



Overview

The **ECC-PFCU series** are microprocessor-based fan coil unit controllers designed to control any fan coil unit application. Each controller uses the LonTalk® communication protocol and is LONMARK certified, using the SCC-Fan Coil profile #8501.

This series contains four models: ECC-PFCU, ECC-PFCU-W, ECC-PFCU-A, and ECC-PFCU-AW, each of which accepts line-voltage power ranging from 85 to 265VAC. Supported controller input types include resistance, voltage, and digital-based ones.

The controllers can be directly connected to high-voltage loads, thereby eliminating the need for external relays and reducing overall installation time and cost. They can provide digital, floating, pulse width modulation, and proportional control for valves, heating elements, fans, and lighting applications. In particular, the ECC-PFCU-A and ECC-PFCU-AW models have an onboard 24VAC power supply output which can be used for proportional, digital, floating or modulating valve applications.

All controller models work with the EC-Smart-Sensor-FC(-CF), an advanced communicating sensor with an LCD display and fan control capabilities. The ECC-PFCU-W and ECC-PFCU-AW models in particular are Open-to-Wireless® ready, and when paired with the Wireless Receiver, they work with a variety of wireless battery-less sensors and switches.

Each controller can be configured using the EC-Configure plug-in through any LNS®-based software, such as Distech Controls' Lonwatcher 3. Alternatively, controllers can also be configured using the EC-Configure wizard through EC-Net^{AX} which is powered by the Niagara^{AX} Framework®. Either way, a configuration interface exists that simplifies the setup of fan coil and lighting applications through an intuitive menu-based user interface.

Applications

- Meets the requirements of the following applications:
 - 2-pipe fan coil – heating only or cooling only
 - 2-pipe fan coil – heating and cooling with changeover sensor
 - 4-pipe fan coil heating and cooling
- Improves energy efficiency when combined with:
 - Motion detectors to automatically adjust a zone's occupancy mode from standby to occupied when presence is detected
 - CO₂ sensors as part of a demand-controlled ventilation strategy that adjusts the amount of fresh air intake according to the number of building occupants
 - Window-contact sensors
 - Light switches to control both lighting and a room's HVAC occupancy / standby mode setting
- Open-to-Wireless ready models work with a wide range of wireless battery-less sensors

Features & Benefits

- Configurable using LNS-based EC-Configure plug-ins or Niagara^{AX}-based EC-Configure wizards, allowing you to work with your preferred network management platform
- Open-to-Wireless ready models supporting up to 5 wireless inputs when connected to a Wireless Receiver, letting you create wire-free installations and use various wireless battery-less sensors and switches
- LONMARK SCC-Fan Coil approved, guaranteeing interoperability with other manufacturers' LONMARK-approved controllers and interchangeability with ones that use the same profile
- Wide input power range of 85-265VAC (50/60HZ), allowing direct connection to any standard building power source, and saving on installation time and cost
- Digital relays, digital triacs, and universal outputs¹, facilitating industry-standard fan coil, line-voltage, and lighting applications
- Highly accurate universal inputs support thermistors and resistance temperature detectors (RTDs) that range from 100 Ohms to 100 000 Ohms, giving you the freedom of using your preferred or engineer-specified sensors, in addition to any existing ones

1. Specific models only, check table on second page for details

Models in this Series



Model	ECC-PFCU	ECC-PFCU-W	ECC-PFCU-A	ECC-PFCU-AW
Points	14-Point Controller	14-Point Controller	16-Point Controller	16-Point Controller
Universal inputs	6	6	6	6
Ability to use spare inputs	■	■	■	■
Open-to-Wireless ready		■		■
Wireless inputs ¹	0	5	0	5
Digital relay outputs (up to 277VAC)	4	4	4	4
Digital triac outputs (up to 265VAC)	4	4	4	4
Universal outputs	0	0	2	2
Network outputs (using NVOs)	8	8	10	10
Ability to use spare outputs	■	■	■	■
Product Number	CDIC-PFXX-00	CDIC-PFXM-00	CDIC-PFAX-00	CDIC-PFAM-00

1. Available when an optional Wireless Receiver is connected to the controller.

Recommended Applications

Model	ECC-PFCU	ECC-PFCU-W	ECC-PFCU-A	ECC-PFCU-AW
2-Pipe Fan Coil	■	■	■	■
2-Pipe Fan Coil with Changeover Sensor	■	■	■	■
4-Pipe Fan Coil	■	■	■	■
Digital, Thermal, PWM, and Floating Valve Actuator	■	■	■	■
Proportional Valve Actuator			■	■

Open-to-Wireless Wireless Receiver – Optional for ECC-PFCU-W and ECC-PFCU-AW



To reduce the cost of installation, and minimize the impact on existing partition walls, the Wireless Receiver enables ECC-PFCU-W and ECC-PFCU-AW controllers to communicate with a line of wireless battery-less room sensors and switches.

