

HEAT CONTROLLER

# SERVICE MANUAL

## Packaged Terminal Air Conditioners & Heat Pumps

7,000-15,000 BTUH

### **Cooling with Electric Heat**

EKTC07-1G      EKTC07-2G

EKTC09-1G      EKTC09-2G

EKTC12-1G      EKTC12-2G

EKTC15-1G      EKTC15-2G

### **Heat Pump with Electric Heat**

EKTH07-1G      EKTH07-2G

EKTH09-1G      EKTH09-2G

EKTH12-1G      EKTH12-2G

EKTH15-1G      EKTH15-2G

# UNIT NOMENCLATURE

**E K T C      0 7   -   1   G**

**EKTC**—Cooling only with Electric Heat

**EKTH**—Heat Pump with Electric Heat

**BTU/H**

07K

09K

12K

15K

**MODEL REVISION**

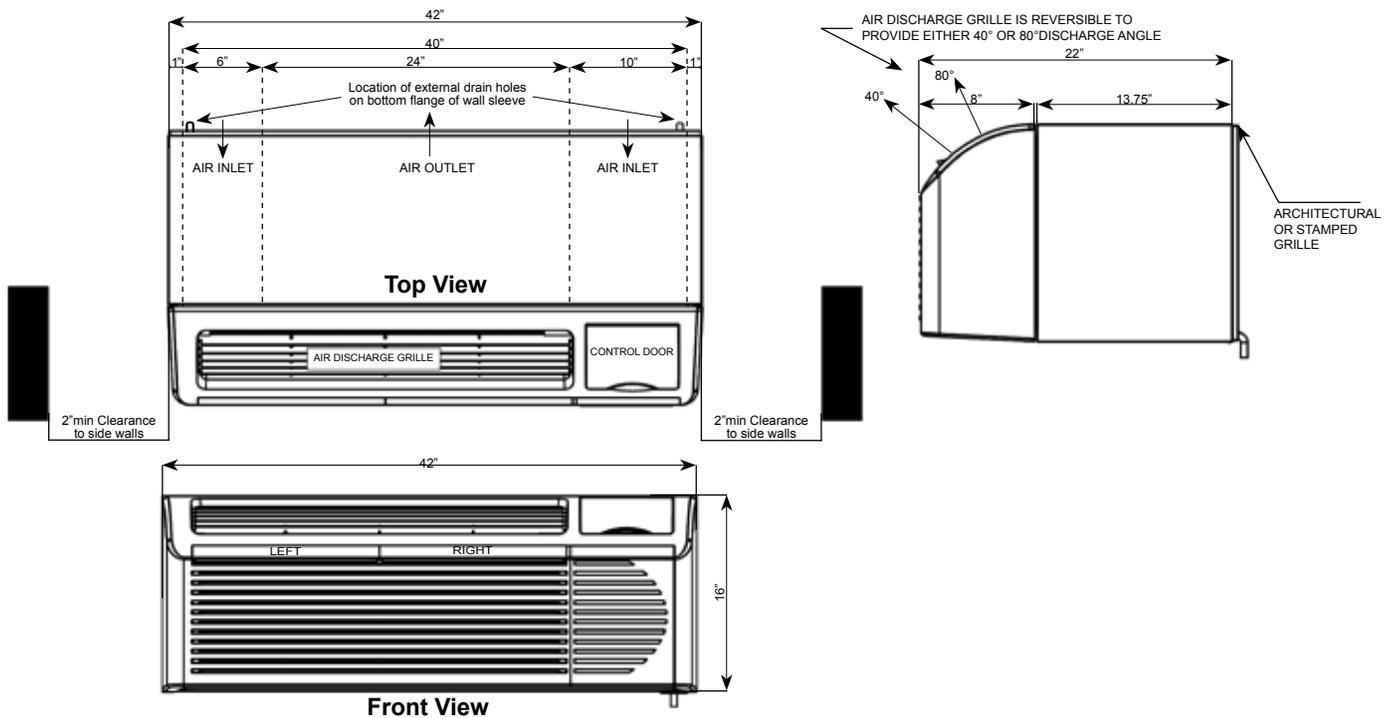
**G**=Green R-410A  
Refrigerant Gas

**VOLTAGE CODE**

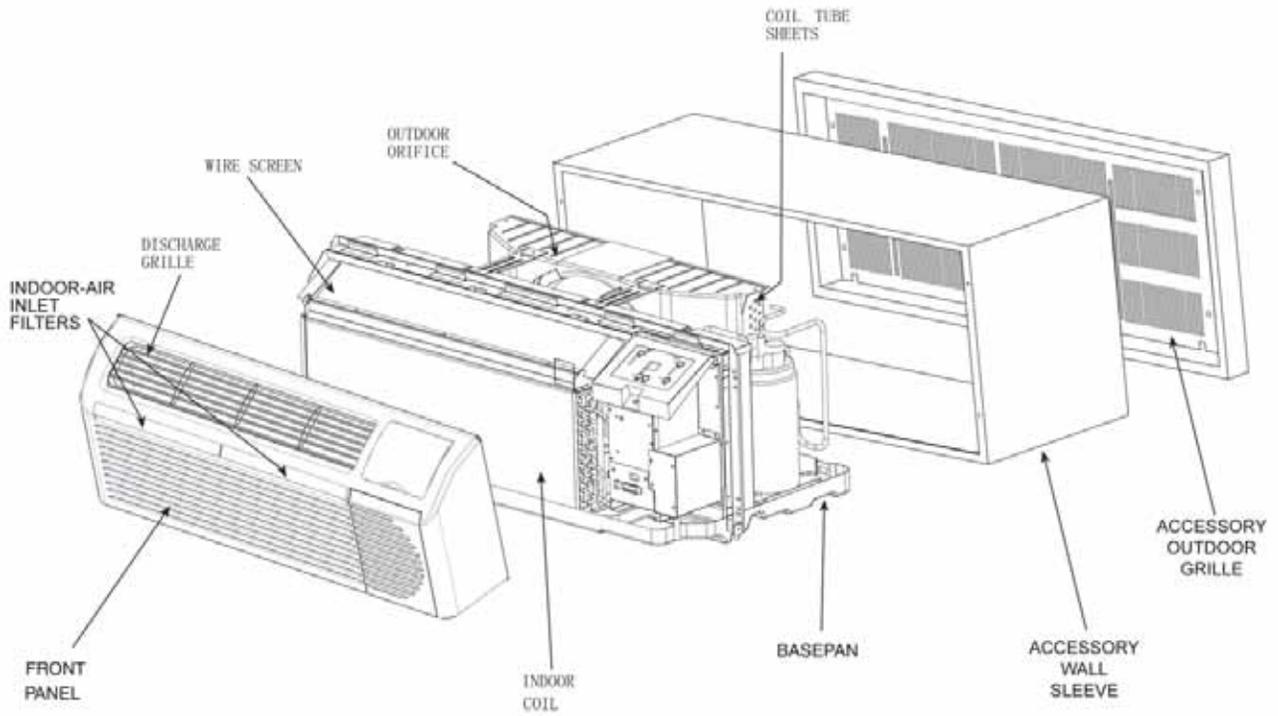
**1**=208/230V-60Hz

**2**=265V-60Hz (consult factory)

# DIMENSIONAL DATA



# UNIT COMPONENTS



## Specification and Technical Parameters

| Model   |                                       | EKTC07-1G                           |                                     | EKTH07-1G                           |         |
|---|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------|
| Function  |                                       | Cooling                             | Heating                             | Cooling                             | Heating |
| Rated Voltage   |                                       | 230/208V                            |                                     | 230/208V                            |         |
| Rated Frequency   |                                       | 60Hz                                |                                     | 60Hz                                |         |
| Indoor Side   | Fan Type-Piece                        | Cross Flow Fan - 1                  |                                     | Cross Flow Fan - 1                  |         |
|   | Diameter-Length in. (mm)              | 4.75 x 27.795 (121 x 706)           |                                     | 4.75 x 27.795 (121 x 706)           |         |
|   | Evaporator                            | Aluminum fin - Aluminum tube        |                                     | Aluminum fin - Aluminum tube        |         |
|   | Pipe Diameter in. (mm)                | 1/32" (7.94)                        |                                     | 1/32" (7.94)                        |         |
|   | Row-Fin Gap in. (mm)                  | 2-0.05" (2-1.4)                     |                                     | 2-0.05" (2-1.4)                     |         |
|   | Coil Length x Height x Width in. (mm) | 27.5 x 9.75 x 1" (698 x 248 x 25.4) |                                     | 27.5 x 9.75 x 1" (698 x 248 x 25.4) |         |
|   | Swing Motor Model                     | /                                   |                                     | /                                   |         |
|   | Output of Swing Motor                 | /                                   |                                     | /                                   |         |
|   | Fuse (A)                              | /                                   |                                     | /                                   |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 48/46/44                            |                                     | 48/46/44                            |         |
|   | Sound Power Level dB (A) (H/M/L)      | 58/56/54                            |                                     | 58/56/54                            |         |
| Outdoor Side  | Compressor Manufacturer/Trademark     | Panasonic                           |                                     | Panasonic                           |         |
|   | Compressor Model                      | 5RS062FAA21                         |                                     | 5RS062FAA21                         |         |
|   | Compressor Type                       | Rotary                              |                                     | Rotary                              |         |
|   | L.R.A (A)                             | 19                                  |                                     | 19                                  |         |
|   | Compressor RLA (A)                    | 2.85                                |                                     | 2.85                                |         |
|   | Compressor Power Input (W)            | 640                                 |                                     | 640                                 |         |
|   | Overload Protector                    | B130-140-241E                       |                                     | B130-140-241E                       |         |
|   | Throttling Method                     | Capillary                           |                                     | Capillary                           |         |
|   | Starting Method                       | Capacitor                           |                                     | Capacitor                           |         |
|   | Working Temperature Range °F (°C)     | 55.4-114.89°F (13-46°C)             |                                     | 55.4-114.89°F (13-46°C)             |         |
|   | Condenser                             | Aluminum Fin-Copper Tube            |                                     | Aluminum Fin-Copper Tube            |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                           |                                     | 0.28" (7)                           |         |
|   | Rows-Fin Gap in. (mm)                 | 2-0.05" (2-1.3)                     |                                     | 2-0.05" (2-1.3)                     |         |
|   | Coil Length x Height x Width in. (mm) | 25 x 13.5 x 1" (635 x 343 x 25.4)   |                                     | 25 x 13.5 x 1" (635 x 343 x 25.4)   |         |
|   | Fan Type-Piece                        | Axial Fan-1                         |                                     | Axial Fan-1                         |         |
|   | Fan Diameter in. (mm)                 | 13.75" (349)                        |                                     | 13.75" (349)                        |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 61/59/57                            |                                     | 61/59/57                            |         |
|   | Sound Power Level dB (A) (H/M/L)      | 71/69/67                            |                                     | 71/69/67                            |         |
| Defrosting Mode   | /                                     |                                     | /                                   |                                     |         |
| Fan Motor Speed (rpm) (H/M/L)   | 1370                                  |                                     | 1370                                |                                     |         |
| Output of Fan Motor (W)   | 40                                    |                                     | 40                                  |                                     |         |
| Fan Motor RLA (A)   | 0.35                                  |                                     | 0.35                                |                                     |         |
| Fan Motor Capacitor (uF)  | 2                                     |                                     | 2                                   |                                     |         |
| Climate Type  | T1                                    |                                     | T1                                  |                                     |         |
| Isolation   | I                                     |                                     | I                                   |                                     |         |
| Moisture Protection   | IP24                                  |                                     | IP24                                |                                     |         |
| Permissible Excessive Operating Pressure for the Discharge Side psi (MPa) | 580.15 (4)                            |                                     | 580.15 (4)                          |                                     |         |
| Permissible Excessive Operating Pressure for the Suction Side psi (MPa)   | 304.58 (2.1)                          |                                     | 304.58 (2.1)                        |                                     |         |
| Dimension (W/H/D) in. (mm)  | 42 x 16 x 21.5 (1069/406/546)         |                                     | 42 x 16 x 21.5 (1069/406/546)       |                                     |         |
| Dimension of Package (L/W/H) in. (mm)                                     | 45 x 25.275 x 18.125 (1141/642/460)   |                                     | 45 x 25.275 x 18.125 (1141/642/460) |                                     |         |
| Net Weight/Gross Weight lbs. (kg)   | 99.2/19.05 (45/54)                    |                                     | 99.2/19.05 (45/54)                  |                                     |         |
| Refrigerant Charge oz. (kg)   | R-410A 23.63 oz. (0.67)               |                                     | R-410A 23.63 oz. (0.67)             |                                     |         |

The above data is subject to change without notice. Please refer to the nameplate of the unit.

