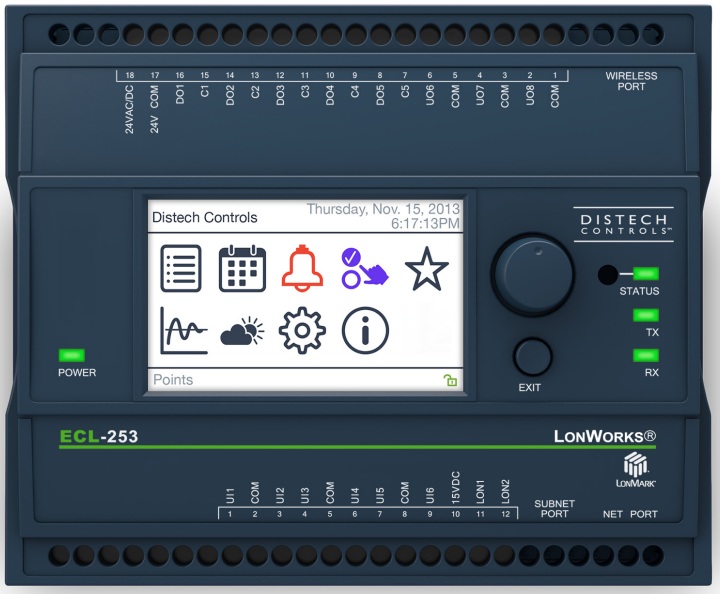
ECL-203 Series

LonMark® Certified 14-Point Programmable Controllers



Overview

The ECL-203 Series controllers are microprocessor-based programmable controllers designed to control terminal units such as rooftop units, fan coil units, unit ventilators, heat pump units, air handling units, and chilled ceilings.

The ECL-203 Series controllers use the LonTalk® communication protocol and is LonMark certified as an SCC Generic device, guaranteeing compatibility and interoperability with other manufacturers' LonMark certified controllers.

Applications

These controllers meet the requirements of the following applications:

- Rooftop Units
- Fan Coil Units
- Chilled Ceilings
- Heat Pumps
- Unit Ventilators
- Small Air Handling Units

Features & Benefits

Flexible Inputs and Outputs

This controller has various input types including resistance, voltage, and digital-based ones. Moreover, it provides digital, floating, pulse width modulation, and proportional control outputs for valves, heating elements, fans, and lighting applications. This controller covers all industry-standard HVAC unitary applications.

Highly Accurate Universal Inputs

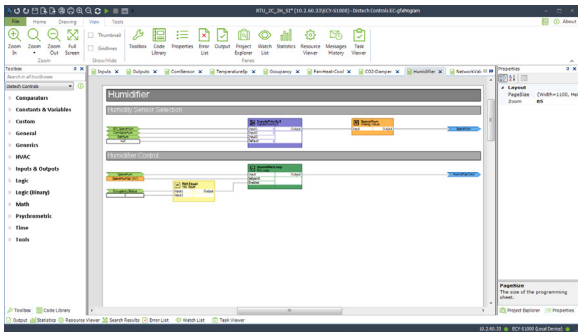
Highly accurate universal inputs support thermistors and resistance temperature detectors (RTDs) that range from 0 Ohms to 350,000 Ohms, as well as support for inputs requiring 0 to 10VDC or 0 to 20mA with an external resistor. This provides the freedom of using your preferred or engineer-specified sensors, in addition to any existing ones.

Rugged Inputs/Outputs

Rugged hardware inputs and outputs eliminate need for external protection components, such as diodes for 12V DC relays.

Programmability

Supports Distech Controls' EC-*gfx*Program, which makes Building Automation System (BAS) programming effortless by allowing you to visually assemble building blocks together to create a custom control sequence for any HVAC / building automation application.



