

# AIR CONDITIONER ACCESSORIES AND OPTIONS



## FACTORY-INSTALLED OPTIONS

**ALUMINUM CABINET:** Where light weight and/or compatibility with appearance of aluminum enclosures are required. Unpainted Type 5052 is standard. Other types and ultraviolet-resistant baked powder finish are available.

**CONDENSER ACCESS PANEL:** Expressly designed for quick, convenient access to the condenser coil for easy cleaning and servicing. Recommended for units operating in dirty environments, the panel is easily removed and replaced by use of a few fasteners, without removal of the entire rear cover panel.

**COOLING EFFECT DETECTOR:** A thermostat is mounted inside the cabinet and attached to a sensor in the warm air return. When the air temperature increases to the set point, a signal is sent to a terminal block. User-installed wiring from the terminal block to local and/or remote warning devices (light, bell, siren, etc.) can be for normally open or closed operation.

**ENCLOSURE HEATER:** 120V or 240V fin strip heater, installed singly or ganged, used to maintain desired internal enclosure temperature, under cold operating conditions.

**INTERNAL CORROSION PROTECTION:** An air cured coating is sprayed on copper lines and brazed joints, providing a degree of protection from corrosive environments. This coating will withstand 1000 hours of salt spray per the ASTM B 117 test method. Also see Stainless Steel Cabinet or Integrity NEMA 4/4X Air Conditioners. **NOTE:** Severe operational environments such as waste water treatment and salt spray are likely to cause corrosion failure over a period of time regardless of coating. **Warranty:** Corrosive conditions may effect the warranty coverage. Consult factory for warranty limitations in corrosive environments.

**LIFTING EYES:** Heavy-gauge steel lifting eyes, attached to the side panels, assist in positioning units.

**LOW AIRFLOW DETECTOR:** Similar to the Airflow Switch shown in the Blower Accessories Section, the switch is installed in a suitable location in the air conditioner to detect loss of airflow, and sends a signal to a terminal block, through which user-installed wiring and warning devices are activated.

**LOW AMBIENT KIT:** Maintains sufficient operating pressures when ambient temperatures drop below 50°F. Includes a compressor heater and a pressure device that senses the reduced discharge pressure and modulates the condenser blower. Effective to a minimum ambient temperature of 0°F.

**MOUNTING HINGE:** (Left-hand or Right-hand) Allows the air conditioner itself to be used as a cabinet door. (Caution: The cabinet must be able to support the full weight of the unit in open position). Specify left-hand or right-hand, determined by facing the mounting side of the air conditioner.

**REMOTE THERMOSTAT RELAY:** Used only with a user-installed remote thermostat or the Kooltronic KLLC100 Lead-Lag Controller, this 24VAC relay can be used for the sequential operation of two units or with a single unit. An external terminal strip is provided for field interconnection. **NOTE:** User-installed thermostat must have a set point of 75°F with a differential of 11°F. **NOTE:** A factory installed thermostat is not provided with this option.

**SHORT CYCLE PROTECTOR:** Protects the compressor from possible damage due to harmful short cycling, (frequent starting) where temperature controls enable the compressor to restart frequently or after a power interruption. These conditions could be due to low or fluctuating heat loads within the electrical enclosure or a power failure. The Compressor Short Cycle Protector will prevent the compressor from starting when it has been shut off for less than several minutes or the power was interrupted. By limiting the number of compressor starts per hour, the life of the compressor is prolonged. It is recommended where installations are subject to solar gain and or changes in the enclosure internal load due to the degree of usage of the equipment being cooled. It is also recommended where higher capacity units are specified in anticipation of the future addition of heat producing equipment being added to the enclosure.

**STAINLESS STEEL CABINET:** For applications in corrosive or other hostile environments such as those requiring Internal Corrosion Resistant Coatings, especially where chemical/moisture combinations are present.

## CUSTOMER-INSTALLED ACCESSORIES

**CONDENSATE EVAPORATOR:** Heated add-on unit for air conditioners without built-in condensate evaporator system. Eliminates need for draining of condensate under normal operating conditions. May not be adequate in extremely high humidity with open or leaky enclosure.

**FILTERS:** See page 67.

**FILTER RECOATING ADHESIVE:** This compound is a superior product for recoating all permanent filters after washing. The adhesives penetrate dirt layers to keep the filter surface tacky for longer effective performance between washings. Part No. A-16 - one pint container.

