

Specification and Manual

Description:	Air Conditioner for Equipment (Thre	ough Wall Mounting)	
Customer Part l	No.:	Rev.:	
Delta Model No	.: HEC0700BFB	Rev.:	03
Sample Date C	ode:		
Sample Issue D	Pate: SEP.15 2020		
	Please send one copy of this	specification back aft	er
	you signed approval for produ	ction pre-arrangeme	nt
	Approved by:		
	The state of the s		_
	Date:		

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DELTA ELECTRONICS, INC. 252, SHANG YING ROAD, KUEI SAN TAOYUAN CITY 333, TAIWAN

Customer:

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Description

This document is an installation and the characteristics of Delta HEC series. Before installing the unit, please read this manual thoroughly, and following the instructions contained in it. The document is the exclusive property of Delta Electronics, Inc. it should not be distributed, reproduced, or any other format without prior permission of Delta. Specifications are subject to change without notice.

Packing & Shipping

During handling or transport, air conditioner must be kept in upward position, "**NOT**" inverted, flat, or subject to excessive tilt and collision. The air conditioner is a precision instrument; it should be handled and transported with care. Do not stand on the box, or place heavy objects on top of the box. Pay attention to the below icons on the package.

If air conditioner is toppled, slanted or dropped, follow these steps: a. stand unit up for 12 hours to ensure refrigerant pressure stability, b. power on the unit and execute self-test to make sure no alarm condition, c. keep the air conditioner running for 1 hour to make sure there is no abnormal acoustic noise.











Safety Notes

Please read the safety notes carefully before installing the air conditioner, and be sure to install it correctly. After completing installation, check that the unit operates properly during start-up operation.

Meaning of WARNING and CAUTION notices:

Failure to follow these instructions properly may result in personal injury or loss of life.

Failure to observe these instructions properly may result in property damage or personal injury, which may be serious depending on the circumstance.

⚠ Warning:

1. Installation work and electrical wiring should be done only by qualified personnel in accordance with all applicable codes, standards and national wiring regulations.

- 2. Use this unit only in the manner intended by the manufacturer. If you have questions, please contact the manufacturer.
- 3. Install the air conditioner in accordance with the instructions in this installation manual. Improper installation may result in water leakage, electric shock or fire.
- 4. Make sure that all wiring is secured, that specified wires are used, and there is no strain on the terminal connections or wires.
- 5. If refrigerant gas leaks during installation, ventilate the area immediately. Do not directly touch refrigerant that has leaked from refrigerant pipes or other areas, as there is a danger of frostbite.
- 6. Before serving or cleaning unit, switch power off and disconnect power supply.
- 7. When cutting or drilling into wall or ceiling, do not damage electrical wiring or hidden utilities.
- 8. Be sure to use only the specified accessories and parts to complete installation.
- 9. Protective grounding connection: The enclosure must be grounded at the protective ground terminal. Use 2.5 mm² (14 AWG) wire and use spring washer to avoid loosening.
- 10. The air conditioner should not be accessible to the general public.
- 11. The installation must contain a device to disconnect all poles of the air conditioner from the power supply. The contact distance in all poles must be 3 mm minimum.
- 12. To reduce the risk of electrical shock: Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- 13. This appliance is intended for use only by qualified personnel.

⚠ Caution :

1. Install the air conditioner on a wall or door strong enough to withstand the weight of the unit.

- 2. Do not block the air inlets or exits.
- 3. Do not install the air conditioner at any place where there is a danger or flammable gas leakage.
- 4. Arrange the drain to ensure complete drainage.
- 5. To avoid injury, do not touch the air inlet or aluminum fins of the unit.
- 6. Watch your step at the time of fin cleaning or air conditioner inspection.
- 7. Do not topple the air conditioner while moving or in storage.
- 8. The hole in the bottom of the air conditioner should be connected to a sealed container through a drain pipe.
- 9. This appliance is not to be used by any persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given proper supervision or instruction.
- 10. Children should be prevented from playing with the appliance.