| Model   |                                       | EKTC07-2G                           |                                     | EKTH07-2G                           |         |
|---|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------|
| Function  |                                       | Cooling                             | Heating                             | Cooling                             | Heating |
| Rated Voltage   |                                       | 265V                                |                                     | 265V                                |         |
| Rated Frequency   |                                       | 60Hz                                |                                     | 60Hz                                |         |
| Indoor Side   | Fan Type-Piece                        | Cross Flow Fan - 1                  |                                     | Cross Flow Fan - 1                  |         |
|   | Diameter-Length in. (mm)              | 4.75 x 27.295 (121 x 706)           |                                     | 4.75 x 27.295 (121 x 706)           |         |
|   | Evaporator                            | Aluminum fin - Aluminum tube        |                                     | Aluminum fin - Aluminum tube        |         |
|   | Pipe Diameter in. (mm)                | 5/16" (7.94)                        |                                     | 5/16" (7.94)                        |         |
|   | Row-Fin Gap in. (mm)                  | 2-0.05" (2-1.4)                     |                                     | 2-0.05" (2-1.4)                     |         |
|   | Coil Length x Height x Width in. (mm) | 27.5 x 9.75 x 1" (698 x 248 x 25.4) |                                     | 27.5 x 9.75 x 1" (698 x 248 x 25.4) |         |
|   | Swing Motor Model                     | /                                   |                                     | /                                   |         |
|   | Output of Swing Motor                 | /                                   |                                     | /                                   |         |
|   | Fuse (A)                              | /                                   |                                     | /                                   |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 48/46/44                            |                                     | 48/46/44                            |         |
|   | Sound Power Level dB (A) (H/M/L)      | 58/56/54                            |                                     | 58/56/54                            |         |
| Outdoor Side  | Compressor Manufacturer/Trademark     | Panasonic                           |                                     | Panasonic                           |         |
|   | Compressor Model                      | 5RS062LAA1                          |                                     | 5RS062LAA1                          |         |
|   | Compressor Type                       | Rotary                              |                                     | Rotary                              |         |
|   | L.R.A (A)                             | 12                                  |                                     | 12                                  |         |
|   | Compressor RLA (A)                    | 2.45                                |                                     | 2.45                                |         |
|   | Compressor Power Input (W)            | 645                                 |                                     | 645                                 |         |
|   | Overload Protector                    | B90-150-24E                         |                                     | B90-150-24E                         |         |
|   | Throttling Method                     | Capillary                           |                                     | Capillary                           |         |
|   | Starting Method                       | Capacitor                           |                                     | Capacitor                           |         |
|   | Working Temperature Range °F (°C)     | 55.4-114.8°F (13-46°C)              |                                     | 55.4-114.8°F (13-46°C)              |         |
|   | Condenser                             | Aluminum Fin-Copper Tube            |                                     | Aluminum Fin-Copper Tube            |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                           |                                     | 0.28" (7)                           |         |
|   | Rows-Fin Gap in. (mm)                 | 0.05" (2-1.3)                       |                                     | 0.05" (2-1.3)                       |         |
|   | Coil Length x Height x Width in. (mm) | 25 x 13.5 x 1" (635 x 343 x 25.4)   |                                     | 25 x 13.5 x 1" (635 x 343 x 25.4)   |         |
|   | Fan Type-Piece                        | Axial Fan-1                         |                                     | Axial Fan-1                         |         |
|   | Fan Diameter in. (mm)                 | 13.75" (349)                        |                                     | 13.75" (349)                        |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 61/59/57                            |                                     | 61/59/57                            |         |
| Sound Power Level dB (A) (H/M/L)  | 71/69/67                              |                                     | 71/69/67                            |                                     |         |
| Defrosting Mode   | /                                     |                                     | /                                   |                                     |         |
| Fan Motor Speed (rpm) (H/M/L)   | 1380                                  |                                     | 1380                                |                                     |         |
| Output of Fan Motor (W)   | 40                                    |                                     | 40                                  |                                     |         |
| Fan Motor RLA (A)   | 0.3                                   |                                     | 0.3                                 |                                     |         |
| Fan Motor Capacitor (uF)  | 1.5                                   |                                     | 1.5                                 |                                     |         |
| Climate Type  | T1                                    |                                     | T1                                  |                                     |         |
| Isolation   | I                                     |                                     | I                                   |                                     |         |
| Moisture Protection   | IP24                                  |                                     | IP24                                |                                     |         |
| Permissible Excessive Operating Pressure for the Discharge Side psi (MPa) | 580.15 (4)                            |                                     | 580.15 (4)                          |                                     |         |
| Permissible Excessive Operating Pressure for the Suction Side psi (MPa)   | 304.58 (2.1)                          |                                     | 304.58 (2.1)                        |                                     |         |
| Dimension (W/H/D) in. (mm)  | 42 x 16 x 21.5 (1069/406/546)         |                                     | 42 x 16 x 21.5 (1069/406/546)       |                                     |         |
| Dimension of Package (L/W/H) in. (mm)                                     | 45 x 25.275 x 18.125 (1141/642/460)   |                                     | 45 x 25.275 x 18.125 (1141/642/460) |                                     |         |
| Net Weight/Gross Weight lbs. (kg)   | 119.05/138.89 (45/54)                 |                                     | 119.05/138.89 (45/54)               |                                     |         |
| Refrigerant Charge oz. (kg)   | R-410A 24.69 oz. (0.67)               |                                     | R-410A 24.69 oz. (0.67)             |                                     |         |

The above data is subject to change without notice. Please refer to the nameplate of the unit.

| Model   |                                       | EKTC09-1G                           |                                     | EKTH09-1G                           |         |
|---|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------|
| Function  |                                       | Cooling                             | Heating                             | Cooling                             | Heating |
| Rated Voltage   |                                       | 230/208V                            |                                     | 230/208V                            |         |
| Rated Frequency   |                                       | 60Hz                                |                                     | 60Hz                                |         |
| Indoor Side   | Fan Type-Piece                        | Cross Flow Fan - 1                  |                                     | Cross Flow Fan - 1                  |         |
|   | Diameter-Length in. (mm)              | 4.75 x 27.795 (121 x 706)           |                                     | 4.75 x 27.795 (121 x 706)           |         |
|   | Evaporator                            | Aluminum Fin-Copper Tube            |                                     | Aluminum Fin-Copper Tube            |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                           |                                     | 0.28" (7)                           |         |
|   | Row-Fin Gap in. (mm)                  | 2-0.05" (2-1.4)                     |                                     | 2-0.05" (2-1.4)                     |         |
|   | Coil Length x Height x Width in. (mm) | 27.5 x 9.75 x 1" (698 x 248 x 25.4) |                                     | 27.5 x 9.75 x 1" (698 x 248 x 25.4) |         |
|   | Swing Motor Model                     | /                                   |                                     | /                                   |         |
|   | Output of Swing Motor                 | /                                   |                                     | /                                   |         |
|   | Fuse (A)                              | /                                   |                                     | /                                   |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 50/48/46                            |                                     | 50/48/46                            |         |
|   | Sound Power Level dB (A) (H/M/L)      | 60/58/56                            |                                     | 60/58/56                            |         |
| Outdoor Side  | Compressor Manufacturer/Trademark     | Mitsubish                           |                                     | Samsung                             |         |
|   | Compressor Model                      | KN073NGFMC                          |                                     | G4C085IUBJP                         |         |
|   | Compressor Type                       | Rotary                              |                                     | Rotary                              |         |
|   | L.R.A (A)                             | 17                                  |                                     | 18.5                                |         |
|   | Compressor RLA (A)                    | 3.7                                 |                                     | 3.6                                 |         |
|   | Compressor Power Input (W)            | 740                                 |                                     | 740                                 |         |
|   | Overload Protector                    | Interior                            |                                     | Interior                            |         |
|   | Throttling Method                     | Capillary                           |                                     | Capillary                           |         |
|   | Starting Method                       | Capacitor                           |                                     | Capacitor                           |         |
|   | Working Temperature Range °F (°C)     | 64.4-109.4 °F (18-43 °C)            |                                     | 64.4-109.4 °F (18-43 °C)            |         |
|   | Condenser                             | Aluminum Fin-Copper Tube            |                                     | Aluminum Fin-Copper Tube            |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                           |                                     | 0.28" (7)                           |         |
|   | Rows-Fin Gap in. (mm)                 | 0.05" (3-1.4)                       |                                     | 0.05" (3-1.4)                       |         |
|   | Coil Length x Height x Width in. (mm) | 25 x 13.5 x 1" (635 x 343 x 25.4)   |                                     | 25 x 13.5 x 1" (635 x 343 x 25.4)   |         |
|   | Fan Type-Piece                        | Axial Fan-1                         |                                     | Axial Fan-1                         |         |
|   | Fan Diameter in. (mm)                 | 13.75" (349)                        |                                     | 13.75" (349)                        |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 61/59/57                            |                                     | 61/59/57                            |         |
|   | Sound Power Level dB (A) (H/M/L)      | 71/69/67                            |                                     | 71/69/67                            |         |
|   | Defrosting Mode                       | /                                   |                                     | /                                   |         |
| Fan Motor Speed (rpm) (H/M/L)   | 1370                                  |                                     | 1370                                |                                     |         |
| Output of Fan Motor (W)   | 65                                    |                                     | 65                                  |                                     |         |
| Fan Motor RLA (A)   | 0.6                                   |                                     | 0.6                                 |                                     |         |
| Fan Motor Capacitor (uF)  | 2                                     |                                     | 2                                   |                                     |         |
| Climate Type  | T1                                    |                                     | T1                                  |                                     |         |
| Isolation   | I                                     |                                     | I                                   |                                     |         |
| Moisture Protection   | IP24                                  |                                     | IP24                                |                                     |         |
| Permissible Excessive Operating Pressure for the Discharge Side psi (MPa) | 580.15 (4)                            |                                     | 580.15 (4)                          |                                     |         |
| Permissible Excessive Operating Pressure for the Suction Side psi (MPa)   | 188.55 (1.3)                          |                                     | 188.55 (1.3)                        |                                     |         |
| Dimension (W/H/D) in. (mm)  | 42 x 16 x 21.5 (1069/406/546)         |                                     | 42 x 16 x 21.5 (1069/406/546)       |                                     |         |
| Dimension of Package (L/W/H) in. (mm)                                     | 45 x 25.275 x 18.125 (1141/642/460)   |                                     | 45 x 25.275 x 18.125 (1141/642/460) |                                     |         |
| Net Weight/Gross Weight lbs. (kg)   | 119.05/138.85 (54/63)                 |                                     | 119.05/138.85 (54/63)               |                                     |         |
| Refrigerant Charge oz. (kg)   | R-410A 33.5 oz. (0.95)                |                                     | R-410A 33.5 oz. (0.95)              |                                     |         |

The above data is subject to change without notice. Please refer to the nameplate of the unit.

| Model   |                                       | EKTC09-2G                           |                                     | EKTH09-2G                           |         |
|---|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------|
| Function  |                                       | Cooling                             | Heating                             | Cooling                             | Heating |
| Rated Voltage   |                                       | 265V                                |                                     | 265V                                |         |
| Rated Frequency   |                                       | 60Hz                                |                                     | 60Hz                                |         |
| Indoor Side   | Fan Type-Piece                        | Cross Flow Fan - 1                  |                                     | Cross Flow Fan - 1                  |         |
|   | Diameter-Length in. (mm)              | 4.75 x 27.795 (121 x 706)           |                                     | 4.75 x 27.795 (121 x 706)           |         |
|   | Evaporator                            | Aluminum Fin-Copper Tube            |                                     | Aluminum Fin-Copper Tube            |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                           |                                     | 0.28" (7)                           |         |
|   | Row-Fin Gap in. (mm)                  | 0.05" (2-1.4)                       |                                     | 0.05" (2-1.4)                       |         |
|   | Coil Length x Height x Width in. (mm) | 27.5 x 9.75 x 1" (698 x 248 x 25.4) |                                     | 27.5 x 9.75 x 1" (698 x 248 x 25.4) |         |
|   | Swing Motor Model                     | /                                   |                                     | /                                   |         |
|   | Output of Swing Motor                 | /                                   |                                     | /                                   |         |
|   | Fuse (A)                              | /                                   |                                     | /                                   |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 50/48/46                            |                                     | 50/48/46                            |         |
|   | Sound Power Level dB (A) (H/M/L)      | 60/58/56                            |                                     | 60/58/56                            |         |
| Outdoor Side  | Compressor Manufacturer/Trademark     | Panasonic                           |                                     | Samsung                             |         |
|   | Compressor Model                      | 5RS072LAA21                         |                                     | G4C085YUJAP                         |         |
|   | Compressor Type                       | Rotary                              |                                     | Rotary                              |         |
|   | L.R.A (A)                             | 15                                  |                                     | 19                                  |         |
|   | Compressor RLA (A)                    | 2.9                                 |                                     | 3.2                                 |         |
|   | Compressor Power Input (W)            | 750                                 |                                     | 795                                 |         |
|   | Overload Protector                    | Interior                            |                                     | Interior                            |         |
|   | Throttling Method                     | Capillary                           |                                     | Capillary                           |         |
|   | Starting Method                       | Capacitor                           |                                     | Capacitor                           |         |
|   | Working Temperature Range °F (°C)     | 64.4-109.4°F (18-43°C)              |                                     | 64.4-109.4°F (18-43°C)              |         |
|   | Condenser                             | Aluminum Fin-Copper Tube            |                                     | Aluminum Fin-Copper Tube            |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                           |                                     | 0.28" (7)                           |         |
|   | Rows-Fin Gap in. (mm)                 | 0.05" (3-1.4)                       |                                     | 0.05" (3-1.4)                       |         |
|   | Coil Length x Height x Width in. (mm) | 25 x 13.5 x 1" (635 x 343 x 25.4)   |                                     | 25 x 13.5 x 1" (635 x 343 x 25.4)   |         |
|   | Fan Type-Piece                        | Axial Fan-1                         |                                     | Axial Fan-1                         |         |
|   | Fan Diameter in. (mm)                 | 13.75" (349)                        |                                     | 13.75" (349)                        |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 61/59/57                            |                                     | 61/59/57                            |         |
|   | Sound Power Level dB (A) (H/M/L)      | 71/69/67                            |                                     | 71/69/67                            |         |
| Defrosting Mode   | /                                     |                                     | /                                   |                                     |         |
| Fan Motor Speed (rpm) (H/M/L)   | 1540                                  |                                     | 1540                                |                                     |         |
| Output of Fan Motor (W)   | 45                                    |                                     | 45                                  |                                     |         |
| Fan Motor RLA (A)   | 0.35                                  |                                     | 0.35                                |                                     |         |
| Fan Motor Capacitor (uF)  | 1.5                                   |                                     | 1.5                                 |                                     |         |
| Climate Type  | T1                                    |                                     | T1                                  |                                     |         |
| Isolation   | I                                     |                                     | I                                   |                                     |         |
| Moisture Protection   | IP24                                  |                                     | IP24                                |                                     |         |
| Permissible Excessive Operating Pressure for the Discharge Side psi (MPa) | 580.15 (4)                            |                                     | 580.15 (4)                          |                                     |         |
| Permissible Excessive Operating Pressure for the Suction Side psi (MPa)   | 188.55 (1.3)                          |                                     | 188.55 (1.3)                        |                                     |         |
| Dimension (W/H/D) in. (mm)  | 42 x 16 x 21.5 (1069/406/546)         |                                     | 42 x 16 x 21.5 (1069/406/546)       |                                     |         |
| Dimension of Package (L/W/H) in. (mm)                                     | 45 x 25.275 x 18.125 (1141/642/460)   |                                     | 45 x 25.275 x 18.125 (1141/642/460) |                                     |         |
| Net Weight/Gross Weight lbs. (kg)   | 110.23/131.8 (50.5/59.5)              |                                     | 113.54/133/38 (51.5/60.5)           |                                     |         |
| Refrigerant Charge oz. (kg)   | R-410A 33.5 oz. (0.95)                |                                     | R-410A 35.27 oz. (1.0)              |                                     |         |

