# Specification Sheet



# QTU-42

**MANUFACTURED BY**

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# Table of Contents

UNIT INFORMATION ..... 3

UNIT CAPACITY ..... 4

STANDARD INFORMATION ..... 4

UNIT INFORMATION, REFRIGERATION SYSTEM ..... 5

CONTROL SYSTEM ..... 5

THAWING UNIT ..... 7

REVISION RECORD ..... 9

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## UNIT INFORMATION

| | |
|---|---|
| **Purpose** | The QTU-42 is a **Q**uick **T**hawing **U**nit designed to maintain frozen product at temperatures as low as -25°C until thawing is required. Then using a programmed microprocessor controller, thaw the cargo based on temperature and time to provide product with the characteristics, quality and consistency required. The system consists of 4 major components; evaporator/heater section, condenser section, electrical box and microprocessor control display. |
| **Construction** | The evaporator/heater section is constructed of aluminum (5052H32), treated to resist corrosion possible in a wash-down environment.<br><br>The condenser section is constructed of aluminum (5052H32), treated to resist corrosion and powder coated white.<br><br>The electrical box exterior is stainless steel, with gaskets and protections for varied weather and atmospheric conditions.<br><br>The microprocessor control display is mounted in an aluminum (5052H32) housing, treated to resist corrosion and to protect in various weather and atmospheric conditions.<br><br>All fasteners including bolts, screws, nuts, washers, hinges, are stainless steel. |
| **Equipment design** | The microprocessor controller/data logger controls the temperature in the container/cargo temperature. All settings and unit data can be set and checked from the microprocessor controller display. Once the temperature controller is set at the desired program, the unit will operate automatically to maintain the desired temperature. |
| **Unit Dimensions**<br><br>Evaporator | Width: 2200 mm (86.6 inches)<br><br>Height: 2212 mm (87.1 inches)<br><br>Depth: 976 mm (38.4 inches) |

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| | |
|---|---|
| Condenser | Width: 1507 mm (59.3 inches)<br>Height: 660 mm (26.0 inches)<br>Depth: 473 mm (18.6 inches) |
| Electrical Box | Width: 602 mm (23.7 inches)<br>Height: 879 mm (34.6 inches)<br>Depth: 260 mm (10.3 inches) |
| **Power supply** | |
| Main power | 400/480 VAC, 3 phase, 50/60 Hz |
| Control power | 28/24 VAC |
| **Refrigerant** | R-452A |
| **Method of Heating** | 42 kW heating elements |

## UNIT CAPACITY

Test method according to ARI standard no. 1110-69 approval.
Net cooling capacity at 30°C ambient temperature, 50Hz power.

| Return Air Temperature | Capacity | Power Requirement |
|---|---|---|
| Storage -20°C | 5.5 kW | 6.6 kW |
| Storage +/-0°C | 8.5 kW | 9.1 kW |
| Thawing +40°C | 46 kW | 47 kW |

## STANDARD INFORMATION

| |
|---|
| Machinery is designed to maintain cargo as low as -25°C (-13°F) and provide heating to temperatures to 40°C (104°F). |
| Machinery will be in full functional operation and work satisfactorily in ambient temperature from -30°C (-22°F) to +52°C (125°F).<br>Components are made to withstand temperature up to 70°C (158°F). |

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The unit is built to comply with standards and regulations of major Classification Societies such as:
ARI – test method for rating refrigerated equipment.
Machinery complies with International Customs Regulations for Containers.
Machinery complies with relevant ISO Recommendations.
Machinery complies with rules of B.V., ABS and Lloyds Register, but is certified to ISO 1496-2.
Unit complies with Australia and New Zealand Health Requirements.

## UNIT INFORMATION, REFRIGERATION SYSTEM

| **Electrical**<br>All data are approximate, and based on 480V/60 Hz | |
|---|---|
| Input power | 480V, 3 phase, 60Hz. |
| Current total unit | Full load – 75A |
| Compressor motor | 3450 Rpm - full load – 12.5A |
| Condenser motor | 1100 Rpm - full load – 1.2A |
| Fan right, high speed | 850 Rpm - full load – 7A |
| Fan right, low speed | 425 Rpm - full load – 3A |
| Fan left | 850 Rpm - full load – 7A |
| Heat step 1 | 13.5 kW - full load – 20A |
| Heat step 2 | 9 kW - full load – 16A |
| Heat step 3 | 9 kW - full load – 16A |
| Heat step 4 | 9 kW - full load – 16A |

| **Refrigerant System** | |
|---|---|
| System charge:<br>R-452A | 3.9 kg (8.6 lbs) |
| Compressor oil charge | 3.2 Liter (9.5 gal) |
| High-pressure switch (cannot be adjusted) | Cut-out approx. 28 bar +/-0.7 = 406 Psig +/- 10<br>Cut-in approx. 20 bar +/-0.3 = 290 Psig +/- 4.35 |
| Low-pressure switch (cannot be adjusted) | Cut-out approx. -0.4 bar +/-0.2 = 11 HG +/- 2.9 Psig<br>Cut-in approx. 0.3 bar +/-0.3 = 4.35 Psig +/- 4.35 |
| Crankcase pressure regulator | Set to suction pressure at max. 3 bar. = 43.5 Psig |
| Safety Relief valve (cannot be adjusted) | 29.3 bar. = 425 Psig |

