

Guardian⁺

FLUID COOLER & PUMP PACKAGE CONTROL

RC-F

One Controller Does It All!

- Specially designed for fluid coolers
- 2-parameter quick setup
- Total control over outlet temperature
- Full remote communication capability



RefPlus® introduces the Guardian+ Fluid Cooler & Pump Package RC-F Controller, a state-of-the-art electronic device engineered to significantly simplify and optimize fluid cooler operation and control.

The Guardian+ RC-F Controller monitors the outlet fluid temperature in real time and uses predictive smart algorithms to optimize fan cycling and, consequently, to control the fluid temperature with great precision. It is easily configurable and provides ultraprecise and constant outlet temperature - no need to setup multiple stages.

It can be programmed to run a fluid cooler with up to 20 fans and can control single-speed, two-speed or modulating-speed ECM fans. It can also manage up to two pumps as well as a 3-way valve for an even more precise outlet temperature.

RC-F is part of Guardian+, an EcoEfficient+ smartpower controller line developed to lower your operating costs, with the added bonus of peace of mind.



KEY FEATURES

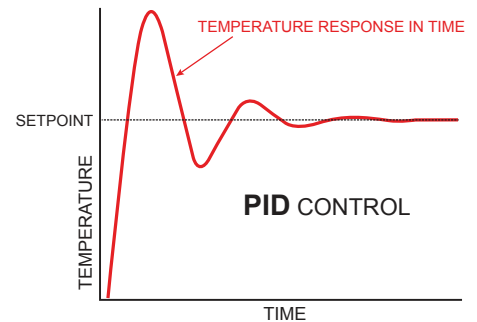
- Runs fluid cooler with up to 20 fans (11 stages)
- Controls 3-way valve
- Controls multiple fluid coolers (optional)
- Controls up to 2 pumps - automatically switches to backup pump in case of failure
- Pump rotation, anti-block and antifreeze
- Sensor failure alarm
- Full time event logging for diagnostic
- Fan and pump run hours information
- No simultaneous stage starts - prevents power spikes
- Modulating speed ECM fan start - prevents freezing
- Remote communication (optional)
- Can control adiabatic systems (optional)
- Fan, pump overload and flow alarms (optional)
- Current sensor switch to proof fan status (optional)

EASY SETUP AND ADJUSTMENTS

Contrary to traditional electro-mechanical controls that require the installation and adjustment of several modules and relays, the Guardian+ RC-F Controller can easily be set-up and programmed using 2 simple parameters: temperature setpoints (summer and winter) and control band.

CHOICE OF 5 CONTROL METHODS

The RC-F Controller offers the user the choice of 5 control methods: the standard control method of fan cycling over a temperature band; the second option is a PID (Proportional Integrative Derivative) control method that provides the smoothest and the most linear ventilation capacity variation while delivering the most precise outlet temperature; and a third option, where fan cycling is driven by an external signal generated by the user. The fourth and fifth options are variants of the fan cycling over a temperature band and the PID control modes. With these methods, the RC-F always provides the lowest possible fluid temperature depending on the ambient temperature.



THE DISPLAY

The main display shows all necessary information such as outlet fluid temperature, ambient temperature, stage status, ECM fan speed, pump status as well as time and date. An alarm is triggered and shown on the display if a temperature sensor fails. Fans, pump overload and flow alarms are optional. An alarm logging is also available, making troubleshooting easy and practical. It features three password protected menus for settings and configuration, reducing user error to a minimum.

16 : 47 : 48	2020/05/05
Status: ON	GT: 087.6°F
H. Speed.	Dyn.F: 092%
St1 St6	OT: 088.7°F
St2 St7	
St3 St8	
St4 St9	
St5	

PUMP PACKAGE & 3-WAY VALVE CONTROL

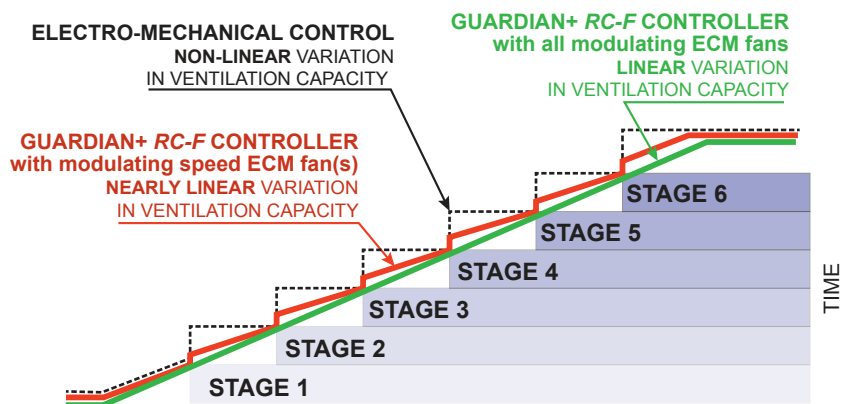
The controller has an integrated pump control that can manage up to two pumps. In case of pump overload or flow loss, the controller automatically switches pump to avoid any costly downtime. It also provides pump rotation to ensure even equipment wear. In addition, it features an optional 3-way valve PID control for an even more precise outlet fluid temperature.