The above data is subject to change without notice. Please refer to the nameplate of the unit.

| Model   |                                       | EKTC12-1G                             |                                     | EKTH12-1G                             |         |
|---|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|---------|
| Function  |                                       | Cooling                               | Heating                             | Cooling                               | Heating |
| Rated Voltage   |                                       | 230/208V                              |                                     | 230/208V                              |         |
| Rated Frequency   |                                       | 60Hz                                  |                                     | 60Hz                                  |         |
| Indoor Side   | Fan Type-Piece                        | Cross Flow Fan - 1                    |                                     | Cross Flow Fan - 1                    |         |
|   | Diameter-Length in. (mm)              | 4.75 x 27.795 (121 x 706)             |                                     | 4.75 x 27.795 (121 x 706)             |         |
|   | Evaporator                            | Aluminum Fin-Copper Tube              |                                     | Aluminum Fin-Copper Tube              |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                             |                                     | 0.28" (7)                             |         |
|   | Row-Fin Gap in. (mm)                  | 2-0.05" (2-1.4)                       |                                     | 2-0.05" (2-1.4)                       |         |
|   | Coil Length x Height x Width in. (mm) | 27.5 x 9.75 x 1.5" (698 x 248 x 25.4) |                                     | 27.5 x 9.75 x 1.5" (698 x 248 x 25.4) |         |
|   | Swing Motor Model                     | /                                     |                                     | /                                     |         |
|   | Output of Swing Motor                 | /                                     |                                     | /                                     |         |
|   | Fuse (A)                              | /                                     |                                     | /                                     |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 52/50/48                              |                                     | 52/50/48                              |         |
|   | Sound Power Level dB (A) (H/M/L)      | 62/60/58                              |                                     | 62/60/58                              |         |
| Outdoor Side  | Compressor Manufacturer/Trademark     | Samsung                               |                                     | Samsung                               |         |
|   | Compressor Model                      | G4A110IUBJP                           |                                     | G4A110IUBJP                           |         |
|   | Compressor Type                       | Rotary                                |                                     | Rotary                                |         |
|   | L.R.A (A)                             | 27                                    |                                     | 27                                    |         |
|   | Compressor RLA (A)                    | 5                                     |                                     | 5                                     |         |
|   | Compressor Power Input (W)            | 1095                                  |                                     | 1095                                  |         |
|   | Overload Protector                    | Interior                              |                                     | Interior                              |         |
|   | Throttling Method                     | Capillary                             |                                     | Capillary                             |         |
|   | Starting Method                       | Capacitor                             |                                     | Capacitor                             |         |
|   | Working Temperature Range °F (°C)     | 64.4-109.4 °F (18-43 °C)              |                                     | 64.4-109.4 °F (18-43 °C)              |         |
|   | Condenser                             | Aluminum Fin-Copper Tube              |                                     | Aluminum Fin-Copper Tube              |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                             |                                     | 0.28" (7)                             |         |
|   | Rows-Fin Gap in. (mm)                 | 0.05" (3-1.4)                         |                                     | 0.05" (3-1.4)                         |         |
|   | Coil Length x Height x Width in. (mm) | 25 x 13.5 x 1.5" (635 x 343 x 25.4)   |                                     | 25 x 13.5 x 1.5" (635 x 343 x 25.4)   |         |
|   | Fan Type-Piece                        | Axial Fan-1                           |                                     | Axial Fan-1                           |         |
|   | Fan Diameter in. (mm)                 | 13.75" (349)                          |                                     | 13.75" (349)                          |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 63/61/59                              |                                     | 63/61/59                              |         |
|   | Sound Power Level dB (A) (H/M/L)      | 73/71/69                              |                                     | 73/71/69                              |         |
| Defrosting Mode   | /                                     |                                       | /                                   |                                       |         |
| Fan Motor Speed (rpm) (H/M/L)   | 1370                                  |                                       | 1370                                |                                       |         |
| Output of Fan Motor (W)   | 65                                    |                                       | 65                                  |                                       |         |
| Fan Motor RLA (A)   | 0.6                                   |                                       | 0.6                                 |                                       |         |
| Fan Motor Capacitor (uF)  | 1.5                                   |                                       | 1.5                                 |                                       |         |
| Climate Type  | T1                                    |                                       | T1                                  |                                       |         |
| Isolation   | I                                     |                                       | I                                   |                                       |         |
| Moisture Protection   | IP24                                  |                                       | IP24                                |                                       |         |
| Permissible Excessive Operating Pressure for the Discharge Side psi (MPa) | 580.15 (4)                            |                                       | 580.15 (4)                          |                                       |         |
| Permissible Excessive Operating Pressure for the Suction Side psi (MPa)   | 188.55 (1.3)                          |                                       | 188.55 (1.3)                        |                                       |         |
| Dimension (W/H/D) in. (mm)  | 42 x 16 x 21.5 (1069/406/546)         |                                       | 42 x 16 x 21.5 (1069/406/546)       |                                       |         |
| Dimension of Package (L/W/H) in. (mm)                                     | 45 x 25.275 x 18.125 (1141/642/460)   |                                       | 45 x 25.275 x 18.125 (1141/642/460) |                                       |         |
| Net Weight/Gross Weight lbs. (kg)   | 119.05/138.89 (54/63)                 |                                       | 119.05/138.89 (54/63)               |                                       |         |
| Refrigerant Charge oz. (kg)   | R-410A 35.27 oz. (1.0)                |                                       | R-410A 35.27 oz. (1.0)              |                                       |         |

The above data is subject to change without notice. Please refer to the nameplate of the unit.

| Model   |                                       | EKTC12-2G                             |                                     | EKTH12-2G                             |         |
|---|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|---------|
| Function  |                                       | Cooling                               | Heating                             | Cooling                               | Heating |
| Rated Voltage   |                                       | 265V                                  |                                     | 265V                                  |         |
| Rated Frequency   |                                       | 60Hz                                  |                                     | 60Hz                                  |         |
| Indoor Side   | Fan Type-Piece                        | Cross Flow Fan - 1                    |                                     | Cross Flow Fan - 1                    |         |
|   | Diameter-Length in. (mm)              | 4.75 x 27.795 (121 x 706)             |                                     | 4.75 x 27.795 (121 x 706)             |         |
|   | Evaporator                            | Aluminum Fin-Copper Tube              |                                     | Aluminum Fin-Copper Tube              |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                             |                                     | 0.28" (7)                             |         |
|   | Row-Fin Gap in. (mm)                  | 2-0.05" (2-1.4)                       |                                     | 2-0.05" (2-1.4)                       |         |
|   | Coil Length x Height x Width in. (mm) | 27.5 x 9.75 x 1.5" (698 x 248 x 25.4) |                                     | 27.5 x 9.75 x 1.5" (698 x 248 x 25.4) |         |
|   | Swing Motor Model                     | /                                     |                                     | /                                     |         |
|   | Output of Swing Motor                 | /                                     |                                     | /                                     |         |
|   | Fuse (A)                              | /                                     |                                     | /                                     |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 52/50/48                              |                                     | 52/50/48                              |         |
|   | Sound Power Level dB (A) (H/M/L)      | 62/60/58                              |                                     | 62/60/58                              |         |
| Outdoor Side  | Compressor Manufacturer/Trademark     | Samsung                               |                                     | Samsung                               |         |
|   | Compressor Model                      | G4A110YUJAP                           |                                     | G4A110YUJAP                           |         |
|   | Compressor Type                       | Rotary                                |                                     | Rotary                                |         |
|   | L.R.A (A)                             | 23                                    |                                     | 23                                    |         |
|   | Compressor RLA (A)                    | 4.3                                   |                                     | 4.3                                   |         |
|   | Compressor Power Input (W)            | 1090                                  |                                     | 1090                                  |         |
|   | Overload Protector                    | Interior                              |                                     | Interior                              |         |
|   | Throttling Method                     | Capillary                             |                                     | Capillary                             |         |
|   | Starting Method                       | Capacitor                             |                                     | Capacitor                             |         |
|   | Working Temperature Range °F (°C)     | 64.4-109.4 °F (18-43 °C)              |                                     | 64.4-109.4 °F (18-43 °C)              |         |
|   | Condenser                             | Aluminum Fin-Copper Tube              |                                     | Aluminum Fin-Copper Tube              |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                             |                                     | 0.28" (7)                             |         |
|   | Rows-Fin Gap in. (mm)                 | 0.05" (3-1.4)                         |                                     | 0.05" (3-1.4)                         |         |
|   | Coil Length x Height x Width in. (mm) | 25 x 13.5 x 1.5" (635 x 343 x 25.4)   |                                     | 25 x 13.5 x 1.5" (635 x 343 x 25.4)   |         |
|   | Fan Type-Piece                        | Axial Fan-1                           |                                     | Axial Fan-1                           |         |
|   | Fan Diameter in. (mm)                 | 13.75" (349)                          |                                     | 13.75" (349)                          |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 63/61/59                              |                                     | 63/61/59                              |         |
|   | Sound Power Level dB (A) (H/M/L)      | 73/71/69                              |                                     | 73/71/69                              |         |
|   | Defrosting Mode                       | /                                     |                                     | /                                     |         |
| Fan Motor Speed (rpm) (H/M/L)   | 1540                                  |                                       | 1540                                |                                       |         |
| Output of Fan Motor (W)   | 45                                    |                                       | 45                                  |                                       |         |
| Fan Motor RLA (A)   | 0.35                                  |                                       | 0.35                                |                                       |         |
| Fan Motor Capacitor (uF)  | 1.5                                   |                                       | 1.5                                 |                                       |         |
| Climate Type  | T1                                    |                                       | T1                                  |                                       |         |
| Isolation   | I                                     |                                       | I                                   |                                       |         |
| Moisture Protection   | IP24                                  |                                       | IP24                                |                                       |         |
| Permissible Excessive Operating Pressure for the Discharge Side psi (MPa) | 580.13 (4)                            |                                       | 580.13 (4)                          |                                       |         |
| Permissible Excessive Operating Pressure for the Suction Side psi (MPa)   | 188.55 (1.3)                          |                                       | 188.55 (1.3)                        |                                       |         |
| Dimension (W/H/D) in. (mm)  | 42 x 16 x 21.5 (1069/406/546)         |                                       | 42 x 16 x 21.5 (1069/406/546)       |                                       |         |
| Dimension of Package (L/W/H) in. (mm)                                     | 45 x 25.275 x 18.125 (1141/642/460)   |                                       | 45 x 25.275 x 18.125 (1141/642/460) |                                       |         |
| Net Weight/Gross Weight lbs. (kg)   | 119.05/138.84 (54/63)                 |                                       | 119.05/138.84 (54/63)               |                                       |         |
| Refrigerant Charge oz. (kg)   | R-410A 35.98 oz. (1.02)               |                                       | R-410A 35.98 oz. (1.02)             |                                       |         |

The above data is subject to change without notice. Please refer to the nameplate of the unit.