Increased Energy Efficiency

Improves energy efficiency when combined with:

- ☐ Motion detectors to automatically adjust a zone's occupancy mode from standby to occupied when presence is detected
- ☐ CO_2 sensors as part of a demand-controlled ventilation strategy that adjusts the amount of fresh air intake according to the number of building occupants
- ☐ Light switches to control both lighting and a room's HVAC occupancy / standby mode setting

Open-to-Wireless™ Solution

Open-to-Wireless™

The controllers are Open-to-Wireless™ ready, and when paired with the Wireless Receiver, work with a variety of wireless battery-less sensors and switches, to reduce the cost of installation and minimize the impact on existing partition walls. For supported frequencies in your area, refer to the Open-to-Wireless Solution Guide.

Available with an optional Wireless Receiver that supports up to 24 wireless inputs to create wire-free installations.

Environmental Protection

The ECL-203 model with Environmental Protection has a conformal coating applied to its circuit board for an extra degree of protection for use in humid regions and it is ideal for enclosed roof-top unit applications.

Allure™ Series Communicating Sensor Support

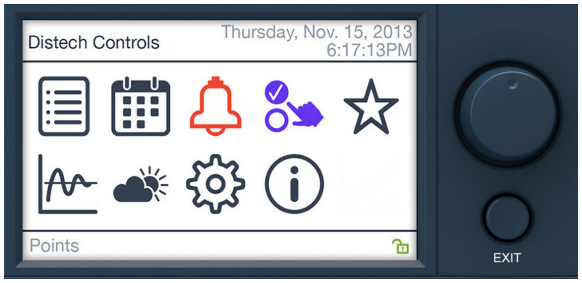
These controllers work with a wide range of sensors, such as the Allure Series Communicating Sensors that are designed to provide intelligent sensing and control devices for increased user experience and energy efficiency.

- ☐ Allure EC-Smart-Vue sensors feature a backlit-display and graphical menus that provide precise environmental zone control, with any combination of the following: temperature, humidity, CO_2, and motion sensor.
- ☐ Allure EC-Smart-Comfort sensors feature colored LED indicators to provide user feedback, rotary knobs to adjust the setpoint offset and fan speed, and an occupancy override push button. This sensor can also be expanded with a combination of up to 4 add-on push button modules for lighting and shade/ sunblind control.
- ☐ Allure EC-Smart-Air sensors combine precise environmental sensing in a discreet and alluring enclosure for temperature, humidity, and CO_2.

Operator Interface

The ECL-253 model has a full-color backlit-display and a jog dial for turn and select navigation to access a wide range of internal controller functions:

- View and override values. The status is color coded to show if the value is overridden.
- Visually tune PID loops with system response graphing.
- View active alarm list.
- View and modify schedules and calendars through a graphic interface. Also create or delete schedule events, special events, and calendar entries.
- Create a list of favorites to provide quick access to commonly-used values.
- Multi-User access management.
- Multilingual interface: English, French, German, etc.



Model Selection

			
Model	**ECL-203**	**ECL-203 with Environmental Protection**	**ECL-253**
Points	14-Point Controller	14-Point Controller	14-Point Controller with Color Display
Universal hardware inputs	6	6	6
Wireless inputs[1]	24	24	24
15 Vdc Power Supply	■	■	■
Digital (Triac) outputs	5	5	5
Universal outputs	3	3	3
Operator interface: interactive color display to monitor and override controller parameters			■
Environmental protection (conformal coating)		■	

1. All controllers are Open-to-Wireless ready. Available when an optional Wireless Receiver is connected to the controller. Some wireless sensors may use more than one wireless input from the controller.

Recommended Applications

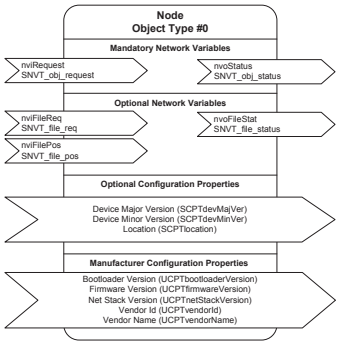
Model	**ECL-203**	**ECL-203 with Environmental Protection**	**ECL-253**
Rooftop Unit	■	■	
2 Pipe Fan Coil	■		■
2 Pipe Fan Coil with Changeover Sensor	■		■
4 Pipe Fan Coil	■		■
Heat Pump Unit	■	■	■
Unit Ventilator	■		■
Small Air Handling Unit	■		■
Chilled Ceiling	■		■