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Specification for Approval

Customer:

Description: Air conditioner for Equipment with 700 W Rated Cooling Capacity (Through

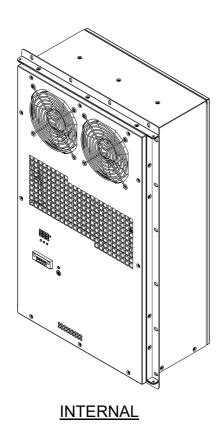
Wall Mounting)

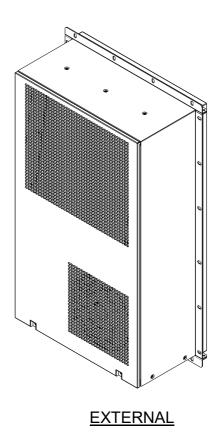
Customer P/N: Rev.:

Delta model no. : HEC0700BFB Rev. : 03

Sample revision. : Date Code :

Sample issue date : Quantity :1 pc





1. Product Instruction

1-1. General Description

HEC0700BFB is a AC air conditioner with 230VAC power input, it is designed for IP55 sealed outdoor telecom cabinet to provide stable and optimum internal conditions for equipment and avoid hotspot inside the cabinet.

HEC X1 BF B - XXX

(1) (2) (3) (4) (5)

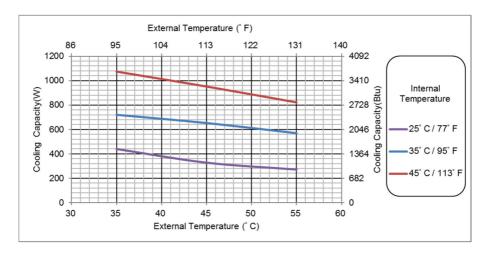
No	Item	Digit	Specification
(1)	Product Message	HEC	Compressor Air Conditioner
(2)	Cooling Capacity	X1	X1=0700
(3)	Operation Voltage	BF	AC 230V for door
(4)	Product Version	В	N/A
(5)	Customer ID	XXX	N/A

1-2. Main Feature & Model Number

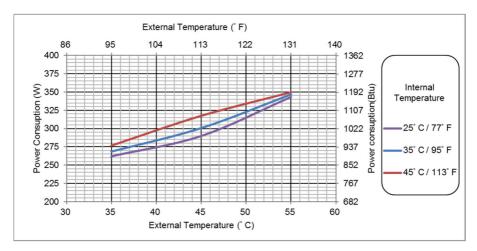
Dimensions, Weight & Mounting method				
Dimension (H x W x D) (without flange)	mm (inch)	545 x 315 x 175 (21.5 x 12.4 x 6.9)		
Application		Outdoor		
Weight	Kg (lbs)	16.0 (35.3)		
Mounting Method		Door/Side		
Color (optional)		RAL7035		
Environmenta	Protection & Perfo	rmance		
Operating Temperature Range	°C (°F)	-10 to +55 (+14 to +131)		
Operating Humidity		External: 0~100% RH Internal: 0~80% RH		
Storage Temperature	°C (°F)	-40 to +70 (-40 to +158)		
Storage Relative Humidity	RH	5~95%		
Refrigerant		R134a, 250 g ±10 g		
Protection for Dust ,Wind and Water (External)	IEC 60529 /GR487	IP55 / GR487		
Noise (1.0m)	dB-A	61		
Operating Status	N/A	LED Indicator / Display Board		
Cooling Capacity & Operational Data				
Rated Cooling Capacity at L35/L35 *	W (Btu/hr)	700 (2380)/50 Hz, 720 (2450)/60 Hz		
Rated Cooling Current at L35/L35(50/60Hz)*	Α	1.25 / 1.52		
Rated Internal Airflow (L35/L35)	m ³ /h (CFM)	230 (135)		

Rated External Airflow (L35/L35)	m³/h (CFM)	150 (90)	
Р	ower & Range		
Input Voltage	VAC/Phase/Frequency	230 / 1 / 50 or 60	
Input Voltage Range	VAC	196~264	
Locked Rotor Current (50/60Hz)	Α	5 / 4.6	
Alarm	N/A	Dry Contact Output	
Key Components			
Controller		Built-in Smart Controller	
Fans		Delta High Efficiency Fans	
Compressor		Rotary	