**LEAD-LAG CONTROLLER:** This true dual-stage device allows users to control the operation of up to two air conditioners based on either temperature or run-time. For users with fluctuating heat loads, the Lead-Lag Controller will bring the second air conditioner on-line as the heat load increases, and shuts it down as the demand for additional cooling diminishes. It can also be used to distribute the run-time over multiple units, balancing the service life of the air conditioners. **NOTE:** Each air conditioner must have the Remote Thermostat Relay (see above) factory-installed prior to connecting this device. **NOTE:** The Lead-Lag Controller must be connected to a 115VAC power supply. The KLLC100 is not UL Listed.

Model Number: KLLC100

# AIR CONDITIONER ACCESSORIES AND OPTIONS (cont.)

**WEATHER PROTECTION KIT:** For outdoor installations subject to invasion by rain, snow or windblown dirt, special deflectors shield the condenser air inlet and outlet ports. Air conditioners or heat exchangers installed outdoors may also require special exterior paint. **NOTE:** Units using the Weather Protection Kit are not UL Listed.

**HIGH-CAPACITY CONDENSATE EVAPORATOR:** Condensate evaporator kits are available for attachment to the bottom of Micro-Mini, Air or Water Cooled Panel Mounted Air Conditioners, and Water-to-Air Heat Exchangers. Condensate is collected, vaporized and discharged to the surrounding air. All units include a safety overflow drain which discharges excessive condensate when required. Overflow may occur when cabinets are poorly sealed, or when cabinet doors are frequently opened, permitting the invasion of moisture-laden air. Built-In Condensate Evaporators are standard equipment on Kooltronic TrimLine and Advantage Series, the Super-Mini, Horizontal Top-Mounted, and Rack-Mounted H9 & H10 models.

### UNIT APPLICATIONS

KCH20 & K2CH20 for use on Kooltronic Micro-Mini Air Conditioners.

KCH30 & K2CH30 for use on Kooltronic Panel Mount Air Conditioners and Water-to-Air Heat Exchangers.

### ELECTRICAL REQUIREMENTS

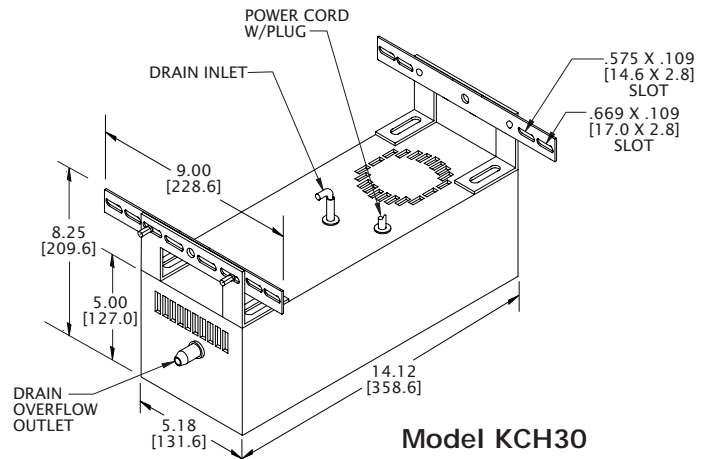
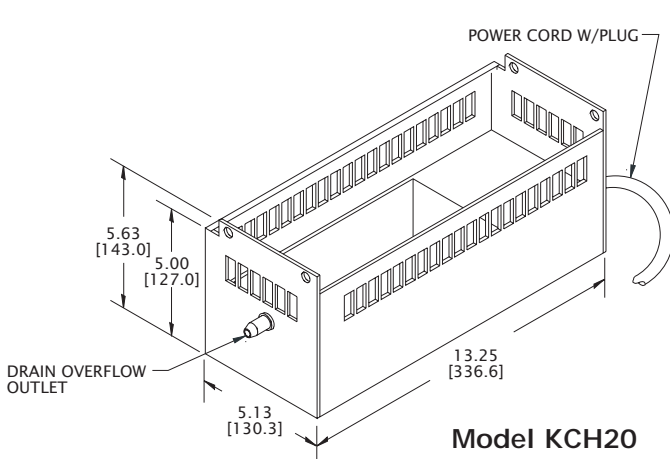
KCH20	115 Volt	2.5 amps	50/60 Hz
K2CH20	230 Volt	1.2 amps	50/60 Hz
KCH30	115 Volt	2.6 amps	50/60 Hz
K2CH30	230 Volt	1.3 amps	50/60 Hz

- Voltage need not match Air Conditioner as long as unit is connected to a matching power source.
- 115 Volt units are furnished with NEMA 5-15 P plugs.
- 230 Volt units are furnished with NEMA 6-15 P plugs.

