

• SPECIAL SPLIT SYSTEMS

- HIGH WALL
- UNDERCEILING
- CASSETTE SYSTEMS
- MULTISPLITS SYSTEMS

MARINE APPLICATION



REV 0112

SPECIAL SPLIT SYSTEMS

There are different configurations, according to the project requirements, cooling capacities, design criteria, available space, etc...

- High Wall
- Underceiling
- Cassette Systems
- Multisplits

60 Hz

MARINE APPLICATION



HIGH WALL



UNDERCEILING



MULTISPLITS SYSTEMS



CASSETTE SYSTEMS

HIGH WALL



FEATURES

AN INEXPENSIVE AND CREATIVE SOLUTION TO DESIGN PROBLEMS.

The indoor unit is mounted on the wall, near the ceiling. This selection of indoor units permits inexpensive and creative solutions to design problems such as:

- Add-ons to current space
- Special space requirements
- When changes in the load cannot be handled by the existing system.
- When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork.
- Historical renovations or any application where preserving the look of the original structure is essential.

These compact indoor units take up very little space in the room and do not obstruct windows. They are attractively styled to blend with most room decors. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.



MARINE APPLICATION

GENERAL CHARACTERISTICS

- Cooling only or heat pump versions.
- Refrigerant R410a
- Wireless remote control
- Easy and quick installation
- Optionals:

- *Low ambient kit:*

Low-ambient temperature capability (permitting cooling operation down to -20°F (-28.89°C) outdoor ambient) is easily added on all units.

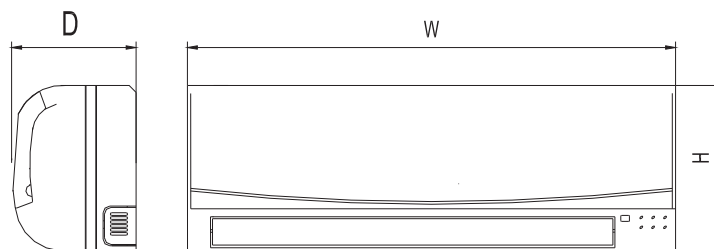
- *Marine Applications:*

Special coating for coil of outdoor unit.

AVAILABLE MODELS

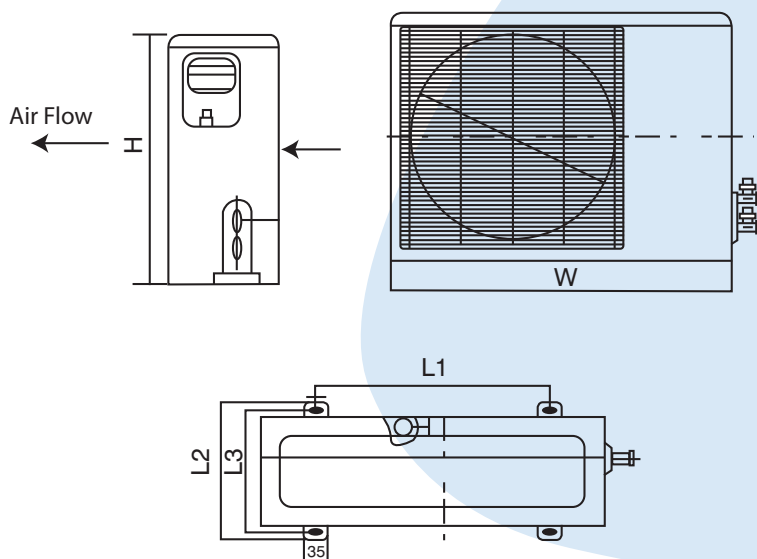
Model	Cooling Btu/h (kw)	Heating Btu/h	volts	ph	Hz
FR-9k	9000 (2.64)	9400	115	1	60
FR-12k	12000 (3.52)	11500	208/230	1	60
FR-18k	18000 (5.28)	17000	208/230	1	60
FR-24k	24000 (7.00)	21500	208/230	1	60
FR-30k	30000 (8.79)	28000	208/230	1	60
FR-36k	36000 (10.55)	35500	208/230	1	60
FR-36k	36000 (10.55)	35500	208/230	3	60
FR-36k	36000 (10.55)	35500	460	3	60