| Model   |                                       | EKTC15-1G                             |                                     | EKTH15-1G                             |         |
|---|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|---------|
| Function  |                                       | Cooling                               | Heating                             | Cooling                               | Heating |
| Rated Voltage   |                                       | 230/208V                              |                                     | 230/208V                              |         |
| Rated Frequency   |                                       | 60Hz                                  |                                     | 60Hz                                  |         |
| Indoor Side   | Fan Type-Piece                        | Cross Flow Fan - 1                    |                                     | Cross Flow Fan - 1                    |         |
|   | Diameter-Length in. (mm)              | 4.75 x 27.795 (121 x 706)             |                                     | 4.75 x 27.795 (121 x 706)             |         |
|   | Evaporator                            | Aluminum Fin-Copper Tube              |                                     | Aluminum Fin-Copper Tube              |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                             |                                     | 0.28" (7)                             |         |
|   | Row-Fin Gap in. (mm)                  | 2-0.05" (2-1.4)                       |                                     | 2-0.05" (2-1.4)                       |         |
|   | Coil Length x Height x Width in. (mm) | 27.5 x 9.75 x 1.5" (698 x 248 x 25.4) |                                     | 27.5 x 9.75 x 1.5" (698 x 248 x 25.4) |         |
|   | Swing Motor Model                     | /                                     |                                     | /                                     |         |
|   | Output of Swing Motor                 | /                                     |                                     | /                                     |         |
|   | Fuse (A)                              | /                                     |                                     | /                                     |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 52/48/46                              |                                     | 52/48/46                              |         |
|   | Sound Power Level dB (A) (H/M/L)      | 62/58/56                              |                                     | 62/58/56                              |         |
| Outdoor Side  | Compressor Manufacturer/Trademark     | Panasonic                             |                                     | Panasonic                             |         |
|   | Compressor Model                      | 5PS146FAA21                           |                                     | 5PS146FAA21                           |         |
|   | Compressor Type                       | Rotary                                |                                     | Rotary                                |         |
|   | L.R.A (A)                             | 32.6                                  |                                     | 32.6                                  |         |
|   | Compressor RLA (A)                    | 6.6                                   |                                     | 6.6                                   |         |
|   | Compressor Power Input (W)            | 1485                                  |                                     | 1485                                  |         |
|   | Overload Protector                    | B205-150-141C                         |                                     | B205-150-141C                         |         |
|   | Throttling Method                     | Capillary                             |                                     | Capillary                             |         |
|   | Starting Method                       | Capacitor                             |                                     | Capacitor                             |         |
|   | Working Temperature Range °F (°C)     | 55.4-114.8°F (13-46°C)                |                                     | 55.4-114.8°F (13-46°C)                |         |
|   | Condenser                             | Aluminum Fin-Copper Tube              |                                     | Aluminum Fin-Copper Tube              |         |
|   | Pipe Diameter in. (mm)                | 0.31" (8)                             |                                     | 0.31" (8)                             |         |
|   | Rows-Fin Gap in. (mm)                 | 0.05" (3-1.4)                         |                                     | 0.05" (3-1.4)                         |         |
|   | Coil Length x Height x Width in. (mm) | 25 x 13.85 x 2.25" (635 x 352 x 57.2) |                                     | 25 x 13.85 x 2.25" (635 x 352 x 57.2) |         |
|   | Fan Type-Piece                        | Axial Fan-1                           |                                     | Axial Fan-1                           |         |
|   | Fan Diameter in. (mm)                 | 13.75" (349)                          |                                     | 13.75" (349)                          |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 65/61/59                              |                                     | 65/61/59                              |         |
|   | Sound Power Level dB (A) (H/M/L)      | 75/71/69                              |                                     | 75/71/69                              |         |
|   | Defrosting Mode                       | /                                     |                                     | /                                     |         |
| Fan Motor Speed (rpm) (H/M/L)   | 1370                                  |                                       | 1600                                |                                       |         |
| Output of Fan Motor (W)   | 65                                    |                                       | 65                                  |                                       |         |
| Fan Motor RLA (A)   | 0.6                                   |                                       | 0.6                                 |                                       |         |
| Fan Motor Capacitor (uF)  | 2.5                                   |                                       | 2.5                                 |                                       |         |
| Climate Type  | T1                                    |                                       | T1                                  |                                       |         |
| Isolation   | I                                     |                                       | I                                   |                                       |         |
| Moisture Protection   | IP24                                  |                                       | IP24                                |                                       |         |
| Permissible Excessive Operating Pressure for the Discharge Side psi (MPa) | 580.15 (4)                            |                                       | 580.15 (4)                          |                                       |         |
| Permissible Excessive Operating Pressure for the Suction Side psi (MPa)   | 188.15 (1.3)                          |                                       | 188.15 (1.3)                        |                                       |         |
| Dimension (W/H/D) in. (mm)  | 42 x 16 x 21.5 (1069/406/546)         |                                       | 42 x 16 x 21.5 (1069/406/546)       |                                       |         |
| Dimension of Package (L/W/H) in. (mm)                                     | 45 x 25.275 x 18.125 (1141/642/460)   |                                       | 45 x 25.275 x 18.125 (1141/642/460) |                                       |         |
| Net Weight/Gross Weight lbs. (kg)   | 119.05/138.84 (54/63)                 |                                       | 119.05/138.84 (54/63)               |                                       |         |
| Refrigerant Charge oz. (kg)   | R-410A 38.01 oz. (1.08)               |                                       | R-410A 38.01 oz. (1.08)             |                                       |         |

The above data is subject to change without notice. Please refer to the nameplate of the unit.

| Model   |                                       | EKTC15-2G                             |                                     | EKTH15-2G                             |         |
|---|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|---------|
| Function  |                                       | Cooling                               | Heating                             | Cooling                               | Heating |
| Rated Voltage   |                                       | 265V                                  |                                     | 265V                                  |         |
| Rated Frequency   |                                       | 60Hz                                  |                                     | 60Hz                                  |         |
| Indoor Side   | Fan Type-Piece                        | Cross Flow Fan - 1                    |                                     | Cross Flow Fan - 1                    |         |
|   | Diameter-Length in. (mm)              | 4.75 x 27.795 (121 x 706)             |                                     | 4.75 x 27.795 (121 x 706)             |         |
|   | Evaporator                            | Aluminum Fin-Copper Tube              |                                     | Aluminum Fin-Copper Tube              |         |
|   | Pipe Diameter in. (mm)                | 0.28" (7)                             |                                     | 0.28" (7)                             |         |
|   | Row-Fin Gap in. (mm)                  | 2-0.05" (2-1.4)                       |                                     | 2-0.05" (2-1.4)                       |         |
|   | Coil Length x Height x Width in. (mm) | 27.5 x 9.75 x 1.5" (698 x 248 x 25.4) |                                     | 27.5 x 9.75 x 1.5" (698 x 248 x 25.4) |         |
|   | Swing Motor Model                     | /                                     |                                     | /                                     |         |
|   | Output of Swing Motor                 | /                                     |                                     | /                                     |         |
|   | Fuse (A)                              | /                                     |                                     | /                                     |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 52/48/46                              |                                     | 52/48/46                              |         |
|   | Sound Power Level dB (A) (H/M/L)      | 62/58/56                              |                                     | 62/58/56                              |         |
| Outdoor Side  | Compressor Manufacturer/Trademark     | Panasonic                             |                                     | Panasonic                             |         |
|   | Compressor Model                      | 5PS146LAA21                           |                                     | 5PS146LAA21                           |         |
|   | Compressor Type                       | Rotary                                |                                     | Rotary                                |         |
|   | L.R.A (A)                             | 32.6                                  |                                     | 32.6                                  |         |
|   | Compressor RLA (A)                    | 6.6                                   |                                     | 6.6                                   |         |
|   | Compressor Power Input (W)            | 1475                                  |                                     | 1475                                  |         |
|   | Overload Protector                    | B180-150-141E                         |                                     | B180-150-141E                         |         |
|   | Throttling Method                     | Capillary                             |                                     | Capillary                             |         |
|   | Starting Method                       | Capacitor                             |                                     | Capacitor                             |         |
|   | Working Temperature Range °F (°C)     | 55.4-114.8°F (13-46°C)                |                                     | 55.4-114.8°F (13-46°C)                |         |
|   | Condenser                             | Aluminum Fin-Copper Tube              |                                     | Aluminum Fin-Copper Tube              |         |
|   | Pipe Diameter in. (mm)                | 0.31" (8)                             |                                     | 0.31" (8)                             |         |
|   | Rows-Fin Gap in. (mm)                 | 0.05" (3-1.4)                         |                                     | 0.05" (3-1.4)                         |         |
|   | Coil Length x Height x Width in. (mm) | 25 x 13.85 x 2.25" (635 x 352 x 57.2) |                                     | 25 x 13.85 x 2.25" (635 x 352 x 57.2) |         |
|   | Fan Type-Piece                        | Axial Fan-1                           |                                     | Axial Fan-1                           |         |
|   | Fan Diameter in. (mm)                 | 13.75" (349)                          |                                     | 13.75" (349)                          |         |
|   | Sound Pressure Level dB (A) (H/M/L)   | 65/61/59                              |                                     | 65/61/59                              |         |
|   | Sound Power Level dB (A) (H/M/L)      | 75/71/69                              |                                     | 75/71/69                              |         |
| Defrosting Mode   | /                                     |                                       | /                                   |                                       |         |
| Fan Motor Speed (rpm) (H/M/L)   | 1540                                  |                                       | 1540                                |                                       |         |
| Output of Fan Motor (W)   | 45                                    |                                       | 45                                  |                                       |         |
| Fan Motor RLA (A)   | 0.35                                  |                                       | 0.35                                |                                       |         |
| Fan Motor Capacitor (uF)  | 2.5                                   |                                       | 2.5                                 |                                       |         |
| Climate Type  | T1                                    |                                       | T1                                  |                                       |         |
| Isolation   | I                                     |                                       | I                                   |                                       |         |
| Moisture Protection   | IP24                                  |                                       | IP24                                |                                       |         |
| Permissible Excessive Operating Pressure for the Discharge Side psi (MPa) | 580.15 (4)                            |                                       | 580.15 (4)                          |                                       |         |
| Permissible Excessive Operating Pressure for the Suction Side psi (MPa)   | 188.55 (1.3)                          |                                       | 188.55 (1.3)                        |                                       |         |
| Dimension (W/H/D) in. (mm)  | 42 x 16 x 21.5 (1069/406/546)         |                                       | 42 x 16 x 21.5 (1069/406/546)       |                                       |         |
| Dimension of Package (L/W/H) in. (mm)                                     | 45 x 25.275 x 18.125 (1141/642/460)   |                                       | 45 x 25.275 x 18.125 (1141/642/460) |                                       |         |
| Net Weight/Gross Weight lbs. (kg)   | 119.05/138.84 (54/63)                 |                                       | 119.05/138.84 (54/63)               |                                       |         |
| Refrigerant Charge oz. (kg)   | R-410A 40.21 oz. (1.14)               |                                       | R-410A 40.21 oz. (1.14)             |                                       |         |

The above data is subject to change without notice. Please refer to the nameplate of the unit.

# EXTENDED PERFORMANCE DATA

| EXTENDED COOLING PERFORMANCE |       |  |       |       |       |       |       |              |       |       |       |       |       |       |       |       |
|------------------------------|-------|--|-------|-------|-------|-------|-------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|
|                              |       | OUTDOOR DRY BULB TEMP. (DEGREES F AT 40% R.H.) |       |       |       |       |       |              |       |       |       |       |       |       |       |       |
|                              |       | 75   |       |       | 85    |       |       | 95           |       |       | 105   |       |       | 110   |       |       |
|                              |       | INDOOR WET BULB TEMP. (DEGREES F AT 80 F D.B.) |       |       |       |       |       |              |       |       |       |       |       |       |       |       |
|                              |       | 72   | 67    | 62    | 72    | 67    | 62    | 72           | 67    | 62    | 72    | 67    | 62    | 72    | 67    | 62    |
| EKTC07                       | BTUh  | 9055   | 8709  | 8062  | 8624  | 8131  | 7500  | 8285         | 7700  | 6815  | 7762  | 6892  | 6076  | 6907  | 5944  | 5251  |
|                              | WATTS | 522  | 530   | 536   | 569   | 575   | 582   | 640          | 640   | 640   | 691   | 691   | 693   | 755   | 755   | 758   |
|                              | AMPS  | 2.5  | 2.5   | 2.6   | 2.7   | 2.8   | 2.8   | 3            | 3     | 3     | 3.3   | 3.3   | 3.3   | 3.6   | 3.6   | 3.6   |
|                              | SHR   | 0.58   | 0.79  | 0.95  | 0.59  | 0.81  | 0.99  | 0.59         | 0.84  | 0.99  | 0.6   | 0.88  | 0.99  | 0.63  | 0.95  | 0.99  |
| EKTC09                       | BTUh  | 10584  | 10179 | 9423  | 10080 | 9504  | 8766  | 9684         | 9000  | 7965  | 9072  | 8055  | 7101  | 8073  | 6948  | 6138  |
|                              | WATTS | 653  | 663   | 670   | 711   | 719   | 727   | 800          | 800   | 800   | 865   | 864   | 866   | 943   | 943   | 947   |
|                              | AMPS  | 3.3  | 3.3   | 3.3   | 3.5   | 3.5   | 3.5   | 3.9          | 3.9   | 3.9   | 4.2   | 4.2   | 4.2   | 4.6   | 4.6   | 4.6   |
|                              | SHR   | 0.56   | 0.75  | 0.91  | 0.57  | 0.79  | 0.92  | 0.57         | 0.81  | 0.92  | 0.58  | 0.86  | 0.94  | 0.62  | 0.91  | 0.92  |
| EKTC12                       | BTUh  | 14112  | 13573 | 12565 | 13440 | 12672 | 11688 | 12912        | 12000 | 10621 | 12096 | 10741 | 9469  | 10765 | 9264  | 8184  |
|                              | WATTS | 914  | 928   | 938   | 996   | 1006  | 1018  | 1120         | 1120  | 1120  | 1210  | 1209  | 1213  | 1321  | 1321  | 1326  |
|                              | AMPS  | 4.4  | 4.4   | 4.4   | 4.7   | 4.7   | 4.8   | 5.3          | 5.3   | 5.3   | 5.7   | 5.7   | 5.7   | 6.3   | 6.3   | 6.3   |
|                              | SHR   | 0.46   | 0.62  | 0.84  | 0.47  | 0.65  | 0.86  | 0.47         | 0.67  | 0.86  | 0.48  | 0.71  | 0.87  | 0.51  | 0.75  | 0.86  |
| EKTC15                       | BTUh  | 17640  | 16965 | 15705 | 16800 | 15840 | 14610 | 16140        | 15000 | 13275 | 15120 | 13425 | 11835 | 13455 | 11580 | 10230 |
|                              | WATTS | 1248   | 1269  | 1282  | 1360  | 1373  | 1391  | 1530         | 1530  | 1530  | 1654  | 1652  | 1657  | 1803  | 1803  | 1812  |
|                              | AMPS  | 6.2  | 6.2   | 6.3   | 6.6   | 6.8   | 6.8   | 7.5          | 7.5   | 7.5   | 8.0   | 8.0   | 8.1   | 8.8   | 8.8   | 8.8   |
|                              | SHR   | 0.45   | 0.60  | 0.81  | 0.46  | 0.63  | 0.83  | 0.46         | 0.65  | 0.83  | 0.47  | 0.69  | 0.84  | 0.49  | 0.74  | 0.83  |
|                              |       |  |       |       |       |       |       | RATING POINT |       |       |       |       |       |       |       |       |
|                              |       |  |       |       |       |       |       | ARI 310/380  |       |       |       |       |       |       |       |       |