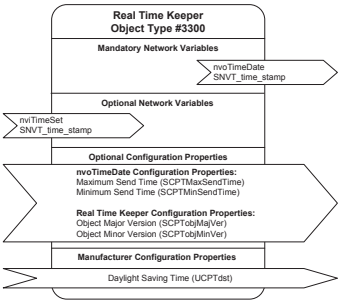
Objects List

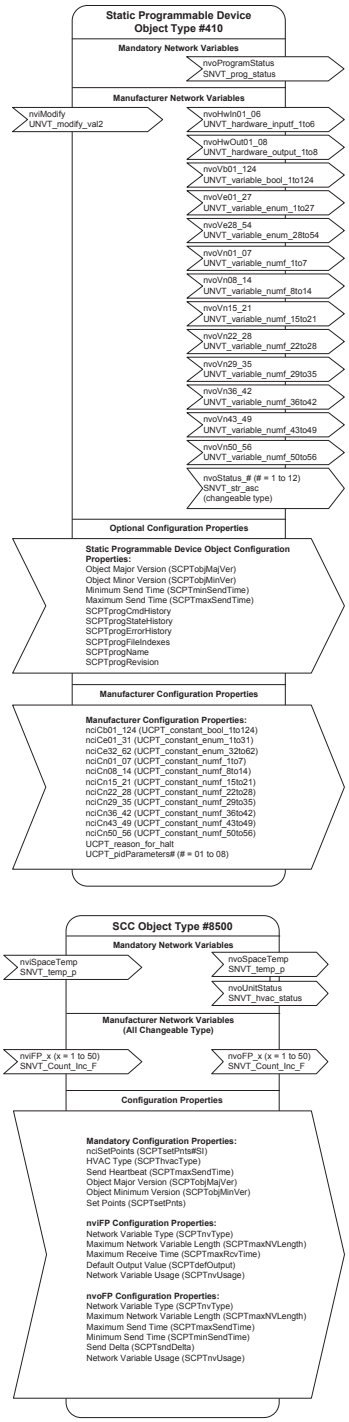
Objects List	
Calendar Objects	1
□ Special events per calendar	25
Schedule Objects	2
□ Special events per schedule	5
PID Loop Objects	8
Constants:	
□ Boolean	124
□ Enumeration	62
□ Numeric	56
Variables:	
□ Boolean	124
□ Enumeration	54
□ Numeric	56
nciSetpoint	■
Total Network Variables	176
Network Variable Input (General Usage):	
□ NVI Changeable Type, Up to 31 Bytes[1]	50
Network Variable Output (General Usage):	
□ NVO Changeable Type, Up to 31 Bytes	50
Hardware Input Network Variable:	
□ nvoHwInput per Hardware Input	■
Hardware Output Network Variable:	
□ nviHwInput per Hardware Output	■
□ nvoHwInput per Hardware Output	■

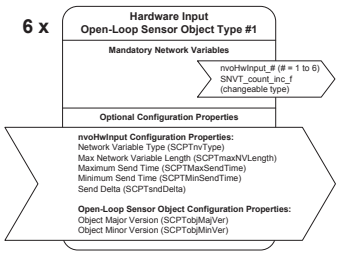
1. Any type of Fan-In function is supported in combination with the “FOR” loop function.