(For wiring directly to Air Conditioners, contact KOOLTRONIC)

### CAPACITY

Units capable of evaporating up to 8 ounces of water per hour under normal operating conditions.



Dimensions, inches [mm], are for reference only and subject to change.

## FILTERS

All KOOLTRONIC filters consist of a multi-layer grid of sturdy corrugated aluminum, securely held in a one-piece aluminum frame. Filters are required wherever air is drawn into an electronics enclosure or related cooling equipment to keep internal parts as clean as possible. A non-drying adhesive coating traps a high percentage of particulate matter. These washable, reusable filters are designed to last the life of the cooling unit. Replacements are available for those which become damaged or otherwise non-serviceable.

Model	Filter P/N	Dimensions, inches** (H x W x D)	Dimensions, mm** (H x W x D)
<b>Advantage</b>			
RP17	6501F	12.00 x 6.50 x 0.38	304.8 x 165.1 x 9.7
RP28	7006F	12.00 x 7.00 x 0.50	304.8 x 177.8 x 12.7
RP33	7006F	12.00 x 7.00 x 0.50	304.8 x 177.8 x 12.7
RP36	9121F	15.38 x 9.13 x 0.38	390.7 x 231.9 x 9.7
RP47	9622F	15.38 x 9.63 x 0.38	390.7 x 244.6 x 9.7
RP52	11751F	16.75 x 11.75 x 0.38	425.5 x 298.5 x 9.7
RP55	11631F	11.63 x 21.63 x 0.38	295.4 x 549.4 x 9.7
<b>TrimLine</b>			
NP17	10871F	10.88 x 14.88 x 0.50	276.4 x 378.0 x 12.7
Narrow-Mini	8751F	16.63 x 8.38 x 0.50	422.4 x 212.9 x 12.7
NP28	8751F	16.63 x 8.38 x 0.50	422.4 x 212.9 x 12.7
NP33	12251F	16.63 x 11.88 x 0.50	422.4 x 301.8 x 12.7
NP36	1000F	12.38 x 12.38 x 0.50	314.5 x 314.5 x 12.7
NP47	12251F	16.63 x 11.88 x 0.50	422.4 x 301.8 x 12.7
NP59	20001F	19.63 x 15.63 x 1.00	498.6 x 397.0 x 25.4
<b>Mini</b>			
Micro-Mini	900F	11.38 x 11.38 x 0.50	289.1 x 289.1 x 12.7
Super-Mini	650F	8.38 x 8.38 x 0.50	212.9 x 212.9 x 12.7
<b>Integrity NEMA 4/4X</b>			
Series 21	9501F	9.50 x 10.50 x 0.38	241.3 x 266.7 x 9.7
Series 32	650F	8.38 x 8.38 x 0.50	212.9 x 212.9 x 12.7
	8751F	16.63 x 8.38 x 0.50	422.4 x 212.9 x 12.7
Series 38	16001F*	16.63 x 10.50 x 0.50	422.4 x 266.7 x 12.7
Series 47	16001F*	16.63 x 10.50 x 0.50	422.4 x 266.7 x 12.7
Series 59	16001F*	16.63 x 10.50 x 0.50	422.4 x 266.7 x 12.7
<b>Rack-Mounted</b>			
H9	1175F	16.63 x 9.63 x 0.50	422.4 x 244.6 x 12.7
H10	1175F	16.63 x 9.63 x 0.50	422.4 x 244.6 x 12.7
<b>Top-Mounted</b>			
Super-Mini (HSL)	11001F	11.00 x 8.00 x 0.50	279.4 x 203.2 x 12.7
Compact	240F	12.38 x 7.38 x 0.50	314.5 x 187.5 x 12.7
Compact Plus	4811F	4.81 x 15.00 x 0.38	122.2 x 381.0 x 9.7
Full Size	17001F	16.00 x 13.00 x 0.50	406.4 x 330.2 x 12.7
Advantage	10501F	16.63 x 10.13 x 0.50	422.4 x 257.3 x 12.7

\*\* Nominal; actual size may vary slightly.

\* T-Shape



## DESCRIPTION

In response to strong customer interest and an increasing number of cooling applications requiring multiple air conditioners on a single cabinet, Kooltronic has developed the KLLC100 Lead-Lag Controller, an option for use with all Kooltronic air conditioners equipped with a 24V relay and external connection (option "D").