| EXTENDED COOLING PERFORMANCE |       |  |       |       |       |       |       |              |       |       |       |       |       |       |       |       |
|------------------------------|-------|--|-------|-------|-------|-------|-------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|
|                              |       | OUTDOOR DRY BULB TEMP. (DEGREES F AT 40% R.H.) |       |       |       |       |       |              |       |       |       |       |       |       |       |       |
|                              |       | 75   |       |       | 85    |       |       | 95           |       |       | 105   |       |       | 110   |       |       |
|                              |       | INDOOR WET BULB TEMP. (DEGREES F AT 80 F D.B.) |       |       |       |       |       |              |       |       |       |       |       |       |       |       |
|                              |       | 72   | 67    | 62    | 72    | 67    | 62    | 72           | 67    | 62    | 72    | 67    | 62    | 72    | 67    | 62    |
| EKTH07                       | BTUh  | 9055   | 8709  | 8062  | 8624  | 8131  | 7500  | 8285         | 7700  | 6815  | 7762  | 6892  | 6076  | 6907  | 5944  | 5251  |
|                              | WATTS | 522  | 530   | 536   | 569   | 575   | 582   | 640          | 640   | 640   | 691   | 691   | 693   | 755   | 755   | 758   |
|                              | AMPS  | 2.5  | 2.5   | 2.6   | 2.7   | 2.8   | 2.8   | 3            | 3     | 3     | 3.3   | 3.3   | 3.3   | 3.6   | 3.6   | 3.6   |
|                              | SHR   | 0.58   | 0.79  | 0.95  | 0.59  | 0.81  | 0.99  | 0.59         | 0.84  | 0.99  | 0.6   | 0.88  | 0.99  | 0.63  | 0.95  | 0.99  |
| EKTH09                       | BTUh  | 10584  | 10179 | 9423  | 10080 | 9504  | 8766  | 9684         | 9000  | 7965  | 9072  | 8055  | 7101  | 8073  | 6948  | 6138  |
|                              | WATTS | 653  | 663   | 670   | 711   | 719   | 727   | 800          | 800   | 800   | 865   | 864   | 866   | 943   | 943   | 947   |
|                              | AMPS  | 3.3  | 3.3   | 3.3   | 3.5   | 3.5   | 3.5   | 3.9          | 3.9   | 3.9   | 4.2   | 4.2   | 4.2   | 4.6   | 4.6   | 4.6   |
|                              | SHR   | 0.56   | 0.75  | 0.91  | 0.57  | 0.79  | 0.92  | 0.57         | 0.81  | 0.92  | 0.58  | 0.86  | 0.94  | 0.62  | 0.91  | 0.92  |
| EKTH12                       | BTUh  | 14112  | 13573 | 12565 | 13440 | 12672 | 11688 | 12912        | 12000 | 10621 | 12096 | 10741 | 9469  | 10765 | 9264  | 8184  |
|                              | WATTS | 914  | 928   | 938   | 996   | 1006  | 1018  | 1120         | 1120  | 1120  | 1210  | 1209  | 1213  | 1321  | 1321  | 1326  |
|                              | AMPS  | 4.4  | 4.4   | 4.4   | 4.7   | 4.7   | 4.8   | 5.3          | 5.3   | 5.3   | 5.7   | 5.7   | 5.7   | 6.3   | 6.3   | 6.3   |
|                              | SHR   | 0.46   | 0.62  | 0.84  | 0.47  | 0.65  | 0.86  | 0.47         | 0.67  | 0.86  | 0.48  | 0.71  | 0.87  | 0.51  | 0.75  | 0.86  |
| EKTH15                       | BTUh  | 17640  | 16965 | 15705 | 16800 | 15840 | 14610 | 16140        | 15000 | 13275 | 15120 | 13425 | 11835 | 13455 | 11580 | 10230 |
|                              | WATTS | 1248   | 1269  | 1282  | 1360  | 1373  | 1391  | 1530         | 1530  | 1530  | 1654  | 1652  | 1657  | 1803  | 1803  | 1812  |
|                              | AMPS  | 6.2  | 6.2   | 6.3   | 6.6   | 6.8   | 6.8   | 7.5          | 7.5   | 7.5   | 8.0   | 8.0   | 8.1   | 8.8   | 8.8   | 8.8   |
|                              | SHR   | 0.45   | 0.60  | 0.81  | 0.46  | 0.63  | 0.83  | 0.46         | 0.65  | 0.83  | 0.47  | 0.69  | 0.84  | 0.49  | 0.74  | 0.83  |
|                              |       |  |       |       |       |       |       | RATING POINT |       |       |       |       |       |       |       |       |
|                              |       |  |       |       |       |       |       | ARI 310/380  |       |       |       |       |       |       |       |       |

## EXTENDED PERFORMANCE DATA CONTINUED

| EXTENDED HEATING PERFORMANCE |       |                                    |       |       |       |       |
|------------------------------|-------|------------------------------------|-------|-------|-------|-------|
|                              |       | OUTDOOR DRY BULB TEMP. (DEGREES F) |       |       |       |       |
|                              |       | 37                                 | 42    | 47    | 52    | 57    |
| EKTH07                       | BTUh  | 5250                               | 5540  | 6300  | 6899  | 7620  |
|                              | WATTS | 509                                | 518   | 540   | 549   | 580   |
|                              | AMPS  | 2.4                                | 2.5   | 2.5   | 2.6   | 2.7   |
| EKTH09                       | BTUh  | 6004                               | 6399  | 8100  | 8647  | 9244  |
|                              | WATTS | 646                                | 656   | 720   | 725   | 735   |
|                              | AMPS  | 3.5                                | 3.5   | 3.6   | 3.6   | 3.7   |
| EKTH12                       | BTUh  | 7726                               | 8531  | 10700 | 11278 | 12235 |
|                              | WATTS | 883                                | 917   | 1010  | 1040  | 1073  |
|                              | AMPS  | 4.2                                | 4.3   | 4.7   | 4.9   | 5.1   |
| EKTH15                       | BTUh  | 10926                              | 11258 | 13800 | 15097 | 16540 |
|                              | WATTS | 1280                               | 1297  | 1390  | 1472  | 1539  |
|                              | AMPS  | 6.0                                | 6.1   | 6.6   | 6.9   | 7.2   |
|                              |       | RATING POINT<br>ARI 310/380        |       |       |       |       |

## Controller Functions and Operating Methods

The relationship between Centigrade and Fahrenheit is:  $T_{\text{centigrade}} = T_{\text{fahrenheit}} \times 1.8 + 3.2$

### A. Temperature Parameter

- Indoor setting temperature ( $T_{\text{preset}}$ )
- Indoor ambient temperature ( $T_{\text{amb}}$ )

### B. System Basic Function

The compressor has a 3 minute time delay before it will start as a protective feature. Once the compressor begins to run, the compressor cannot be stopped by changing the set temperature. However, it can be stopped by changing the mode the unit is operating in or by turning the unit off. Once the unit is restarted, the compressor will not restart until the 3 minute time delay has surpassed. (The compressor can be stopped immediately at the time of mode switchover, turning off the unit, adjusting setting temperature and when in protective modes.)

#### 1. Cooling Mode

When  $T_{\text{amb}} \geq T_{\text{preset}} + 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ), the unit runs in cooling mode. Meanwhile, the compressor runs and the fan runs at the preset fan speed.

When  $T_{\text{amb}} \leq T_{\text{preset}} - 2^{\circ}\text{F}$  ( $1^{\circ}$ ), the unit will turn OFF, the compressor will stop, however the fan will continue to run at the preset fan speed;

When  $T_{\text{preset}} - 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ )  $< T_{\text{amb}} < T_{\text{preset}} + 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ), the unit keeps running with the previous settings.

- In this mode, the unit's display will read the set temperature and the cooling LED is illuminated.

#### 2. Fan Mode

In this mode, only the fan runs. The compressor won't run and the temperature can't be adjusted. The fan speed can be changed. The display will read ambient temperature (32~99°F, when ambient temperature is higher than 99°F, it will display H1; when ambient temperature is lower than 32°F, it will display L0), and the fan LED is illuminated.

#### 3. Energy Saving Mode

When  $T_{\text{amb}} \geq T_{\text{preset}} + 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ), the unit runs in cooling mode. Meanwhile, the compressor runs and the fan runs at the preset fan speed.

When  $T_{\text{amb}} \leq T_{\text{preset}} - 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ), the compressor will turn off while the fan will continue to run for 3 minutes; If  $T_{\text{amb}} \leq T_{\text{preset}} - 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ), the fan will stop for 10 mins, and then turn on for 2 minutes at the preset speed. It will continue to cycle the fan on and off in this sequence until  $T_{\text{amb}} \geq T_{\text{preset}} + 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ), then the fan and the compressor will start up (the start-up of compressor will be delayed for 3 minutes; the fan start up will occur 30 seconds prior to the compressor).

#### 4. Heating Mode

When  $T_{\text{amb}} \leq T_{\text{present}} - 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ), the unit is runs in heating mode. Meanwhile, the electric heater will start after the fan runs for 3 seconds. When  $T_{\text{amb}} \geq T_{\text{present}} + 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ), the electric heater will turn off and the fan will continue to run til  $T_{\text{air exhaust}} \leq 90^{\circ}\text{F}$  and the unit stops (the fan will run 15 seconds after the unit stops); Then the fan will stop for 10 minutes and run for 1 minute at low fan speed. It will continue to cycle the fan on and off in this sequence until  $T_{\text{amb}} \leq T_{\text{preset}} - 2^{\circ}\text{F}$  ( $1^{\circ}\text{C}$ ).

#### 5. OFF mode

If the OFF mode is selected the power button is active on the control panel. The freeze protection feature remains enabled, even when the unit is OFF.

If the UP or DOWN buttons are pressed the display will turn off, after the ambient temperature is displayed for 15 seconds. The indoor light will also turn off after 15 seconds.

#### 6. Freeze Protection

This feature works in OFF, cooling and fan modes.

If the indoor ambient temperature is lower than 40°F (5°C) for 5 seconds, the electric heat mode and the freeze protection mode will start up.

When the indoor ambient temperature is more than 50°F (10°C), the freeze protection mode will turn off.

After entering into the freeze protection mode, it can't be stopped by pressing any buttons. During freeze protection mode, the display reads "FP" and the green running LED is illuminated. During the freeze protection mode, the unit can't be controlled by the wall thermostat.

## Controller Function and Operating Method continued

### 7. Open circuit and short circuit of temperature sensor

If the temperature sensor has an open circuit, it will send an error signal. The error signal is displayed (see table below). If malfunction of temperature sensor is detected, all the loads except the indoor fan will be turned off in cooling and fan mode; However, in heating mode, all the loads will stop immediately and the indoor fan will blow off any residual heat for 6 seconds. When the temperature sensor has malfunctioned and the fan has stopped, the fan can't be restarted. In cooling and fan mode, the fan will run normally. If the malfunction of the temperature sensor occurs during the time of blowing residual heat, the fan will stop after 1 minute.

## C. Button and Displays

### 1. Buttons

There are five buttons in all, ON/STOP, UP, DOWN, MODE and FAN SPEED.

1. In the OFF mode, press the ON/STOP button to turn on the unit: In OFF mode, if the UP or DOWN button is pressed, the display will turn off after displaying in the indoor temperature for 15 seconds; If the MODE button is pressed in the OFF mode, the controller will resume to the running status before the unit was turned off. The green running LED is illuminated.
2. In ON mode
  - ① ON/STOP: After pressing the ON/STOP button, the unit can be switched between ON and OFF mode
  - ② MODE: In ON mode, after pressing the MODE button, the unit be switched between cooling, fan and heating modes; In the OFF mode, after pressing the MODE button, the controller will run at the running status before turning off the unit.
  - ③ FAN SPEED: In ON mode, after pressing the FAN SPEED button, you can select the high, medium and low fan speed.
  - ④ UP, DOWN: Adjust the set temperature 61-86°F (16~30°C) by pressing the UP and DOWN buttons. Set temperature ranges can be specified through configuration of the dip switches.