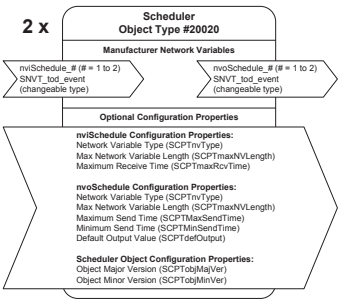
Functional Profile

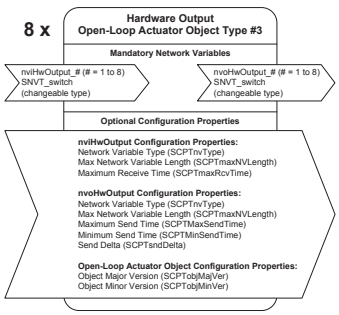


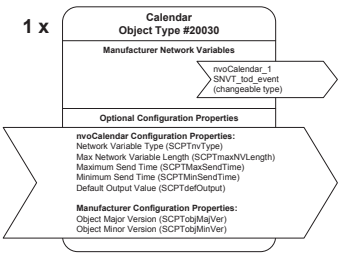












Product Specifications

Power Supply Input

Voltage Range — 24VAC/DC; ±15%; Class 2

Frequency Range — 50/60Hz

Overcurrent Protection — Field replaceable fuse

Fuse Type — 2.0A

Power Consumption:

- ECL-203 — 14 VA typical plus all external loads[1], 23 VA max.
- ECL-253 — 17 VA typical plus all external loads[1], 26 VA max.

1. External loads must include the power consumption of any connected modules such as an Allure Series Communicating Sensor. Refer to the respective module's datasheet for related power consumption information.

Communications

Communication — LonTalk Protocol

Transceiver — FT 5000 Free Topology Smart Transceiver

Channel — TP/FT-10; 78Kbps

LonMark Interoperability Guidelines — Version 3.4

Device Class — SCC Generic #8500

LonMark Functional Profile :

- Input Objects — Open-Loop Sensor #1
- Output Objects — Open-Loop Actuator #3
- Node Object — Node Object #0
- Real Time Clock — Real Time Keeper #3300
- Scheduler — Scheduler #20020
- Calendar — Calendar #20030
- Programmable Device — Static Programmable Device #410
- SCC Object — SCC Generic #8500

Hardware

Processor — STM32 (ARM Cortex™ M3) MCU, 32 bit

CPU Speed — 68 MHz

Memory — 384 kB Non-volatile Flash (applications)
1 MB Non-volatile Flash (storage)
64 kB RAM

Real Time Clock (RTC) — Built-in Real Time Clock without battery
Network time synchronization is required at each power-up cycle before the RTC become available

Status Indicator — Green LEDs: power status & LAN Tx
Orange LEDs: controller status & LAN Rx

Communication Jack — LON® audio jack

Subnetwork

Communication — RS-485

Cable — Cat 5e, 8 conductor twisted pair

Connector — RJ-45

Connection Topology — Daisy-chain

Maximum Number of Allure Series Communicating Sensors combined — 4[1]

1. A controller can support a maximum of two Allure Series Communicating Sensor models equipped with a CO_2 sensor. The remaining connected Allure Series Communicating Sensor models must be without a CO_2 sensor.

Wireless Receiver[1]

Communication Protocol — EnOcean wireless standard

Number of Wireless Inputs[2] — 24

Supported Wireless Receivers — Refer to the Open-to-Wireless Solution Guide

Cable — Telephone cord

- Connector — 4P4C modular jack
- Length (maximum) — 6.5ft (2m)

