#1

This shows a Chiltrix CX34 heat pump chiller used for DHW (domestic hot water), fan coils for heating/cooling. Water heating capacity is up to 36000 BTU (~9000w) of water heating depending on tank temperature and outdoor temperature.

1- G1 Valve DHW
2 - DHW Sensor
Air To Water Heat Pump Design Options

#2

This shows a Chiltrix CX34 heat pump chiller used for heating/cooling with fan coils and has an optional inline V18 backup heater. The CX34 can control the V18 backup heater. The V18 is dynamically variable and only adds “just the right amount” of heat, it is controlled by the CX34 to match any heating shortfall, if such exists.
This is a Chiltrix CX34 air to water heat pump chiller used for heating/cooling with fan coils and domestic hot water and also has a V18 for optional backup electric heat. The DHW tank also has an internal electric backup, if needed.

Note, no booster pump for DHW is shown above. This may be needed if you use a DHW tank with a small diameter coil or if the DHW tank is not close to the CX34. Otherwise, a booster pump is generally not needed for DHW.
Two Chiltrix CX34 heat pump chillers are shown in parallel for fan coil heating/cooling and domestic water heating. The system is available with the optional V18 backup heater(s) as shown. A vct37 buffer tank is used to balance the CX34s.

A hot water heating function is shown connected to one CX34. In a loop pump (as shown above) is used on the load side of the buffer tank.
#5

This shows 2x Chiltrix CX34 units used for fan coil heating/cooling and has a VCT19 multi-purpose tank (in this case, used to provide extra loop fluid volume and/or backup heat with installed element) (controlled by the CX34). Up to 16x fan coils could be used with 2x CX34 units.

A VCT19 is shown as a volume expander (not an “expansion tank” which is a different thing). Expanding the volume is desirable when total loop volume is less than 15 gallons.

This is a piping option for connecting 2x CX34s. Both inlet and outlet pipes for each chiller should be of equal length from the CX34 inlets/outlets, to the point that they meet, for best flow balancing. In addition, an additional loop booster pump (as shown above) is used to ensure proper flow.
This shows a Chiltrix CX34 unit used for heating/cooling with fan coils and with radiant heat zone(s) interfaced with a VCT19 configured as a buffer tank, it also shows an optional V18 backup heater controlled by the CX34.
#7

This shows 2x Chiltrix CX34 units used with fan coil units for both heating and cooling, 2x optional V18 backup heaters, and radiant zone(s) for heating with a VCT37 buffer tank.

This drawing shows an optional loop booster to ensure proper flow.
#8

This shows dual ChiltriX CX34 chiller systems in parallel, each has a V18 backup heater, and is configured with a VCT37 for balancing the CX34 units, serves fan coils for heating/cooling and serves a radiant loop for heating.

The radiant system can also be used for cooling with proper controls added.
This shows a Chiltrix CX34 unit used with fan coils for cooling only, a radiant heat loop with buffer tank, and domestic hot water. The G3 seasonal valve isolates the heating system out of the main loop when the system is operating in cooling mode and locks out the fan coils during heating mode. An A-A/B version is available that can use both fan coils and radiant for heating but lock out the radiant during cooling mode. An optional V18 can be used for backup heat and isolates the fan coils during heating mode.
#10
CX34 used for radiant heat and domestic hot water, no cooling. Shows optional V18 backup heater.

Radiant cooling can also be used in conjunction with proper radiant loop controls such as a Tekmar 557 with dew point sensor and mixing valve (provided by Tekmar).
#11
Shows a CX34 set up for domestic hot water, fan coils for both heating and cooling, and radiant heating.
This shows a CX34 set up for domestic hot water and a Firstco VMB unit (air handler for ducted forced air heating/cooling).
#13 Drawing shows one of several ways to integrate solar thermal space heating with CX34. This design allows all solar heat to be used with the CX34 taking over as thermal storage is depleted.

Please consult with a Chiltrix sales engineer to obtain a design that is perfect for your solar thermal application.
#14 Drawing shows a radiant-only system with (optional) backup heater.

Backup heat can be provided by a V18 dynamic backup units, as desired. Backup heat may be needed in certain applications per your Manual J report.
#15 Drawing shows a FCU-only application where a 19 gallon VCT19 “volume expander” tank was added to bring the total system volume up to the minimum size (15-20 gallons).

Note – a volume expander tank is not at all the same thing as an “expansion tank”. The CX34 has a built-in (internal) expansion tank that can handle total fluid volume up to 25 gallons.
#16 Drawing shows a radiant heating-only (could also be used for radiant cooling) application using 2x CX34 units.

There are hundreds (actually, thousands) of ways to configure CX34(s) and we only show a few examples in this document.

Any or all of DHW, room fan coils for heating and/or cooling, radiant heating, and ducted air handlers, domestic hot water, can all be used together in the same system if desired. One, two, or more CX34s can be combined.
#17 Drawing shows a way to configure DHW, radiant heating and fan coils using 2x CX34 units.
#18 Drawing shows 3x CX34 units combines with DHW and multiple FCU or AHU etc.