DIMENSIONS - INDOOR



Model	W mm	H mm	D mm	Operating Weight (kg)
FR-9K	815	280	195	8
FR-12K	906	286	235	11.5
FR-18K	1250	325	230	18
FR-24K	1250	325	230	18
FR-30K	1461	340	241	23.2
FR-36K	1461	340	241	23.2

DIMENSIONS - OUTDOOR



Model	W mm	H mm	L1 mm	L2 mm	L3 mm	Operating Weight (kg)
FR-9K	780	540	549	300	276	33
FR-12K	760	590	530	315	290	38
FR-18K	840	695	560	360	335	53.5
FR-24K	889	851	588	355	333	68.5
FR-30K	1131.9	944.6	774.7	498.5	468.3	84.8
FR-36K	1131.9	944.6	774.7	498.5	468.3	105.2

LOW SOUND LEVELS

When noise is a concern, the duct-free split systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork.

SECURE OPERATION

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork.

FAST INSTALLATION

This compact duct-free split system is simple to install. A mounting bracket is standard with the indoor units and only wire and piping need to be run between indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in the home or workplace.

SIMPLE SERVICING AND MAINTENANCE

Removing the top panel on outdoor units provides immediate access to the control compartment, providing a service technician access to check unit operation. In addition, the draw-thru design of the outdoor section means that dirt accumulates on the outside surface of the coil. Coils can be cleaned quickly from the inside using a pressure hose and detergent.

On all indoor units, service and maintenance expense is reduced due to easy-to-use cleanable filters. In addition, these high wall systems have extensive self-diagnostics to assist in troubleshooting.

BUILT-IN RELIABILITY

Duct-free split system indoor and outdoor units are designed to provide years of trouble-free operation.

The high wall indoor units include protection against freeze-up and high evaporator temperatures on heat pumps.

The condensing units and heat pumps are also protected. There is a three minute time delay before the compressor will start. The compressor is also protected by the over-current protection. On size 18k and 24k heat pumps, there is high temperature protection.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on usage pattern. The air sweep feature provided permits optimal room air mixing to eliminate hot and cold spots for occupant comfort.

ECONOMICAL OPERATION

The duct-free split system design allows individual room heating or cooling when required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

EASY-TO-USE CONTROLS

The high-wall units have microprocessor-based controls to provided the ultimate in comfort and efficiency. The user friendly wireless remote control provides the interface between user and the unit.



UNDERCEILING



FEATURES

AN INEXPENSIVE AND CREATIVE SOLUTION TO DESIGN PROBLEMS.

The ceiling-suspended fan coils are ideal for retrofit and modernization projects where it is impractical or prohibitively expensive to run ductwork and where there are no false ceilings or wall space available. This selection of fan coils permits inexpensive and creative solutions to design problems such as:

- Special space requirements such as garages.
- When changes in the load cannot be handled by the existing system like restaurants.
- When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork like schools.
- Historical renovations or any application where preserving the look of the original structure is essential like churches.

These compact indoor fan coil units blend nicely with most ceilings and protrude less than 254 mm from the ceiling. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.

MARINE APPLICATION

60 Hz

GENERAL CHARACTERISTICS

- Cooling only or heat pump versions.
- Refrigerant R410a
- Wireless remote control
- Easy and quick installation
- Optionals:
 - *Low ambient kit:*

Low-ambient temperature capability
(permitting cooling operation down to -20°F (-28.89°C) outdoor ambient) is easily added on all units.