## CONTROL SYSTEM

The control system is based on the newest technology and consists of these parts:

1. **The microprocessor controller.**
   The controller is mounted in the electrical box, the display/keypad is mounted in the display panel box and all sensors are mounted in the container or on the system.
   This device contains all circuits necessary to select the functions required to maintain an accurate temperature.
   The controller is always regulating the container temperature based on the three sensor temperatures, depending on what stage the program is in.

2. **The display/keypad.**

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The display shows all information regarding temperature on all unit sensors, all data logged in data logger and all information for unit operating conditions.
The four keypads give access to all operations, setting of temperatures, and scrolling in unit data information.

3. **Temperature sensors.**
   Several temperature sensors are placed within the system.
   - Product surface sensor
   - Product center sensor
   - Supply air sensor
   - Defrost sensor
   - Return air sensor
   - Condenser sensor
   - Compressor sensor

   Temperature signals from the sensors are relayed to the controller with the information for the microprocessor to apply to the current program.

**Alarm Codes**

The QTU-42 microprocessor thermostat logic is designed to show alarm codes on the display panel in the event of the system not operating properly.

# INSTALLATION

The QTU-42 is designed for installation in a variety of applications, including built-in rooms, pre-constructed insulated boxes, and insulated shipping containers up to 40’ length.

For optimum performance, when installed in boxes and containers, an adjustable ceiling is supplied to be lowered to the cargo height forcing airflow through the cargo.

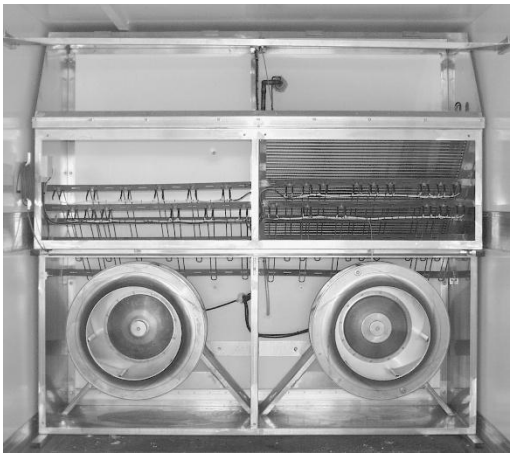
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## THAWING UNIT

| **Evaporator section, inside container:** | |
|---|---|
| Main Housing and all Covers | Aluminum AL Mg3 (57S)<br>DIN 1725 (Saltwater resistant) |
| Louver | Aluminum. AL Mg3 (57S)<br>DIN 1725 (Saltwater resistant) |
| Pallet stop | Aluminum AL Mg Si 0,7 (51S) DIN 1725<br>(Anodized) |
| All Bolt | Stainless Steel (A2) |



| | |
|---|---|
| Heating element | Stainless Steel (AISI 304)<br>(Tightness IP65/ NEMA13) |
| Element frame | Aluminum. AL Mg3 (57S)<br>DIN 1725. (Saltwater resistant) |
| Refrigerant coil | Cobber tube. (Paint.)<br>Fin (Hydrophilic Aluminum) |
| Blower wheel | Aluminum. AL Mg3 (57S)<br>DIN 1725 (Saltwater resistant) |
| Blower motor | IEC34-1 DIN EN.60034-1<br>(Tightness IP55/ NEMA12) |



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| **Condenser section, mounted to face of container:** | |
|---|---|
| Main Housing and Cover door | Aluminum AL Mg3 (57S) DIN 1725 (Saltwater resistant) |
| All hinge | Stainless Steel (AISI 316) |
| All Bolt | Stainless Steel (A2) |
| Refrigerant coil | Cobber tube. (Paint) Fin (Paint aluminum) |
| Refrigerant piping | Cobber tube. (Paint) |
| Fan motor | IEC34-1 DIN EN.60034-1 (Tightness IP55/ NEMA12) |
| Compressor | Copeland Scroll (Tightness IP55/ NEMA12) |




| **Electrical/Display Panel, mounted to container:** | |
|---|---|
| **Electrical Box:** | |
| Main Box | Stainless Steel (AISI 304) |
| Hinge and Lock | Stainless Steel (AISI 316) |
| Gasket | PUR rubber |
| Tightness | IP 65/ NEMA 13 |
| **Display:** | |
| Display panel | Polycarbonate, ABS |
| Tightness | IP 65/ NEMA 13 |

Electrical Panel



Display Panel



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## REVISION RECORD

| Rev | Description | Date | Approved |
|---|---|---|---|
| A | Corrected Main Power voltage 400/480, removed R-404A refrigerant | 2-4-2025 | BES |
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