^{*}Followed thermal balancing test of DIN3168

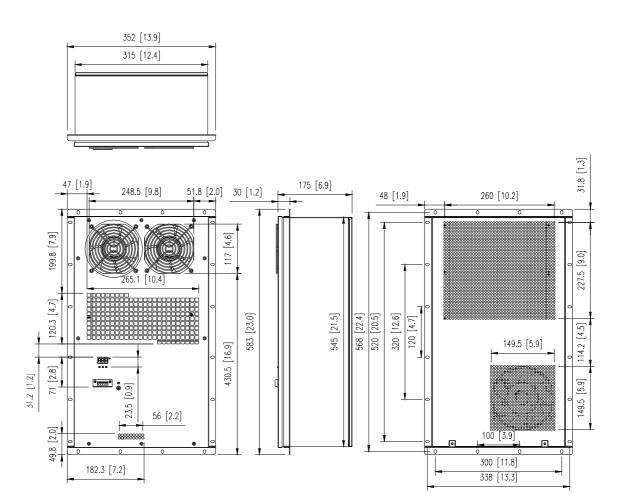


Cooling Capacity with Varied Temperature



Power Consumption with Varied Temperature

1-3. Dimension



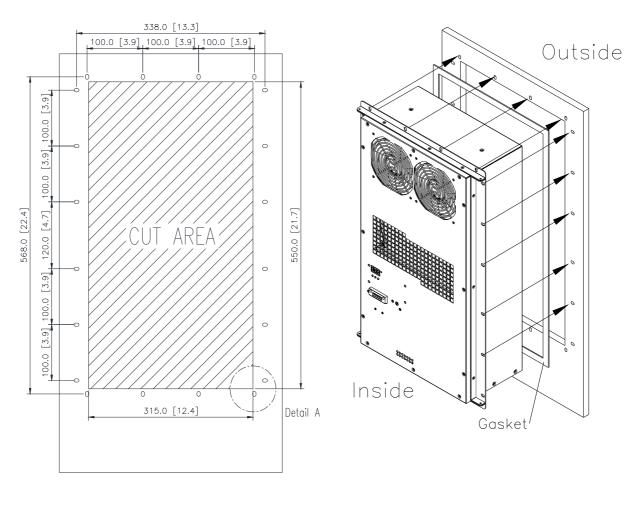
mm (inch)

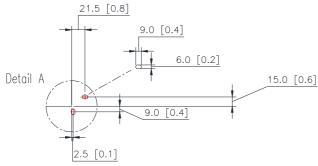
(1) Material: Case SGCC Sheet(2) Finish: Power paint 75 ~ 120 um

(3) Color: RAL 7035

(4) Dimension tolerance: ± 1.0mm

1-4. Mounting Panel Cutout



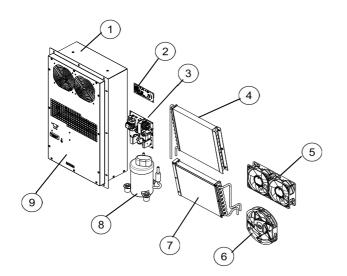


mm (inch)

1-5. Configuration & Maintenance

Make sure the air conditioner surface sealed with mounting flange to avoid water penetrates into shelter through mounting interface. It is suggested to use gaskets sticking on the mounting flange and seal the gap between flange and cabinet with silicone gel during installation. There should be **NO** any gap surround gaskets to avoid water penetrates into enclosure.

The air conditioner is composed as the following key components: they are chassis, cover, controller, heat exchanger, blowers and compressor etc. It is "**not**" recommended that the user replace the compressor, evaporator, and the condenser by themselves; it may damage the system and getting injured.



NO.	Q'TY	DESCRIPTION
1	1	Case Chassis
2	1	Driver Board
3	1	Power Board
4	1	Condenser
5	1	Internal Fan
6	1	External Fan
7	1	Evaporator
8	1	Compressor
9	1	Case Cover

In order to assure the air conditioner running at optimal condition, the condenser should be cleaned once annually at least; user can clean the condenser with water directly. The external side fan blade can also be cleaned with normal pressure water if there is dust accumulation. Please do not use strong water jet to impact the center of fan and the surface of condenser.

The bottom hole of the air conditioner should be connected to a sealed container through a drainpipe, please clear drain holes when the maintenance. Please also notice that:

- 1. Check wires are connected correctly, and the insulation is not cracking or broken.
- 2. Use Self-test to check the unit running correctly or not. And the supplied air of internal side should be as cooled air.