THE REAL ADVANTAGE OF THE RC-F CONTROLLER VS ELECTRO-MECHANICAL CONTROLS

Conventional electro-mechanical controls simply use switches to turn fans on and off in order to control the outlet temperature. They can only regulate a modulating fan stage using fixed settings and consequently are not able to generate a smooth, linear variation in ventilation capacity.

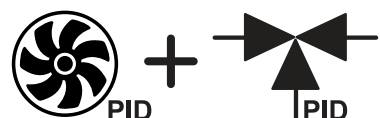
Guardian+ RC-F Controller regulates a modulating speed ECM fan stage every time a regular ON-OFF fan stage is added or stopped. This leads to a nearly linear variation in ventilation capacity, as shown by the red line on the graph.

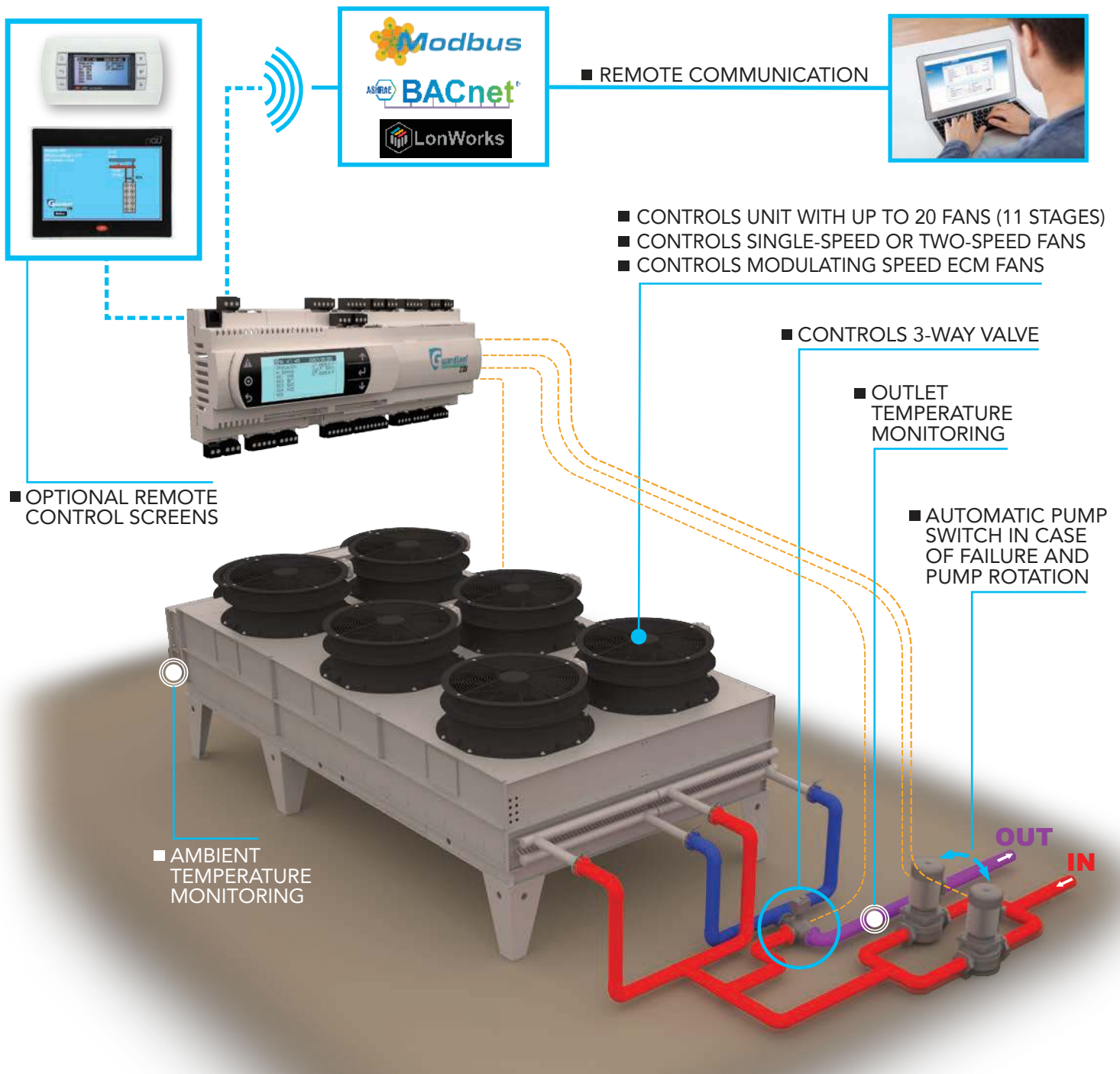
If all fans are modulating speed ECM, the ventilation capacity variation is perfectly linear, as shown by the green line on the graph.



