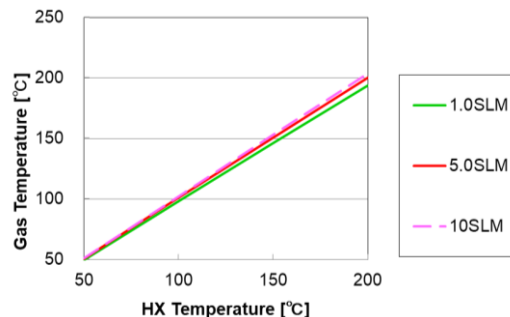
•Gas used: N₂

•Measuring room temperature: 25°C

•Secondary line temperature control: None

(No heat insulating material, open to atmosphere)

•Secondary pressure: atmospheric pressure



(2) Pressure loss data

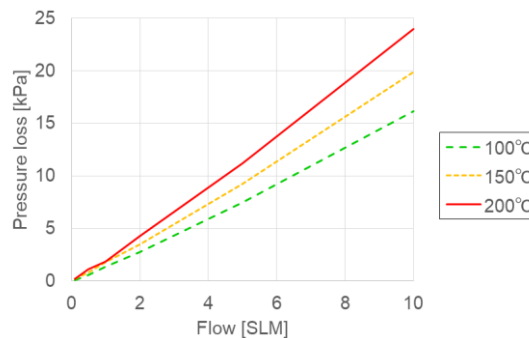
< Measurement conditions >

•Heat exchanger set temperature: 100, 150, 200°C

•Gas used: N₂

•Measuring room temperature: 25°C

•Secondary pressure: atmospheric pressure



9. Product Warranty

(1) Period

This product is guaranteed for 1 year from the date of shipment.

Defects are repaired according to the following regulations.

(2) Scope

Warranty coverage is restricted to this product only. Any other damage caused by this product is not covered.

(3) Disclaimer facts

The following repairs are not covered by the warranty:

- Failure caused by product of gas or liquid used.
- Failure caused by misuse (including careless operation), incorrect repair or modification.
- Failure cause by falling or dropping after purchase.
- Failure caused by fire, earthquake, flood, lightning, or other natural disasters.

Even if the warranty period is still in effect, repair service may not be provided in the following cases.

- When the kind of fluid used in the product is unclear.
- The product is returned with fluid remaining inside, and safety cannot be confirmed.

This instruction manual is subject to revision without notice.

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