- Wireless Receiver (315) - Receiver for EnOcean® 315MHz wireless-enabled sensors and switches
- Wireless Receiver (868) - Receiver for EnOcean 868.3MHz wireless-enabled sensors and switches

Note that Open-to-Wireless ready controllers have one wireless port to support a single Wireless Receiver.

For more information about the EnOcean technology and Open-to-Wireless, refer to the Open-to-Wireless Solution Guide. For more information about the Wireless Receiver module, refer to the Wireless Receiver Datasheet. These documents can be found on our web site at www.distech-controls.com.

Supported Platforms



EC-Net^{AX}

EC-Net^{AX} is a web-enabled multi-protocol integration solution powered by the Niagara^{AX} Framework, establishing a fully Internet-enabled, distributed architecture for real-time access, automation and control of devices. EC-Net^{AX}'s open framework creates a common development and management environment for integration of LONWORKS[®], BACnet[®] and other protocols. Regardless of manufacturer and protocol, the EC-Net^{AX} system provides a unified modeling of diverse systems and data, providing one common platform for development, management and enterprise applications.



LNS[®] TURBO Edition

LONWORKS Network Services (LNS)

LNS[®] is a client-server platform that allows multiple users, running different LNS-compatible applications, to access a common source for directory, installation, management, monitoring and control services for the network system being managed. Distech Controls' Lonwatcher is an example of a LNS-based network management tool that can use Plug-Ins to configure and monitor controllers and devices in the control system.

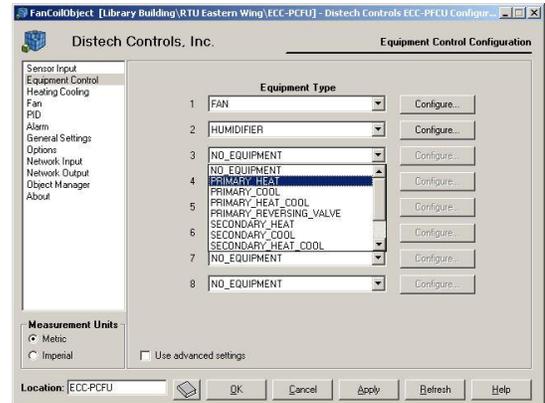
EC-Net^{AX} Wizards and LNS Plug-Ins

EC-Configure EC-Net^{AX} Wizards

Designed for use with EC-Net^{AX} (powered by the Niagara^{AX} Framework), the EC-Configure EC-Net^{AX} Wizards can be used to easily configure a device's parameters including inputs, outputs, fan and valve settings, heating and cooling setpoints, amongst others. Moreover, these wizards can be used to enable and configure additional built-in features such as morning warm-up, load shedding, frost protection and slave operation mode.

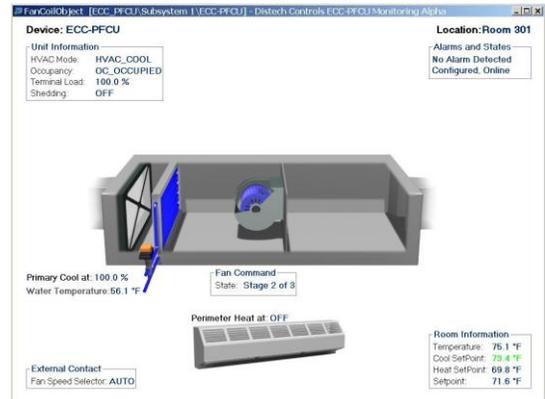
EC-Configure LNS Plug-in

Similar to an EC-Configure EC-Net^{AX} Wizard, the EC-Configure LNS Plug-in is a user-friendly configuration interface, which is accessible through any LNS[®]-based software, such as Distech Controls' Lonwatcher 3.



EC-Monitor LNS Plug-in

The monitoring plug-in is a graphical user interface that monitors all device parameters including inputs, outputs, alarms and device status. There is no more need to create any graphics pages and as it can be launched from any GUI that supports plug-in applications, graphics dynamically adapt themselves to the configuration of the device as well as the real time values being monitored.