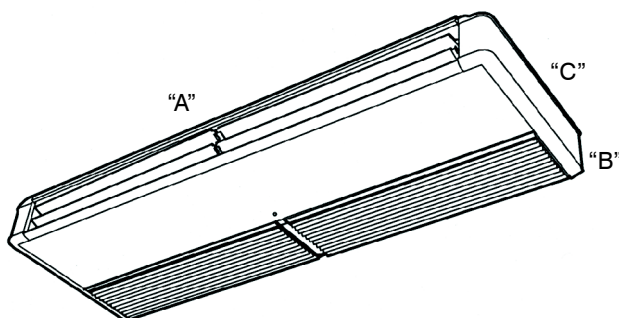
- *Marine Applications:*
Special coating for coil of outdoor unit.

AVAILABLE MODELS

Model	Cooling Btu/h (kw)	Heating Btu/h	volts	ph	Hz
FR-18k	18000 (5.28)	17000	208/230	1	60
FR- 24k	24000 (7.00)	23800	208-230	1	60
FR- 30k	30000 (8.79)	28000	208/230	1	60
FR- 36k	36000 (10.55)	32000	208-230	1	60
FR- 36k	36000 (10.55)	32000	208/230	3	60
FR- 36k	36000 (10.55)	32000	460	3	60
FR- 48k	48000 (14.00)	45000	208/230	1	60
FR- 48k	48000 (14.00)	45000	208/230	3	60
FR- 48k	48000 (14.00)	45000	460	3	60
FR- 60k	60000 (17.59)	56000	208/230	1	60
FR- 60k	60000 (17.59)	56000	208/230	3	60
FR- 60k	60000 (17.59)	56000	460	3	60

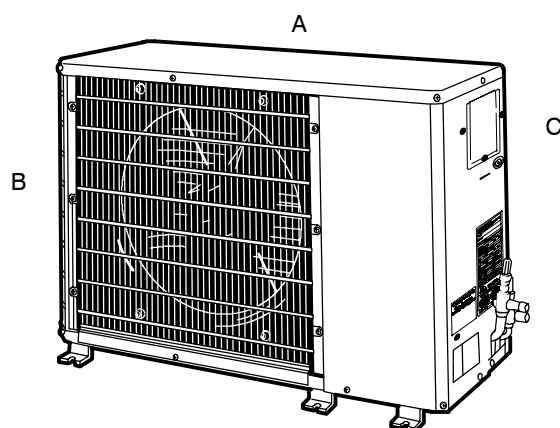
UNIT DIMENSIONS – INDOOR MODEL

Model	Operating Weight (kg)	A (mm)	B (mm)	C (mm)
FR-18k	50	1294	253	588
FR-24k	50	1294	253	588
FR-30k	54	1493	253	588
FR-36k	54	1493	253	588
FR-48k	68.5	1817	253	588
FR-60k	82	2336	253	588



UNIT DIMENSIONS –OUTDOOR MODEL

Model	Operating Weight (kg)	A (mm)	B (mm)	C (mm)
FR-18k	70.4	938.2	638.2	436.6
FR-24k	81.8	938.2	790.6	436.6
FR-30k	90.9	1131.9	944.6	498.5
FR-36k	99.0	1131.9	944.6	498.5
FR-48k	129.0	1131.9	1097.0	498.5
FR-60k	133.6	1131.9	1097.0	498.5



LOW SOUND LEVELS

When noise is a concern, ceiling-suspended duct-free split systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork.

SECURE OPERATION

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork.

FAST INSTALLATION

The small footprint of the outdoor units provide additional benefits. Because they require minimal service and airflow clearances, the outdoor units can be located virtually anywhere - on the ground, roof, balcony, under a deck, or even mounted to an outside wall.

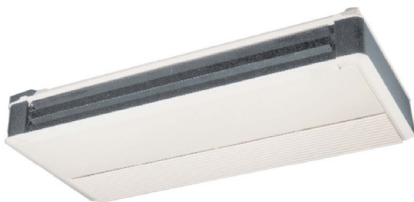
The ceiling-suspended unit has its own mounting bracket for easier installation. Since there is no need to run ductwork and only piping and wiring is required between the indoor and outdoor units, there is minimal disruption to customers in the workplace, making this system ideal for retrofit applications.