### 2. Display and LED Display

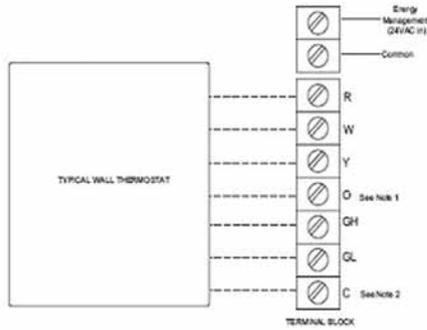
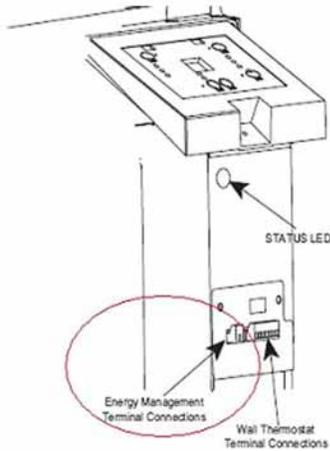
1. Mode LED display: when the A/C is running, the corresponding LED is illuminated.
2. Running/power LED: In ON mode, the LED is green in color; In STOP status, the controller is red in color.
3. Fan speed display: When the A/C is running on high, medium and low fan speed, the corresponding LED is illuminated.
4. Display: In cooling and heating modes, the display shows the set temperature (in fan mode it displays the indoor ambient temperature).
5. Malfunction Display: After energization, when there's malfunction or protective feature operating the STATUS LED will blink to display an error code continuously. The error codes are shown below: Priority is decreasing from 1 to 8. In OFF mode, the display will not show the error code (except for freeze protection). When multiple errors occur, the unit displays only the protection with the highest priority.

|   |   |  |
|---|---|--|
| 1 | Indoor ambient temp sensor is open circuit/short circuit    | Display reads "F1" and STATUS LED blinks once and turns off for 3 seconds    |
| 2 | Indoor tube temp sensor is open circuit and short circuit   | Display reads "F2" and STATUS LED blinks twice and turns off for 3 seconds   |
| 3 | Outdoor tube temp sensor is open circuit and short circuit  | Display reads "F3" and STATUS LED blinks 4 times and turns off for 3 seconds |
| 4 | Low temperature resistant protection                        | Display reads "FP"   |
| 5 | Wrong wire connection for wall thermostat                   | STATUS LED blinks 9 times and turns off for 3 seconds                        |
| 6 | High temperature resistant protection for evaporator        | STATUS LED blinks 8 times and turns off for 3 seconds                        |
| 7 | High temperature resistant protection for outdoor condenser | STATUS LED blinks 6 times and turns off for 3 seconds                        |
| 8 | Antifreezing protection for evaporator                      | STATUS LED blinks 5 times and turns off for 3 seconds                        |
| 9 | Frost protection (heat pump)                                | STATUS LED blinks 7 times and turns off for 3 seconds                        |

## D. Special Functions and Features

The PTAC unit is designed to be operated by the unit's main control panel, however, factory installed connections are included to allow the PTAC to operate via remote thermostat or energy management input (front desk control).

### Energy Management Input

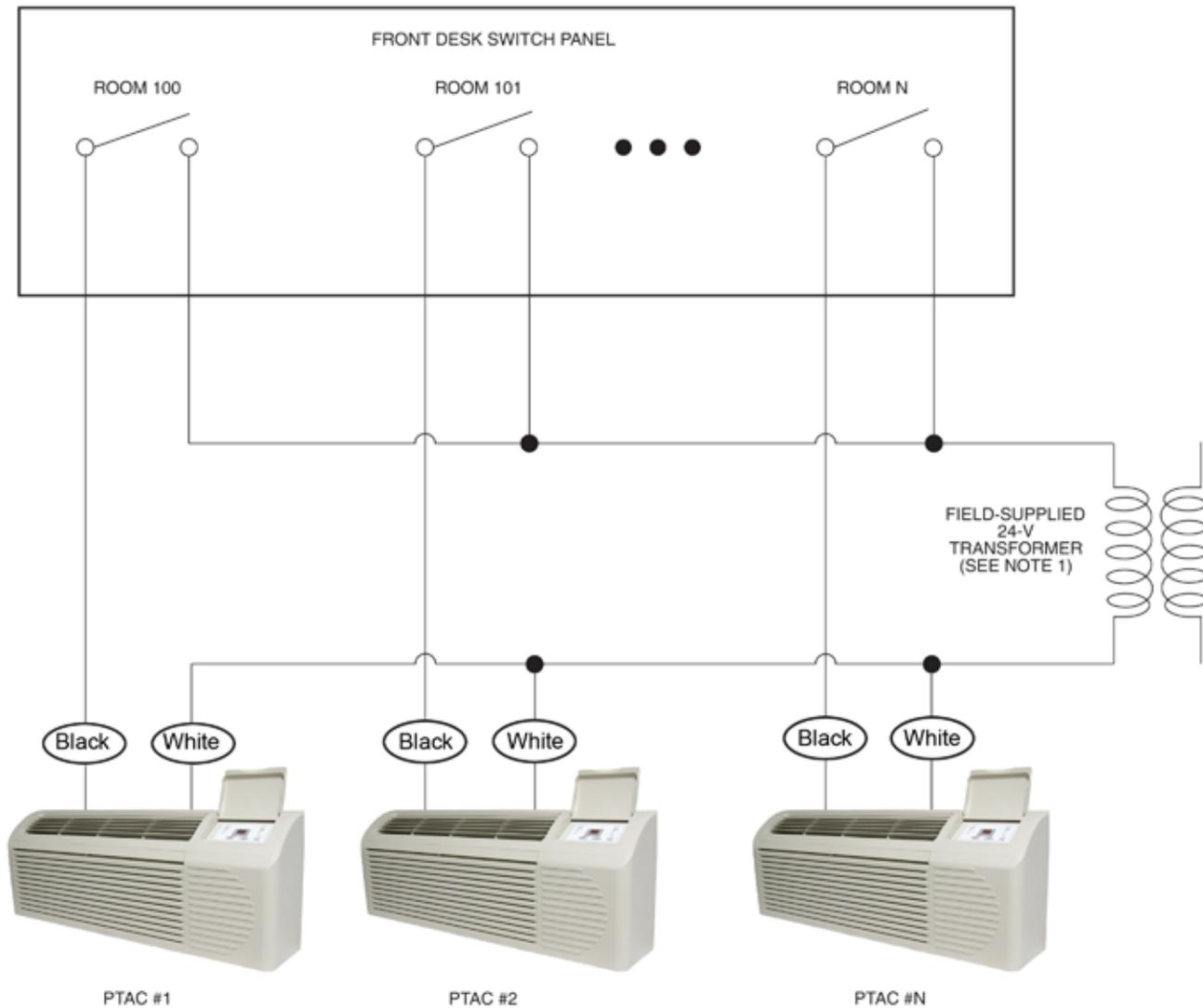


- NOTES:**
1. Use terminal "O" for heat pump connection only
  2. Terminal "C" (common) is typically only required for digital thermostats.

| TERMINAL | DESIGNATION     |
|----------|-----------------|
| R        | 24 VAC          |
| W        | Electric Heat   |
| Y        | Compressor      |
| O        | Reversing Valve |
| GH       | High Fan        |
| GL       | Low Fan         |
| C        | Common          |

**NOTE:** Any illegal input combinations will be captured as thermostat wiring failures and will light the STATUS LED indicator on main board

### Typical Wiring Schematic for Energy Management Kit



#### SUGGESTIONS:

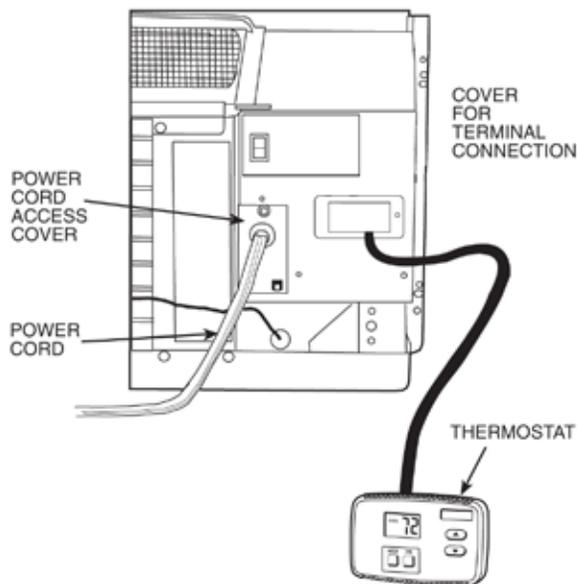
- To size transformer, use the following equation:  
Quantity of PTAC units x 12 va=Transformer Size (va)  
Example: 110 PTAC units x 12 va = 1320 vaTransformer

- Following are American Wire Gauge recommended sizes:

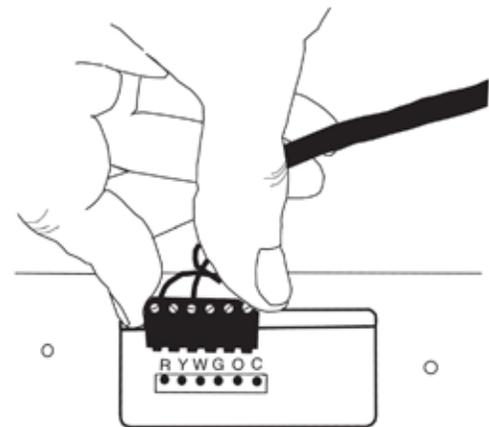
| AWG WIRE SIZE NO. | MAXIMUM LENGTH (ft) |
|-------------------|---------------------|
| 24                | 400                 |
| 22                | 600                 |
| 20                | 900                 |
| 18                | 1500                |
| 16                | 2000                |

## Wall Thermostat Connections

A standard low voltage wall thermostat can be wired with the PTAC unit's factory installed terminal. Multiple PTACs can even be connected together on a single wall thermostat.



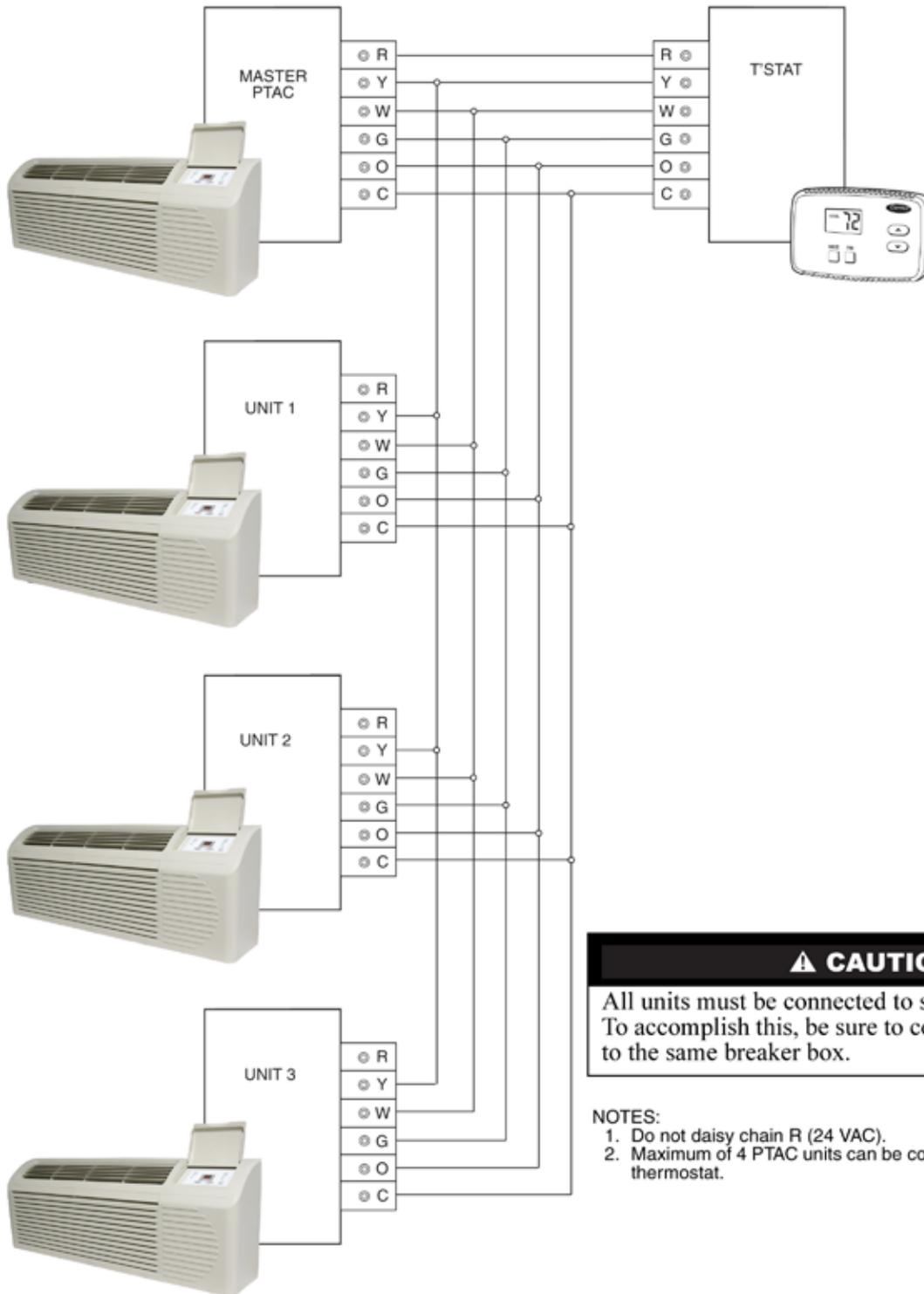
**Control Box Terminal Cover for Wall Thermostat Models**