Complementary Products

Temperature Sensors

Supported Smart-Sensors



EC-Smart-Sensor-FC

Communicating sensor with 2-line LCD, setpoint adjustment, fan speed control, and room temperature display

EC-Smart-Sensor-FC-CF

Communicating sensor with 2-line LCD, setpoint adjustment, fan speed control, room temperature display, and °C/°F toggle button

Allure EC-Sensor

Line of discrete sensors



EC-Sensor

Room temperature sensor with communication jack

EC-Sensor-O

Room temperature sensor with occupancy override button and communication jack

EC-Sensor-S

Room temperature sensor with setpoint adjustment and communication jack

EC-Sensor-SO

Room temperature sensor with setpoint adjustment, occupancy override button, and communication jack

EC-Sensor-SOF

Room temperature sensor with setpoint adjustment, occupancy override button, fan speed selection, and communication jack

Open-to-Wireless Sensors and Switches (for ECC-PFCU-W and for ECC-PFCU-AW; requires Wireless Receiver)

Allure Wireless Battery-less ECW-Sensor

Line of wireless, battery-less sensors. Available in EnOcean 315MHz and 868.3MHz versions.



ECW-Sensor

Room temperature sensor

ECW-Sensor-O

Room temperature sensor with occupancy override button

ECW-Sensor-S

Room temperature sensor with setpoint adjustment

ECW-Sensor-SO

Room temperature sensor with setpoint adjustment and occupancy override button

ECW-Sensor-SOF

Room temperature sensor with setpoint adjustment, occupancy override button, and fan speed selection

Wireless EnOcean Sensors and Switches



41-580

Wireless solar-cell powered motion detector. Available at 868.3MHz.



2-channel Light Switch
4-channel Light Switch

2-/4-channel wireless light switches (European models). Available at 315MHz or 868.3MHz.

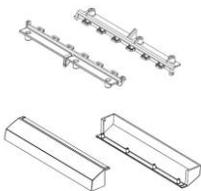


PTM265
PTM265D

2-/4-channel wireless light switches (North American models). Available at 315MHz or 868.3MHz.

For a complete list of the Open-to-Wireless EnOcean sensors and switches that are compatible with the ECC-PFCU-W and ECC-PFCU-AW models, refer to the Open-to-Wireless Solution Guide which can be found on our web site at www.distech-controls.com.

Other

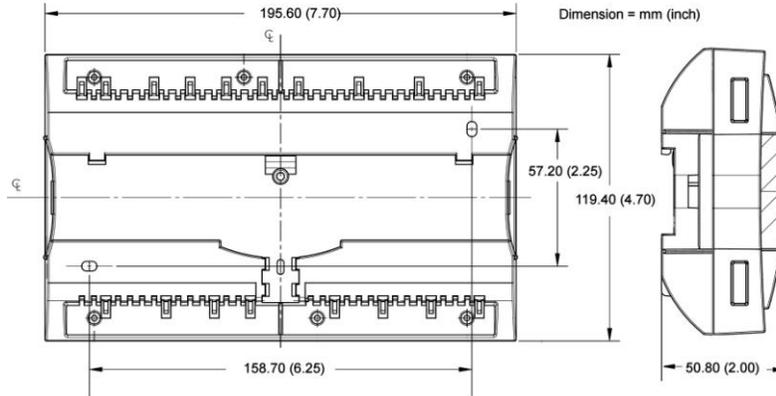


Strain Relief and
Terminal Blocks
Covers

Cover designed to conceal the wire terminals. Required to meet local safety regulations in certain jurisdictions.

For more information on these or other Distech Controls products please refer to our web site at www.distech-controls.com or contact sales@distech-controls.com.

Controller Dimensions



Product Specifications

Power

Voltage	85-265VAC; 50/60HZ; over-voltage category II Pollution degree 2
Protection	2.0A Fast-acting breaking capacity fuse
Maximum Consumption	
- ECC-PFCU / ECC-PFCU-W	20VA
- ECC-PFCU-A / ECC-PFCU-AW	33VA



: Double insulation devices

Interoperability

Communication	LonTalk protocol
Channel	TP/FT-10; 78Kbps
LonMark Interoperability Guidelines	Version 3.4
LONMARK Functional Profile	SCC – Fan Coil #8501

Hardware

Processor	Neuron [®] 3150; 8 bits; 10MHZ
Memory	Non-volatile Flash 64K (APB applications)
Status Indicator	Green LEDs: power status & LON TX Orange LEDs: service & LON RX
Communication Jack	LON [®] audio jack mono 1/8" (3.5mm)



Measurement Category: CAT I $\left. \begin{matrix} \text{UIX} \\ \text{COM} \end{matrix} \right\} \leq 10\text{VDC}$