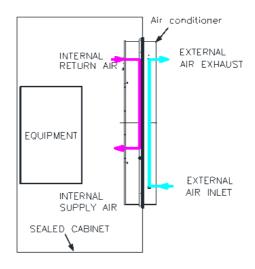
3. Do not wipe the product with organic solvent, volatile substances like toluene or gasoline, it will destroy the powder-coated surface.

- 4. Turn off the power before maintaining.
- 5. Please turn off power and remove dry contact connector while non-operating for a long time.
- 6. If any abnormal acoustic noise from air conditioner happened, please turn off the product and contact with customer services.
- 7. The refrigerant is environmental friendly product of R134a. Little refrigerant leakage (< 5 g/ year) is allowed for application. If refrigerant leakage seriously, please turn off the power and wait for at least 2 hours to make sure the refrigerant fully exhaust. Please also contact the services to replace spare parts.
- 8. The compressor electrical protecting cover is sealed with silicon for IP55 requirement. Please do not dismantle the sealed cover or will lose the quality assurance of the compressor.

1-6. Thermal and Airflow

Internal and external air flow circulation is shown in below diagram. Counter flow design prevents mixing of internal and external air flows, but waste heat can still be dissipated from cabinet to the ambient outside air. An internal temperature sensor has been placed in the return air stream to provide reliable temperature measurement, and for safe operation.

The heated air inside the cabinet will be cooled by the evaporator. Waste heat absorbed by the refrigerant will be dissipated through the condenser at the external side.

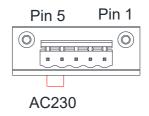


2 Electrical Specification

Power Supply & Alarm Connector & Indicator

(1) Connect:

Pin	Description	Cable wire size
1	ALARM	N.O 24AWG
2	ALARM	COM.24AWG
3	N/A	N/A
4	N	1.5 mm2 (18AWG)
4	L	1.5 mm2 (18AWG)



(2) System alarm default setup:

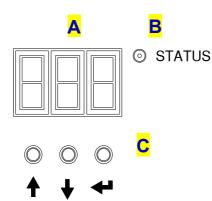
- Specification: Contact rating: 24 VDC, 1A
- Normal: PIN 1 and PIN 2 dry contact output open
- Any alarms happening: PIN 1 and PIN 2 dry contact output close

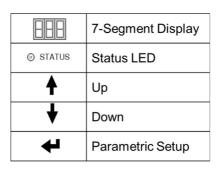
(3) Case Grounding:





(4) Panel operation:





A: Display:

It will show the temperature inside the cabinet and system parametric setup.

- B: LED indicator:
 - When the system power on and the LED will light in green.
 - If any alarm happens, according to flashing times of red led to check the root cause.
 - ❖ If the system gets into self-test mode and the LED will flash in green.

Part no.:

Delta model no.: HEC0700BFB

C: Press Buttons:

↑: UP or increase

** ↓: DOWN or decrease

SET: Parametric setup

3. Environmental Condition

Operating Temperature

Storage Temperature

Operation Humidity

External air loop: 0 ~ 100 % RH

Internal air loop: 0 ~ 80 % RH, non-condensing

Ingress Protection Rating

IP55 (IEC60529) on external side

GR487 on external side

4. Reliability Table

Test item	Condition
High temperature	IEC 60068-2-2
Low temperature	IEC 60068-2-1
High temp. / High humidity	IEC 60068-2-3
Temperature cycle	IEC 60068-2-14 test Nb
Vibration	ETSI 300 019-1-4 CLASS 4.1
Ingress protection (external side)	IEC 60529 IP55 / GR487
Salt fog test (external side)	IEC 60068-2-11 severity 4 , 6cycles
Package bump	IEC 60068-2-29

5. Safety Certification

CB,UL,CE



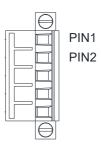




6. Accessory

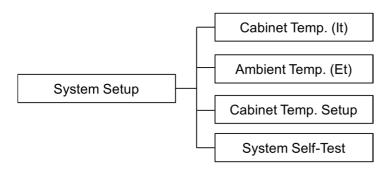
Power and Alarm Cable:

Pin	Description	Cable wire size
1	ALARM	N.O 24AWG
2	ALARM	COM.24AWG
3	N/A	N/A
4	N	1.5 mm2 (18AWG)
4	L	1.5 mm2 (18AWG)