**Terminal Connector Removal and Replacement**

# Typical Wiring Diagram

## Typical Wiring for Multiple PTAC Units Connected to a Single Wall Thermostat

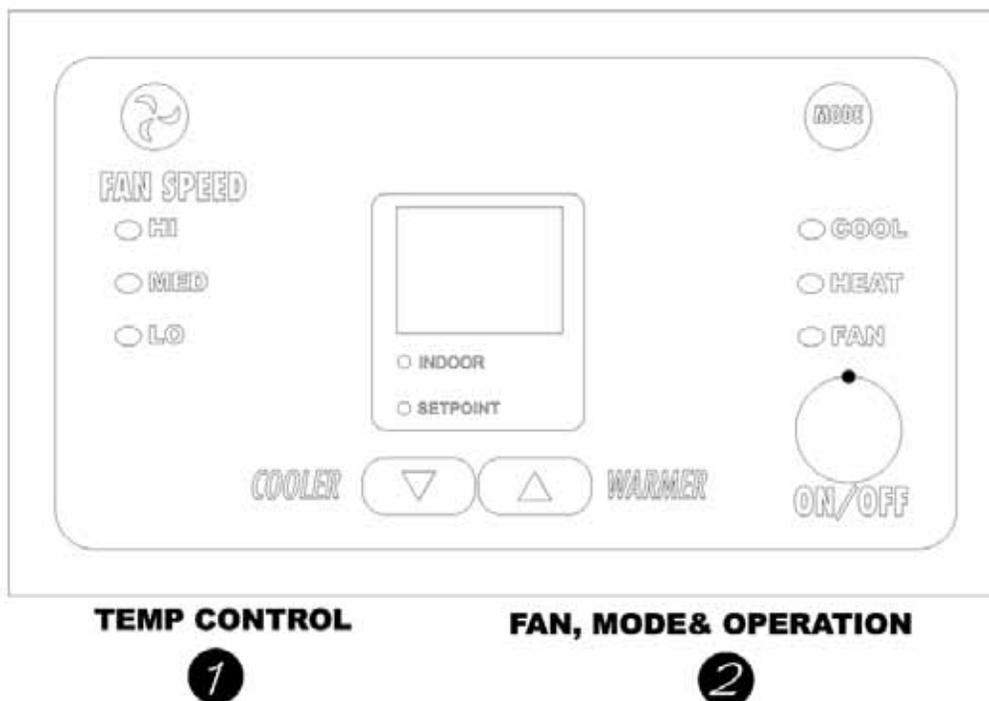


**CAUTION**  
All units must be connected to same ground source. To accomplish this, be sure to connect all units back to the same breaker box.

- NOTES:
- 1. Do not daisy chain R (24 VAC).
  - 2. Maximum of 4 PTAC units can be connected to one single wall thermostat.

## E. Unit controls

The PTAC can be configured by the display and a set of dip switches.



### 1. TEMP CONTROL

Temp Control is used to maintain room temperature. Compressor will cycle on and off to keep room at the requested level of comfort.

**COOLER**—Lowers temperature. (Minimum temperature setting is 61°F/16°C)

**WARMER**—Raises temperature. (Maximum temperature setting is 86°F/30°C)

### 2. FAN SPEED, MODE & ON/OFF

**FAN SPEED**—Set fan operation for HI, MED, or LO speed.

**MODE-COOL**—For cooling

**MODE-HEAT**—For heating

**NOTE:** If unit is a heat pump, raising the heat setting by 5°F will cause unit to use its electric heating elements for one cycle in order to reach the new requested temperature quickly.

**MODE-FAN**—For fan-only operation

**ON/OFF**—Turns the unit on or off.

**NOTE:** The LED above the ON/OFF button will be green when unit is ON and red when the unit is OFF. All other LEDs will be off when unit is set to OFF mode.

**NOTE:** Power remains connected to unit even when the unit is in the OFF mode.

## KEYPAD CONFIGURATION

Allows further configuration of system to desired application such as whether the unit displays in °F or °C, whether the display shows the set point or room air temperature, and to set controls for sensor biasing. Changes do not take effect until power is cycled on the unit.

### To enter Keypad configuration

Cycle power to unit. Press and hold the Fan Speed Button and the COOLER button for 5 continuous seconds, within 30 seconds of the unit being powered up. If the unit has had power for more than 30 continuous seconds, keypad configuration cannot be entered. When keypad configuration mode is first entered, it will default to Fahrenheit/ Celsius Display Mode.

### To scroll through the Keypad Configuration Options

Press and release the Fan Speed button. The stored value will be displayed.

### To modify configuration settings

Press and release the Setpoint Up or Setpoint Down buttons.

### To exit Keypad Configuration

Keypad Configuration will end on its own 30 seconds after the last button is pressed or when the MODE button on the Keypad is pressed.

In the configuration mode, four different options can be selected by using the fan speed button. The options are described below:

### Fahrenheit/ Celsius Display Switch:

Changes between degrees Fahrenheit and Celsius on the display. An “F” indicates Fahrenheit and ‘C’ indicates Celsius. Default is degrees “F”.

### Indoor Air Temperature Sensor Biasing for Cooling mode:

Sometimes known as an anticipator, the air temperature sensor bias is used to adjust the room air temperature reading in cooling mode. (Not normally required.)

### Indoor Air Temperature Sensor Biasing for Heating mode:

Sometimes known as an anticipator, the air temperature sensor bias is used to adjust the room air temperature reading in heating mode. (Not normally required.)

### Indoor Temperature Display:

Change between showing setpoint only on the display during heating and cooling modes “SP” or displaying room temperature during heating and cooling modes “AA”. (“SP” mode is the default mode.)

If “SP” is selected, only the setpoint will be displayed during heating and cooling modes, regardless of what the real temperature is in the room.

If “AA” mode is selected, the room temperature will be displayed during heating, cooling and fan only modes.

- If the mode button has been changed to either heating or cooling modes, setpoint will be displayed for 10 seconds. After the 10 seconds, the room temperature will again be displayed.
- If the on/off button is pressed (when the unit is off) and the last mode was either cooling or heating, the setpoint will be displayed for 10 seconds before displaying room temperature.
- During heating and cooling modes, if either the up or down setpoint key is pressed, the display will show the setpoint until 10 seconds after the last up or down key is pressed. Then the room temperature will be displayed again.

### To restore factory setting

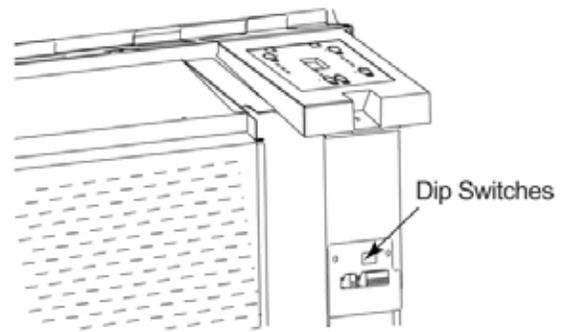
During standby of OFF mode, press fan speed and UP buttons simultaneously for 3 seconds. The display will show “00” for 3 seconds.

### DIP SWITCHES

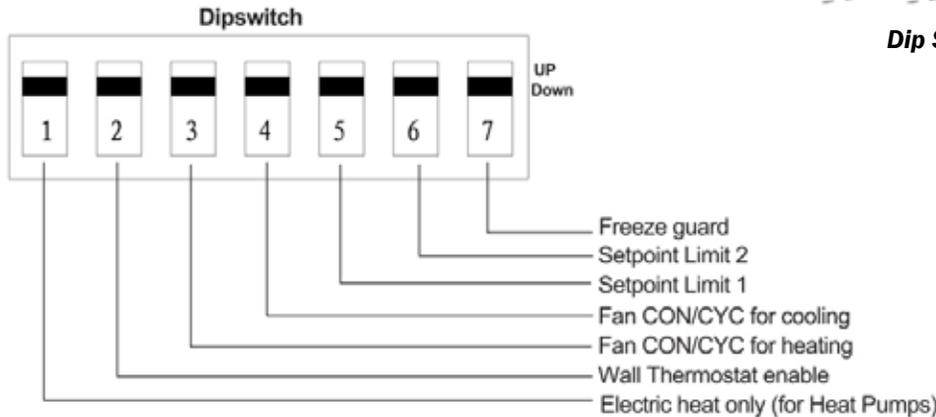
Auxiliary dip switch controls are located behind front panel, through an opening below the control panel.

Dip switches are accessible without opening the control box. Unit must be powered OFF to effectively change their status.

Factory settings for dip switches will be in the **DOWN** position. See Table—Dip Switch Functions for functions of each dip switch position.



Dip Switches



Dipswitch Location on Unit

Table—DIP SWITCH FUNCTIONS

| No. | UP                             |                                 | DOWN                            |   | REMARKS  | DEFAULT                           |
|-----|--------------------------------|---------------------------------|---------------------------------|---|--|-----------------------------------|
| 1   | Electric Heat Only             |                                 | Heat Pump                       |   | For Heat Pump unit only.   | DOWN                              |
| 2   | Wall Thermostat Enabled        |                                 | Control Panel Enabled           |   |  | DOWN                              |
| 3   | Fan Continuous Run for Heating |                                 | Fan Cycle for Heat              |   |  | DOWN                              |
| 4   | Fan Cycle for Cool             |                                 | Fan Continuous Run for Cooling  |   |  | DOWN                              |
| 5*6 | UP*UP<br>68–75 °F<br>20–24 °C  | UP*DOWN<br>63–80 °F<br>18–28 °C | DOWN*UP<br>65–78 °F<br>19–26 °C | DOWN*DOWN<br>61–86 °F<br>16–30 °C<br>(full range) | Two configurations (5*6) combine to select set point range. When set point limit set, display always shows full range. | DOWN*DOWN<br>61–86 °F<br>16–30 °C |
| 7   | Freeze Guard Disabled          |                                 | Freeze Guard Enabled            |   |  | DOWN                              |

#### Electric Heating Only / Emergency Heat (For Heat Pump Units Only)

This setting is typically used for Emergency Heating.

#### Wall Thermostat Enable

A wired wall thermostat can be connected to the unit. If it is, this dipswitch must be moved to the Wall Thermostat Enable Position, before the wall thermostat will begin control.

#### Heat and Cool Fan CON/CYC Dip-switches

Allows the fan to operate in continuous or cycle modes while the unit is in heating or cooling mode (continuous or cycle):

##### CON (Continuous)

Allows fan to run continuously, circulating air even when the temperature setting has been satisfied. This switch helps to maintain the room temperature closer to the thermostat setting.

##### CYC (Cycle)

This setting allows the fan to cycle on and off with the compressor or electric heater. The fan stops a short time after the temperature setting is satisfied.

#### Setpoint Temperature Limits

Provides a restricted range of temperature control.

#### Room Freeze Protection

If unit senses a room temperature below 40°F, the fan motor and electric strip heat will turn on and warm the room to 50°F. The fan stops a short time after the temperature is satisfied.

## F. Protective Features

### 1. Frost Protection Mode (heat pump):

When the compressor is running under wired controller's heating signal. If T outer tube  $\leq 28^{\circ}\text{F}$  ( $-2^{\circ}\text{C}$ ) is detected for 1 minute successively, the compressor and outdoor fan will stop running. Then indoor fan will run normally according to the wired controller's signal. If the heating is required then the heat pump operation will stop the compressor and run the electric heater solely. However, if T outer tube  $\geq 40^{\circ}\text{F}$  ( $5^{\circ}\text{C}$ ) is detected for 10 minutes, it will stop the frost protection mode.

### 2. High temperature protection for evaporator:

When the compressor is running under wired controller's heating signal, if T inner tube  $\leq 136^{\circ}\text{F}$  ( $58^{\circ}\text{C}$ ) is detected for 1 minute successively, the compressor and outdoor fan will stop running and the indoor fan will run normally according to the wired controller's signal. If heating is required the heat pump operation will stop the compressor and run the electric heater solely after 15 seconds.