Environmental

Operating Temperature	0°C to 40°C; 32°F to 104°F
Storage Temperature	-20°C to 70°C; -4°F to 158°F
Relative Humidity	0 to 90% Non-condensing
Altitude	Up to 2000m above sea level

Enclosure

Material	ABS type PA-765A
Color	Blue casing & grey connectors
Dimensions overall	7.7" x 4.7" x 2.0" (195.6mm x 119.4mm x 50.8mm)
Shipping Weight	1.17lbs (0.53kg)
Installation	Direct din-rail mounting or wall mounting through mounting holes (see figure above for hole positions)

Inputs

Input Types	Universal (software configurable)
-Voltage	0-10VDC
-Current	4-20mA with 249Ω external resistor (wired in parallel)
-Digital	Dry contact
-Pulse	Dry contact; 500ms minimum ON/OFF
-Resistor	
<i>Thermistor</i>	10KΩ Type 2, 3 (10KΩ @ 25°C; 77°F) Range: -40°C to 150°C; -40°F to 302°F
<i>Platinum</i>	Pt1000 (1KΩ @ 0°C; 32°F) Range: -40°C to 150°C; -40°F to 302°F Pt100 (100Ω @ 0°C; 32°F) Range: -40°C to 135°C; -40°F to 275°F
<i>Nickel</i>	RTD Ni1000 (1KΩ @ 0°C; 32°F) Range: -40°C to 150°C; -40°F to 302°F
<i>Potentiometer</i>	Translation table configurable on several points
Input Resolution	16-bit analog / digital converter

Wireless Receiver¹

Communication	EnOcean wireless standard
Number of wireless inputs ²	5
Supported Wireless Receivers	Wireless Receiver (315) Wireless Receiver (868)
Cable	Telephone cord
- Connector	4P4C modular jack
- Length	6.5ft; 2m

EC-Smart-Sensors

Models Supported	EC-Smart-Sensor-FC, EC-Smart-Sensor-FC-CF
Power & communication	2-wire
Number of sensors supported	1

Product Specifications (continued)

Electromagnetic Compatibility

CE -Emission	EN61000-6-3: 2007; Generic standards for residential, commercial and light-industrial environments
-Immunity	EN61000-6-1: 2007; Generic standards for residential, commercial and light-industrial environments
FCC	This device complies with FCC rules part 15, subpart B, class B



Agency Approvals

UL Listed (CDN & US) Material ³	UL61010-1 Process Control Equipment, Electrical UL94-5VA
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Communication Protocols and Standards



1. Available to the ECC-PFCU-W and ECC-PFCU-AW models when they are connected to an optional external Wireless Receiver. Refer to the Open-to-Wireless Solution Guide for a list of supported EnOcean wireless modules.
2. Some wireless sensors may use more than one wireless input from the controller.
3. All materials and manufacturing processes comply with the RoHS directive  and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive .

Output Configuration Guide

ECC-PFCU and ECC-PFCU-W

3 Digital Relay Contacts (Typically Fan Speeds)	Up to 277VAC, N.O. contacts 2A (inductive or resistive) All share the same common
1 Digital Relay Contact (Typically Heater)	Up to 277VAC, N.O. contacts 3A (inductive) and 6.5A (resistive) Dedicated common
4 Digital	24-230VAC ±15% Triac, digital (on/off), floating or PWM - 0.5A continuous - 1.0A @ 15% duty cycle for a 10-minute period - PWM control: adjustable period from 2 seconds to 15 minutes - Floating control: requires two consecutive outputs - Min pulse on/off: 500msec. - Adjustable drive time period Protect the output with an external 4A fast-acting, high-breaking fuse. 1 common per pair of outputs