7. Parameters

7-1 Parametric Setup



System Parameter	Default	Range
Target Temperature	35°C	25°C - 40°C
Alarm Status	open	Close/Open

7-2 System Default Setup

7-3 Self-Test (Operating Procedure)

- 1. Press the SET button into parametric setup mode.
- 2. Press UP button to choose CLR and then press SET button to execute auto self-test.
- 3. If the system gets into self-test mode and LED will flash in green.
- 4. Auto self-test running period about eighty seconds exclude compressors three minutes protection.
- 5. The test process including EEPROM, NTC sensor, inner-fan, outer-fan, compressor running correctly.
- 6. Recognizing that the implementation process without generating alarm or fault. If any alarm happens, according to flashing times of power led to check the root cause.

7-4 Alarm Logs & Fault Processing

1. If any alarm happens, the LED flashes. Customer could check the root cause according to alarm code.

Item	Alarm Item	Alarm LED (Flashing Times)
1	Compressor Startup Fail	9
2	Fan Low Voltage Protection	8
3	EVA Low Temp. Protection	7
4	Overload Protection	6
5	Outdoor Temp. Sensor Fail	5
6	Indoor Over Temp. Protection	4
7	Indoor and EVA Temp. Sensor	3
8	Outdoor Fan Alarm Protection	2
9	Indoor Fan Alarm Protection	1

Fault State	Analysis of the Reasons	Solutions		
		1.Check the power supply and		
Power on, and the	1.Power failure or no power.	the electric circuit.		
cabinet temperature is	2.The target temperature is	2.Re-set the target		
too high but the air	higher than inside	temperature according to the		
conditioner is not	temperature.	system requirement.		
working	3.System failure.	3.Please contact the service		
		department.		
The air conditioner is	1. The air conditioner capacity is	1.Check the heating load of		
running but the cabinet	not match the load of the	the system.		

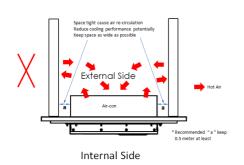
Part no.:

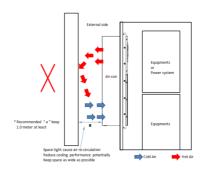
Delta model no.: HEC0700BFB

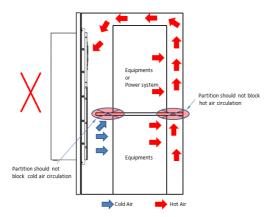
temperature is still high,	system.	2.Ensure the air conditioner		
no obvious cooling	2.The ambient temperature is	operates in correct		
effect.	too high.	temperature range.		
	3.Low efficiency of the	3. Clean the condenser.		
	condenser.	4. Please contact the service		
	4.Other system failure	department.		
	The inside temperature is lower than the target temperature. Other system failure.	1.Re-set the target		
The air conditioner stop		temperature according to the		
operating, and there is		system requirement. 2. Please contact the service		
no alarm signal.				
		department.		

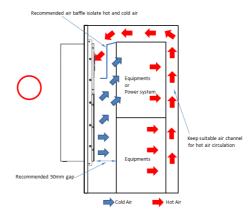
8. Installation Notice

Check the surrounding obstacles to make sure the product get enough space for air circulate.









9. Reclaim



At the end of the unit working life, the produce must not be disposed of as urban waste. It must be taken to a special local authority differentiated waste collection center or to a dealer providing this service.

10. Versions

REV.	DESCRIPTION	DRAWN	CHECKED		APPROVED	ISSUE	
			ME	EE	CE	APPROVED	DATE
00	ISSUE SPEC	VIC.PAN 09/13'18	VIC.PAN 09/13'18	Allen.Huang 09/13'18		Diamond CHEN / CW.CHEN 09/13'18	09/13'18
01	Change Fomat	VIC.PAN 02/26'19	VIC.PAN 02/26'19	Allen.Huang 02/26'19		Diamond CHEN / CW.CHEN 02/26'19	02/26'19
02	Modify TUV.CE.UL ICON	REX.LYU 08/13'20	REX.LYU 08/13'20	Allen.Huang 08/13'20		Diamond CHEN / MARS.WU 08/13'20	08/13'20
03	Modify Caution.	REX.LYU 09/15'20	REX.LYU 09/15'20	Allen.Huang 09/15'20		Diamond CHEN / MARS.WU 09/15'20	09/15'20