SIMPLE SERVICING AND MAINTENANCE

Saving time and money was a big consideration when designing these systems.

On all indoor units, service and maintenance expense is reduced due to easy-to-use cleanable filters and the ability to service the unit from the bottom by removing the filter tracks.

On the outdoor units, a single panel provides immediate access to the isolated compressor and control compartment, allowing a service technician easy access to check the unit operation without a loss of condenser airflow. In addition, the blow-through design of the outdoor section means that dirt accumulates on the inside surface of the coil. Coils can be cleaned from the outside using a pressure hose and mild detergent without removing grilles or using fin combs.



BUILT-IN RELIABILITY

Duct-free split system indoor and outdoor units are designed to provide years of trouble-free operation.

The high wall indoor units include protection against freeze-up.

The condensing units and heat pumps are also protected. There is a three minute time delay before the compressor will start.

An oversized accumulator on heat pumps, high and low pressure switches (loss of pressure switch on heat pumps), and compressor internal overload protection will ensure a robust system that is ideal for light commercial applications.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on usage pattern. The ceiling-suspended units are equipped with motorized louvers which permits optimal room air mixing to eliminate hot and cold spots for occupant comfort. In addition, year-round comfort can be provided with heat pumps.

ECONOMICAL OPERATION

The duct-free split system design allows individual room heating or cooling when required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

EASY-TO-USE CONTROLS

The ceiling-suspended units have electro-mechanical controls and can be controlled by one of three user friendly thermostats that mount on the wall.



CASSETTE SYSTEMS



MARINE APPLICATION

FEATURES

AN INEXPENSIVE AND CREATIVE SOLUTION TO DESIGN PROBLEMS.

The in-ceiling cassette fan coils are ideal for retrofit or modernization projects where a false ceiling is available. This selection of fan coils permits inexpensive and creative solutions to design problems such as:

- Add-ons to current space where the existing system cannot handle the load.
- Special space requirements. like a conference room, where the load varies.

These compact in - ceiling cassette units require less than 304.8 mm of false ceiling space and the only part that is seen is an aesthetically pleasing grille that blends with most decor.

60 Hz

GENERAL CHARACTERISTICS

- Cooling only or heat pump versions.
- Refrigerant R410a
- Wireless remote control
- Easy and quick installation
- Optionals:

- *Low ambient kit:*

Low-ambient temperature capability (permitting cooling operation down to -20°F (-28.89°C) outdoor ambient) is easily added on all units.

- *Marine Applications:*

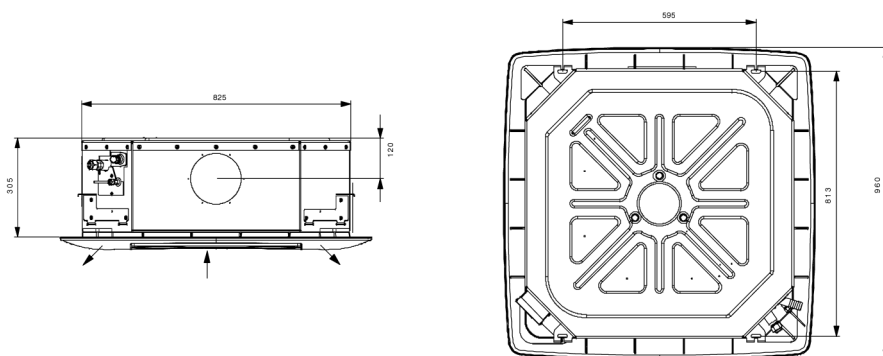
Special coating for coil of outdoor unit.