This true dual-stage device allows users to control the operation of up to two air conditioners based on either temperature or run-time. For users with fluctuating heat loads, the Lead-Lag Controller will bring the second air conditioner on-line as the heat load increases, and shuts it down as the demand for additional cooling diminishes. It can also be used to distribute the run-time over multiple units, balancing the service life of the air conditioners.

Applications using more than one air conditioner on a cabinet, either for extreme heat load or as a redundant system are becoming more prevalent. Adding a Lead-Lag Controller is an effective solution for users who need to maintain a critical cabinet temperature without interruption or failure.

The Controller features an LED display to indicate which air conditioner is on the run cycle and whether a unit is in the cooling or heating mode, if so equipped. There is also an easy-to-read display panel that provides options to tailor the control of the air conditioners to suit any application. Other standard features include a built-in thermostat with adjustable set-point, deadband and sequencer and a universal mounting plate for simple installation within the cabinet. The Lead-Lag Controller can also be used with Kooltronic's line of Heat Exchangers.

## APPROXIMATE WEIGHT

2.2 lbs. [1.0 kg]

## SPECIFICATIONS

### ELECTRICAL

#### INPUT

Nominal Voltage: 18-30 VAC  
 Frequency: 50/60Hz

#### OUTPUT

Type: Triac  
 Number: Four (4)  
 Rating: 2 amps per output @ nom. 24 VAC

### OPERATIONAL

#### HEAT/COOL STAGING

First Stage Heat (H1): deadband setting above thermostat setpoint (C1)  
 Second State Heat (H2): 2°F above H1  
 First Stage Cool (C1): equal to thermostat setpoint  
 Second Stage Cool (C2): 2°F below C1

#### DEADBAND

Adjustable: 2° to 20°F

#### SHORT-CYCLE PROTECTION

Stage 1: Three (3) minutes  
 State 2: Four (4) minutes

#### SETPOINT

Adjustable: 55 to 90°F @ C1

#### ADVANCE SEQUENCER

Pin selectable: Alternates every 1, 3, 7, 15 or 28 days, or fixed  
 Manual ADVANCE pushbutton initializes sequence record

#### MODE MEMORY

On power loss, system 'remembers' which previous mode it was in

#### TEST MODES

Thermistor bypass calibration mode jumper  
 Accelerated test mode jumper

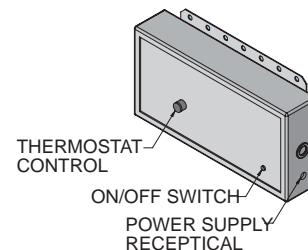
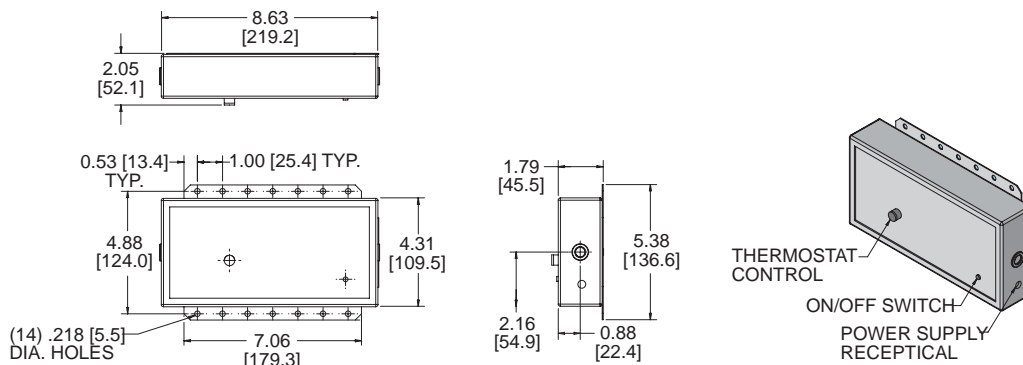
#### DISPLAY LEDs

Green LEDs: call for COOL (C1 & C2)  
 Red LEDs: call for HEAT (H1 & H2)

## STANDARD FEATURES

- True Dual Stage control
- Regulates 1 or 2 air conditioners
- Controls units based on temperature and run-time
- Second unit can heat or cool only when necessary
- Built-in thermostat (adjustable setpoint, deadband and sequencer)
- Compact housing
- Memory on power loss
- Enables load balancing and redundancy
- Manages heating and cooling of both units
- Provides Short-Cycle protection
- Includes status LEDs

## DRAWINGS AND DIMENSIONS inches [metric]



## HOW TO ORDER

Specify model number.