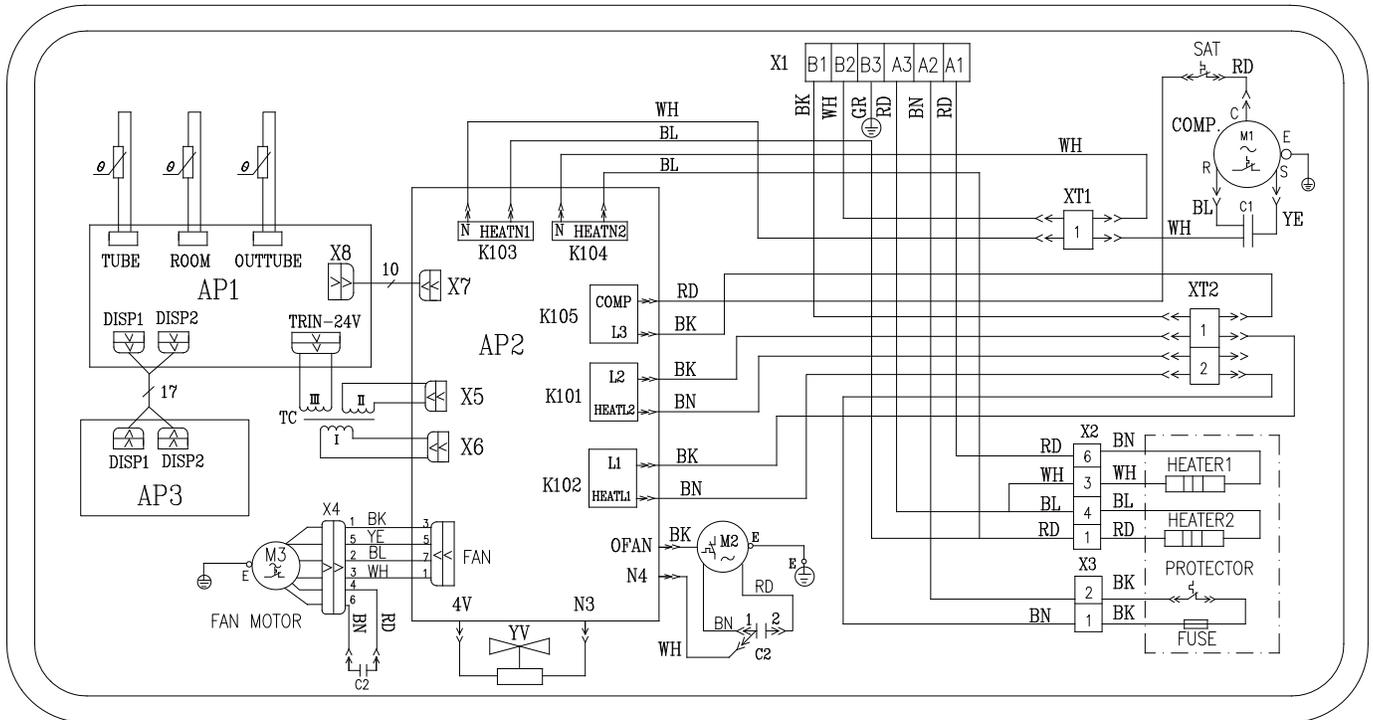
### 3. Antifreezing protection for evaporator:

When the compressor is running under wired controller's heating signal, if T inner tube  $\leq 28^{\circ}\text{F}$  ( $-2^{\circ}\text{C}$ ) is detected for 1 minute successively, the compressor and outdoor fan will stop running and the indoor fan will run normally according to the wired controller's signal. (Before the protection, if there isn't a signal for indoor fan, it will run at medium fan speed. After entering the protection mode, it will run at the preset fan speed before protection) until T inner tube  $\leq 40^{\circ}\text{F}$  ( $5^{\circ}\text{C}$ ) is detected for 2 minutes, the system will quit the antifreezing protection mode.

### 4. Higher temperature protection for outdoor condenser:

Under the wired controller's signal, the compressor is running. If T outer tube  $\leq 149^{\circ}\text{F}$  ( $65^{\circ}\text{C}$ ) is detected for 1 minute successively, the high temperature resistant protection mode will be enabled. The compressor will stop running, the indoor fan will run normally according to the signal of wired controller and the outdoor fan will run constantly until T outer tube  $\leq 131^{\circ}\text{F}$  ( $55^{\circ}\text{C}$ ) is detected for 2 minutes successively then the protection mode will stop.

# Electric Circuit Diagram



This electrical diagram is subject to change. Please refer to the diagram in the actual unit.

## POWER CONNECTION OPTIONS

Appropriate power cord accessory kit is determined by the voltage, and amperage of the branch circuit. **The unit does not come with a power cord (or hard wire kit).** An accessory power cord kit must be ordered to connect the unit to the outlet. If the unit is to be hard wired, an accessory hard wire kit must be ordered.

**IMPORTANT:** For 265V units, if a power cord is selected, it must plug into the 265V subbase accessory.

### Cord-connected Units

The 250V field supplied outlet must match the plug for the standard 208/230V units and be within reach of the service cord. The standard cord-connected 265V units require an accessory electrical subbase for operation. *Refer to Table for proper receptacle and fuse type.*

### Power Cord Protection

The power cord for 230/208v units provide power cord fire protection. Unit power automatically disconnects when unsafe conditions are detected. Power to the unit can be restored by pressing the reset button on plug head. Upon completion of unit installation for 230/208V models, an operational check should be performed using the TEST/RESET buttons on the plug head.

**NOTE:** The 265V models do not incorporate this feature as they require use of the electrical subbase accessory.

### RECEPTACLES AND FUSE TYPES: 250, 265 VOLTS

| RECEPTACLE  |  |  |  |  |  |  |
|---|---|---|---|--|---|---|
| AMPS  | 15  | 20  | 30  | 15   | 20  | 30  |
| RATED VOLTS                                       | 250   | 250   | 250   | 265  | 265   | 265   |
| TIME-DELAY TYPE FUSE<br>(or HACR Circuit Breaker) | 15  | 20*   | 30  | 15   | 20  | 30  |

#### LEGEND

HACR—Heating, Air Conditioning, Refrigeration

\* May be used for 15 amp applications

### Power Connection Chart

| UNIT MODEL | CODE OF POWER SUPPLY KIT |                 |                 |
|------------|--------------------------|-----------------|-----------------|
|            | 30A                      | 20A             | 15A             |
|            | 230/208 VOLT             | 230/208 VOLT    | 230/208 VOLT    |
| EKTC07-1G  | N/A*                     | 7602-520A-230   | 7602-515A-230   |
| EKTH07-1G  |                          |                 |                 |
| EKTC09-1G  |                          |                 |                 |
| EKTH09-1G  |                          |                 |                 |
| EKTC12-1G  |                          |                 |                 |
| EKTH12-1G  |                          |                 |                 |
| EKTC15-1G  |                          |                 |                 |
| EKTH15-1G  | 7602-530A-230            |                 |                 |
|            | <b>265 VOLT</b>          | <b>265 VOLT</b> | <b>265 VOLT</b> |
| EKTC07-2G  | N/A*                     | 7602-520A-265   | 7602-515A-265   |
| EKTH07-2G  |                          |                 |                 |
| EKTC09-2G  |                          |                 |                 |
| EKTH09-2G  |                          |                 |                 |
| EKTC12-2G  |                          |                 |                 |
| EKTH12-2G  |                          |                 |                 |
| EKTC15-2G  |                          |                 |                 |
| EKTH15-2G  | 7602-530A-265            |                 |                 |

\* Using 30A on these units could result in damage to your unit.

## **PREVENTATIVE MAINTENANCE**

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Preventative maintenance is essential to proper unit operation, efficiency and longevity.

To ensure equipment operates properly, it must be properly maintained. Equipment operation should be checked and verified several times during each year. During regular unit inspection and maintenance, follow the guidelines below:

- Clean both sides of outdoor coil. (Never use high pressure spray on coils.)
- Clean basepan and outdoor vent filter.
- Clean outdoor orifice and fan.
- Clean indoor coil. (Never use high pressure spray on coils.)
- Clean indoor fan, wire screen and front panel.
- Clean or install new indoor-air inlet filter(s).
- Clean wall sleeve and outdoor grille.
- Inspect cord and receptacle.
- Secure electrical connections.
- Ensure front panel is properly mounted and not damaged.
- Ensure wall sleeve is installed properly.
- Ensure heat and cool cycles operate properly.

# Trouble Shooting Guide

| Complaint  | No Heat               |                                      |   |                               |                              |  | Unsatisfactory Cooling        |   |                            |                              | System Operating Pressures              |                     |                      |                   | Test Method Remedy    |   |
|--|-----------------------|--------------------------------------|---|-------------------------------|------------------------------|--|-------------------------------|---|----------------------------|------------------------------|---|---------------------|----------------------|-------------------|-----------------------|---|
|  | SYMPTOM               |                                      |   |                               |                              |  |                               |   |                            |                              |   |                     |                      |                   |                       |   |
| POSSIBLE CAUSE<br><br>DOTS IN ANALYSIS GUIDE INDICATE "POSSIBLE CAUSE" | System Will Not Start | Compressor will not start - fan runs | Compressor and Condenser Fan will not start | Evaporator fan will not start | Condenser fan will not start | Compressor runs - goes off on overload | Compressor cycles on overload | System runs continuously - little cooling | Too cool and then too warm | Not cool enough on warm days | Certain areas too cool others, too warm | Compressor is noisy | Low suction pressure | Low head pressure | High Suction Pressure | High head pressure                        |
| Power Failure  | •                     |                                      |   |                               |                              |  |                               |   |                            |                              |   |                     |                      |                   |                       | Test Voltage                              |
| Blown Fuse   | •                     | •                                    | •   |                               |                              |  |                               |   |                            |                              |   |                     |                      |                   |                       | Check Fuse Size & Type, Replace if needed |
| Loose Connection   | •                     |                                      | •   |                               | •                            |  |                               |   |                            |                              |   |                     |                      |                   |                       | Inspect Connection, Tighten if needed     |
| Shorted or Broken Wires  | •                     | •                                    | •   | •                             | •                            | •                                      |                               |   |                            |                              |   |                     |                      |                   |                       | Test Circuits With Ohmmeter               |
| Open Overload  | •                     | •                                    |   | •                             | •                            |  |                               |   |                            |                              |   |                     |                      |                   |                       | Test Continuity of Overloads              |
| Faulty Thermostat  | •                     |                                      |   | •                             |                              |  |                               | •   |                            |                              |   |                     |                      |                   |                       | Test Continuity of Thermostat & Wiring    |
| Shorted or Open Capacitor  |                       | •                                    |   |                               | •                            | •                                      |                               |   |                            |                              |   |                     |                      |                   |                       | Test Capacitor                            |
| Internal Overload Open   | •                     |                                      |   |                               |                              |  |                               |   |                            |                              |   |                     |                      |                   |                       | Test Continuity of Overload               |
| Shorted or Grounded Compressor   |                       | •                                    |   |                               |                              | •                                      |                               |   |                            |                              |   |                     |                      |                   |                       | Test Motor Windings                       |
| Compressor Stuck   | •                     |                                      |   |                               |                              | •                                      |                               |   |                            |                              |   |                     |                      |                   |                       | Use Test Cord                             |
| Open Control Circuit   |                       |                                      |   | •                             |                              |  |                               |   |                            |                              |   |                     |                      |                   |                       | Test Control Circuit with Voltmeter       |
| Low Voltage  |                       | •                                    |   |                               |                              | •                                      | •                             |   |                            |                              |   |                     |                      |                   |                       | Test Voltage                              |
| Faulty Evap. or Cond. Fan Motor  |                       |                                      |   | •                             |                              |  |                               |   |                            |                              |   | •                   |                      |                   |                       | Repair or Replace                         |
| Shorted or Grounded Fan Motor  |                       |                                      |   |                               | •                            |  |                               |   |                            |                              |   |                     |                      |                   | •                     | Test Motor Windings                       |
| Shortage of Refrigerant  |                       |                                      |   |                               |                              |  | •                             | •   |                            |                              |   | •                   |                      |                   |                       | Test for Leaks, Replace Drier             |
| Restricted Liquid Line   |                       |                                      |   |                               |                              |  | •                             | •   |                            |                              |   | •                   | •                    |                   |                       | Replace Restricted Part                   |
| Dirty Air Filter   |                       |                                      |   |                               |                              |  |                               | •   | •                          | •                            |   | •                   |                      |                   | •                     | Inspect Filter, Clean or Replace          |
| Dirty Indoor Coil  |                       |                                      |   |                               |                              |  |                               | •   | •                          | •                            |   | •                   |                      |                   | •                     | Inspect Coil, Clean if needed             |
| Too Much Air across Indoor Coil  |                       |                                      |   |                               |                              |  |                               |   |                            |                              |   |                     | •                    |                   |                       | Reduce Blower Speed                       |
| Overcharge of Refrigerant  |                       |                                      |   |                               |                              | •                                      | •                             |   |                            |                              |   |                     | •                    | •                 |                       | Remove & Replace Cap Tube                 |
| Dirty Outdoor Coil   |                       |                                      |   |                               | •                            | •                                      |                               |   | •                          |                              |   |                     |                      |                   | •                     | Inspect Coil, Clean if needed             |
| Noncondensibles  |                       |                                      |   |                               |                              |  | •                             |   | •                          |                              |   |                     |                      |                   | •                     | Remove Charge, Replace Cap Tube           |
| Recirculation of Condensing Air  |                       |                                      |   |                               |                              |  | •                             |   | •                          |                              |   |                     |                      |                   | •                     | Remove Obstruction to Air Flow            |
| Infiltration of Outdoor Air  |                       |                                      |   |                               |                              |  |                               | •   | •                          | •                            |   |                     |                      |                   |                       | Check Windows, Doors, Vent Fans, etc.     |
| Improperly Located Thermostat  |                       |                                      |   |                               |                              | •                                      |                               |   | •                          |                              |   |                     |                      |                   |                       | Relocate Thermostat                       |
| System Undersized  |                       |                                      |   |                               |                              |  |                               | •   | •                          |                              |   |                     |                      |                   |                       | Refigure Cooling Load                     |
| Broken Internal Parts  |                       |                                      |   |                               |                              |  |                               |   |                            |                              |   | •                   |                      |                   |                       | Replace Compressor                        |
| Broken Valves  |                       |                                      |   |                               |                              |  |                               |   |                            |                              |   | •                   |                      |                   |                       | Test Compressor Efficiency                |
| Inefficient Compressor   |                       |                                      |   |                               |                              |  |                               | •   |                            |                              |   |                     | •                    | •                 |                       | Test Compressor Efficiency                |

*Design, specifications, performance data and materials subject to change without notice.*

# HEAT CONTROLLER

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