AVAILABLE MODELS

Model	Cooling Btu/h (kw)	Heating Btu/h	volts	ph	Hz
FR- 18k	18000 (5.28)	17900	208/230	1	60
FR- 24k	24000 (7.00)	22600	208/230	1	60
FR- 30k	30000 (8.79)	28000	208/230	1	60
FR- 36k	36000 (10.55)	33400	208/230	1	60
FR- 36k	36000 (10.55)	33400	208/230	3	60
FR- 36k	36000 (10.55)	33400	460	3	60

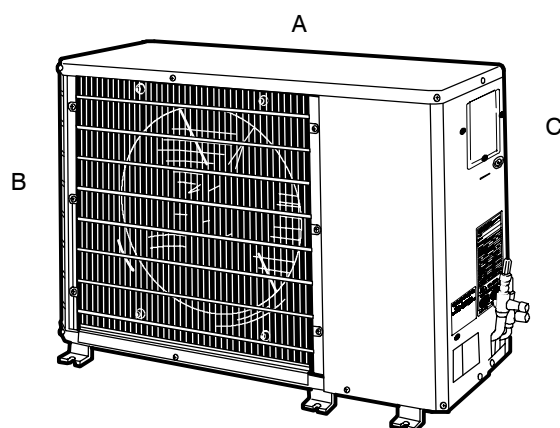
UNIT DIMENSIONS – INDOOR MODEL

Model	Operating Weight (kg)
FR-18k	41.4
FR-24k	41.4
FR-30k	43.2
FR-36k	43.2



UNIT DIMENSIONS –OUTDOOR MODEL

Model	Operating Weight (kg)	A (mm)	B (mm)	C (mm)
FR-18k	75.3	938.2	638.2	436.6
FR-24k	79.8	938.2	790.6	436.6
FR-30k	84.8	1131.9	944.6	498.5
FR-36k	105.2	1131.9	944.6	498.5



LOW SOUND LEVELS

For applications like conference rooms or libraries where noise is a concern, the in-ceiling cassette is the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork.

SECURE OPERATION

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork.

FAST INSTALLATION

The small footprint of the outdoor unit provides additional benefits. Because they require minimal service and airflow clearances, the outdoor units can be located virtually anywhere – on the ground, roof, balcony, under a deck, or even mounted on an outside wall.

These units are fast and easy to install ensuring minimal disruption to customers in the workplace and making them ideal for retrofit applications.

SIMPLE SERVICING AND MAINTENANCE

Saving time and money was a big consideration when designing these systems.

On the indoor unit, opening the grille will allow a service technician access to the control box and to remove the cleanable filters. There is even a plug to drain water from the condensate pan if it is ever required.

On the outdoor unit, a single panel provides immediate access to the isolated compressor and control compartment, allowing a service technician to check the unit operation without a loss of condenser airflow. In addition, the blow-through design of the outdoor section means that dirt accumulates on the inside surface of the coil. Coils can be cleaned from the outside using a pressure hose and detergent without removing grilles or using fin combs.



BUILT-IN RELIABILITY

Duct-free split system indoor and outdoor units are designed to provide years of trouble-free operation.

The in-ceiling cassette units include protection against freeze-up and high evaporator temperatures on heat pumps.

The condensing units and heat pumps are also protected. There is a 3-minute time delay before the compressor will re-start. An oversized accumulator, high and low pressure switches (or liquid line pressure switch on the heat pump), and compressor internal overload protection will ensure a reliable system that is ideal for light commercial applications.

INDIVIDUAL ROOM COMFORT

Maximum occupant comfort was key in the design of the in-ceiling cassette units.

For instance, the indoor unit is equipped with a motorized louver system that provides optimum air distribution into the conditioned room. The user can select eight different louver operating modes to adjust the airflow according to their specific needs.

The air can be distributed from four sides of the unit. This allows the unit to be installed in the center of the room. For applications where the unit has to be installed near a wall or in a corner, a special kit is available to close one or two outlets.

On heat pumps, the controls have built-in features to automatically compensate for air stratification and avoid cold blow on start-up or during defrost.