Ventilation Capacity Behavior Comparison Graph

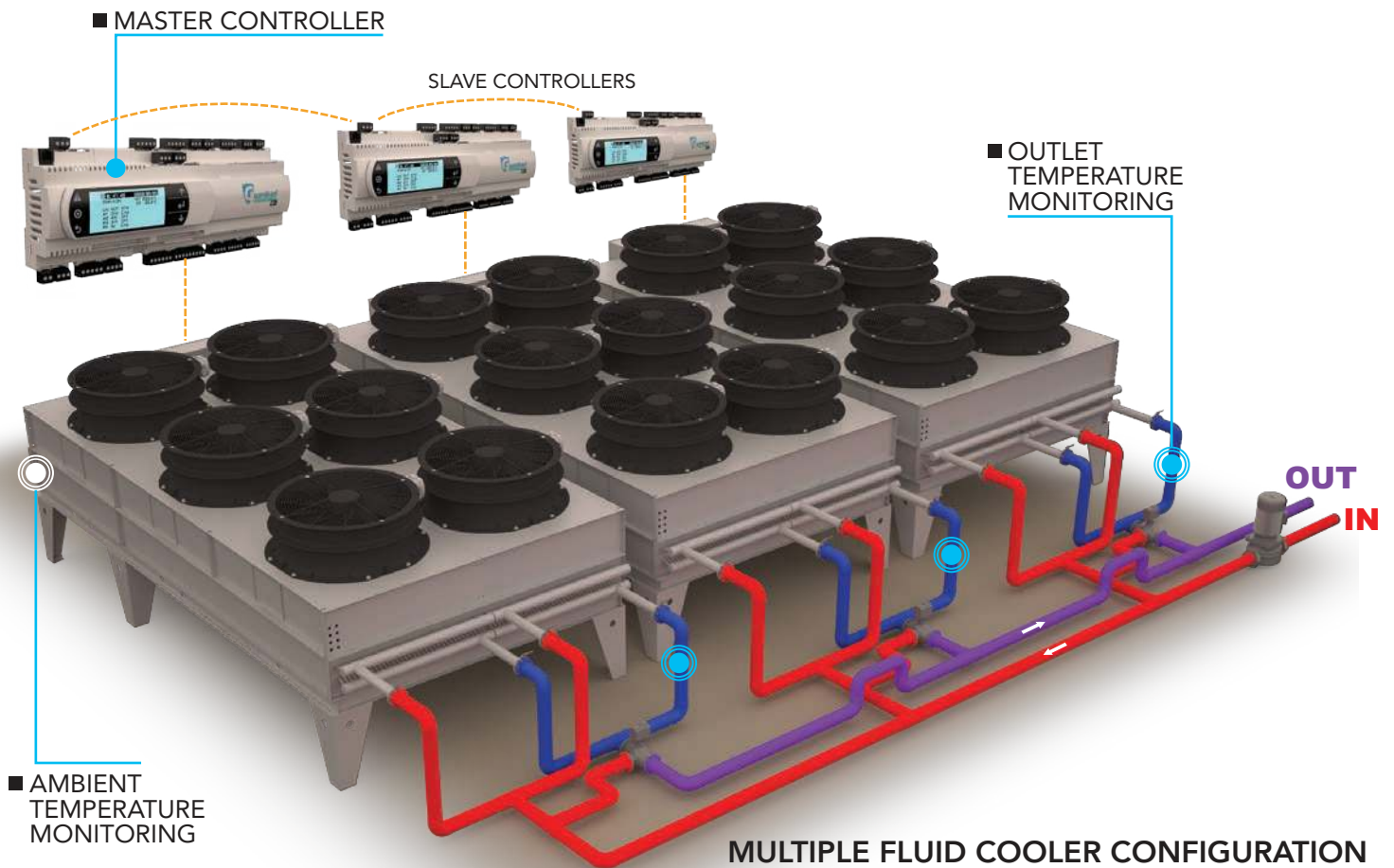
[Fan and 3-way valve control allows for ultraprecise and stable outlet fluid temperature]





TECHNICAL DESCRIPTION

Sensors	1 outlet fluid temperature sensor 1 ambient temperature sensor
Voltage	208/240/480/600V
Power Input	Refer to unit nameplate
Controller Battery Life	10 year (program/data protection)
Operating conditions	14°F to 140°F (-10°C to 60°C), < 90% RH non-condensing
Overall Dimensions	Small: 8.9"L X 4.4"H X 2.7"W / Medium: 12.4"L X 4.4"H X 2.7"W / Large: 12.4"L X 5.2"H X 2.7"W
Weight	N/A
Communication (optional)	Modbus RTU, BACNET MSTP, MODBUS TCP/IP, BACNET IP, SNMP, LonWorks.



MULTIPLE FLUID COOLER CONFIGURATION

The Guardian+ RC-F Controller can control multiple fluid coolers. The user simply enters the operating parameters and the master controller will run the necessary units to control the outlet temperature.

The Guardian+ Controller Family.

Guardian+
LEAD LAG & DEFOST CONTROL
RC-L



Guardian+
SMART EVAPORATOR CONTROL
RC-S



Guardian+
FLUID COOLER & PUMP PACKAGE CONTROL
RC-F



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