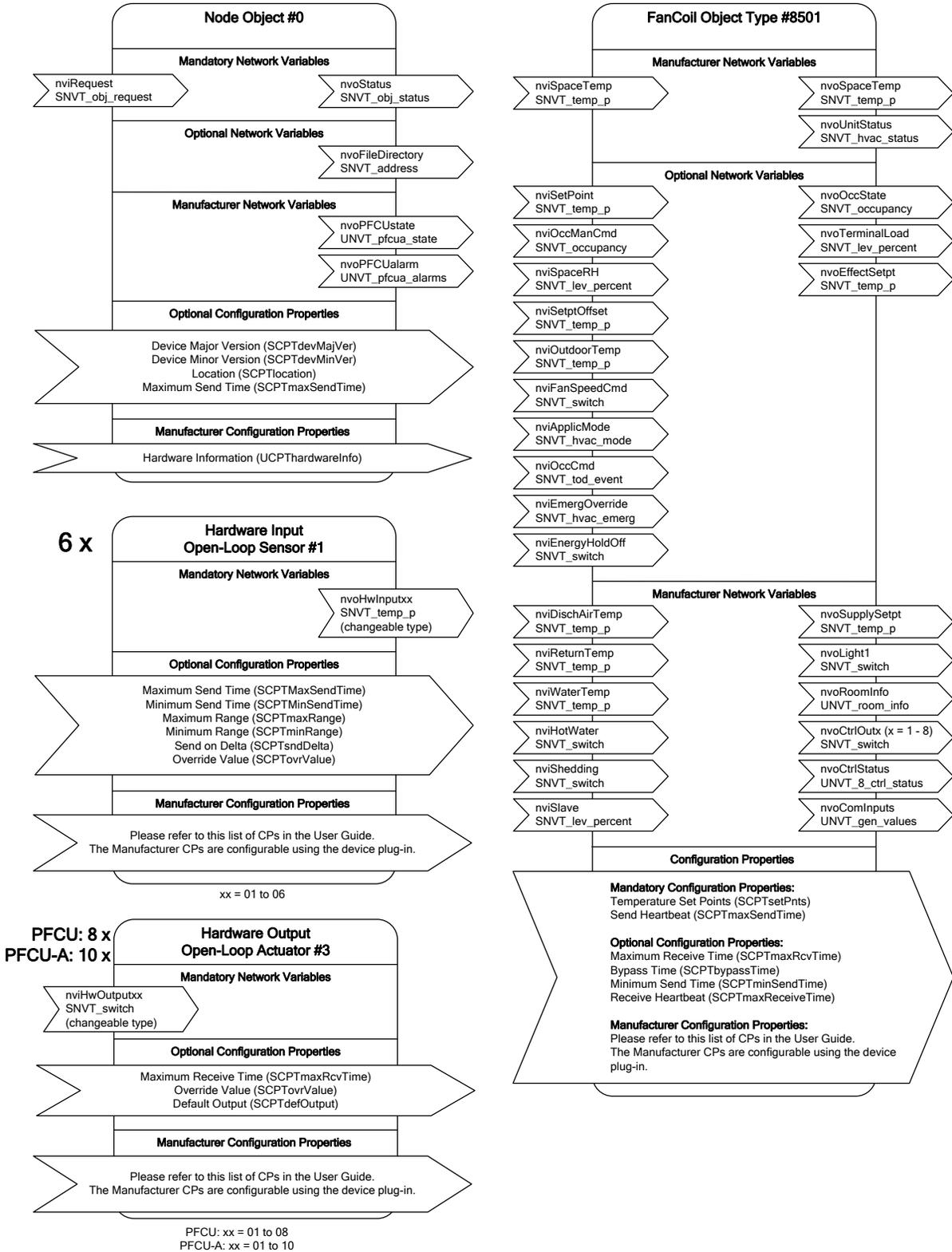
ECC-PFCU-A and ECC-PFCU-AW

3 Digital Relay Contacts (Typically Fan Speeds)	Up to 277VAC, N.O. contacts 2A (inductive or resistive) All share the same common
1 Digital Relay Contact (Typically Heater)	Up to 277VAC, N.O. contacts 3A (inductive) and 6.5A (resistive) Dedicated common
4 Digital	24-230VAC ±15% Triac, digital (on/off), floating or PWM - 0.5A continuous - 1.0A @ 15% duty cycle for a 10-minute period - PWM control: adjustable period from 2 seconds to 15 minutes - Floating control: requires two consecutive outputs - Min pulse on/off: 500msec. - Adjustable drive time period Protect the output with an external 4A fast-acting, high-breaking fuse. 1 common per pair of outputs
2 Universal	0-10VDC linear, digital 0-12VDC (on/off), PWM or floating - PWM control: adjustable period from 2 seconds to 15 minutes - Floating control: requires two consecutive outputs - Min pulse on/off: 500msec. - Adjustable drive time period - 20mA max. @ 12VDC - Minimum load resistance 600Ω
Output Resolution	10-bit digital / analog converter
Onboard 24VAC output:	24VAC; ±15%; 50Hz; 300mA max (7.2VA) @24VAC

Product Warranty & Total Quality Commitment

All Distech Controls product lines are built to meet rigorous quality standards and carry a two-year warranty. Distech Controls is an ISO 9001 registered company.

Functional Profile



Specifications subject to change without notice.

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ECC-PFCU Series

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05DI-DSPFCUX-32