ECONOMICAL OPERATION

The duct-free split system design allows individual room heating or cooling when required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

EASY-TO-USE CONTROLS

The in-ceiling cassette units have microprocessor-based controls to provide the ultimate in comfort and efficiency. Either a user friendly wireless remote control or a wired controller provides the interface between user and the unit.



MULTISPLITS SYSTEMS



MARINE APPLICATION



FEATURES

AN INEXPENSIVE AND CREATIVE SOLUTION TO DESIGN PROBLEMS.

The multi split system provides comfort control for up to 4 zones.

One, two, three or four space-saving High Wall duct free fan coils are matched with one outdoor heat pump. The indoor fan coils are connected to the outdoor unit by refrigerant tubing and wires.

The fan coils are mounted on the wall, near the ceiling. This selection of fan coils permits inexpensive and creative solutions to design problems such as:

- When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork.
- Historical renovations or any application where preserving the look of the original structure is essential.
- Commercial add-on jobs where the existing air conditioning system cannot be stretched.

These compact indoor fan coil units take up very little space in the room and do not obstruct windows. The fan coils are attractively styled to blend with most room decors.

Advanced system components incorporate innovative technology to provide reliable cooling and heating performance at low sound levels.

INVERTER TECHNOLOGY - COMFORT

The inverter driven compressor is designed to run at various input power frequencies (Hz) which controls the motor speed of the compressor.

Even Temperature – The control package, including the inverter, monitors outdoor and indoor temperatures as they relate to the selected indoor set point and adjusts the speed of the compressor to match the load and keep the system operating continuously rather than cycling and creating temperature swings. This translates to higher comfort levels for the occupants.

Rapid Pull Down/Warm-Up – Comfort is increased by the ability to the inverter system to ramp up the compressor speed enabling the system to reach the user selected room temperature set point quicker.

Humidity Control – Running the system for longer periods and continuously varying the compressor speed will enhance the humidity control.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on the usage pattern. The air sweep feature provided permits optimal room mixing to eliminate hot and cold spots for the occupant comfort.

LOW SOUND LEVELS

When noise is a concern, the duct free split systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork.

INVERTER TECHNOLOGY – ENHANCED ECONOMICAL OPERATION

Duct free systems are inherently economical to operate. Individual rooms are heated or cooled only when required, and since the air is delivered directly to the space, there is no need to use additional energy to move the air in the ductwork. This economical operation is enhanced further when the inverter system output matches the load resulting in a more efficient system.

EASY-TO-USE CONTROLS

The high-wall systems have microprocessor-based controls to provide the ultimate in comfort and efficiency. The user friendly wireless remote control provides the interface between the user and the unit.

SECURE OPERATION

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork or wall openings.

FAST INSTALLATION

This compact duct-free split system is simple to install. A mounting bracket is included with the indoor units and only wires and piping need to be run between the indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in homes or workplace.

SIMPLE SERVICING AND MAINTENANCE

Removing the top panel of the outdoor unit provides immediate access to the control compartment, providing the service technician access to the diagnostic LEDs to facilitate the troubleshooting process. In addition, the draw-thru design of the outdoor unit means that dirt accumulates on the outside surface of the coil. Coils can be cleaned quickly from the inside using a pressure hose and detergent.

On the indoor units, service and maintenance expense is reduced due to the permanent easy to clean filters. Also, error codes are displayed on the front panel to alert the user to certain system malfunctions

BUILT-IN RELIABILITY

Duct-free split system indoor and outdoor units are designed to provide years of trouble-free operation.

Both the indoor and outdoor units are well protected. Whenever the microprocessor detects abnormal conditions, the unit will stop and an error code is displayed.

Inverter systems provide additional reliability due to soft start. This refers to the ability of the inverter to start the compressor motor using reduced voltage and reduced current. This feature is beneficial from an electrical standpoint (eliminates current spikes) as well as an overall reliability standpoint due to reduced stress on all associated system components.

ACCESSORIES

A condensate pump accessory is available to provide installation flexibility for those applications where gravity cannot be used to dispose of the condensate.