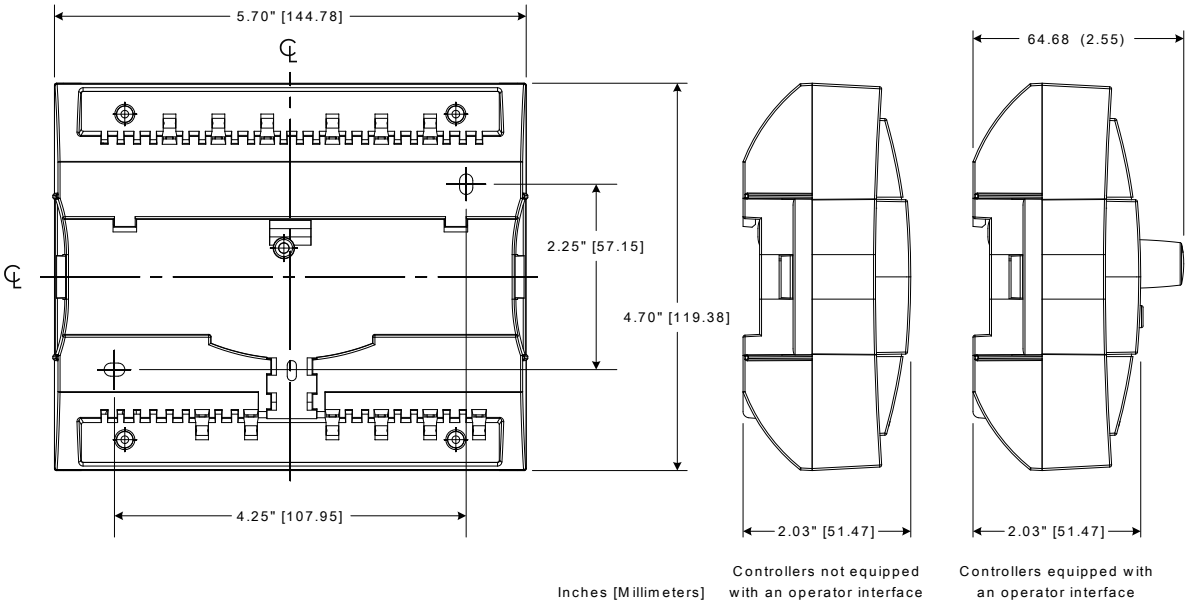
enocean

1. Available when an optional external Wireless Receiver module is connected to the controller. Refer to the Open-to-Wireless Solution Guide for a list of supported EnOcean wireless modules.
2. Some wireless modules may use more than one wireless input from the controller.

Mechanical

Dimensions (H × W × D):

- ECL-203 — 4.7 × 5.7 × 2.03" (119.38 × 144.78 × 51.47 mm)
- ECL-253 — 4.7 × 5.7 × 2.55" (119.38 × 144.78 × 64.68 mm)



Shipping Weight:

- ECL-203 — 0.97lbs (0.44 kg)
- ECL-253 — 1.08lbs (0.49 kg)

Enclosure Material[1] — FR/ABS

Enclosure Rating — Plastic housing, UL94-5VB flammability rating

Plenum rating per UL1995

Color — Black & blue casing & grey connectors

Installation — Direct DIN-rail mounting or wall mounting through mounting holes (see figure above for hole positions)

1. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive

Environmental

Operating Temperature:

- ECL-203 -40°F to 158°F (-40°C to 70°C)
- ECL-253 32°F to 122°F (0°C to 50°C)

Storage Temperature — -4°F to 122°F (-20°C to 50°C)

Relative Humidity — 0 to 90% Non-condensing

Standards and Regulations

CE:

- Emission — EN61000-6-3: 2007; A1:2011; 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

UL Listed (CDN & US) — UL916 Energy management equipment

CEC Appliance Database — Appliance Efficiency Program[1]

1. California Energy Commission's Appliance Efficiency Program: The manufacturer has certified this product to the California Energy Commission in accordance with California law.

ECL-253 Display

Display Type — Backlit-color LCD

Display Resolution — 400 W x 240 H pixels (WQVGA)

Effective Viewing Area (W × H) — 2.4 × 1.4" (61.2 × 36.7mm) 2.8" (71mm) diagonal

Menu Navigation — Jog dial turn, select navigation with Exit button

Specifications - Universal Inputs (UI)

General

Input Type — Universal; software configurable
Input Resolution — 16-bit analog / digital converter
Power Supply Output — 15VDC; maximum 120mA

Contact

Type — Dry contact

Counter

Type — Dry contact
Maximum Frequency — 1Hz maximum,
Minimum Duty Cycle — 500milliseconds On / 500milliseconds Off

0 to 10VDC

Range — 0 to 10VDC (40kΩ input impedance)

0 to 5VDC

Range — 0 to 5VDC (high input impedance)

0 to 20mA

Range — 0 to 20mA
— 249Ω external resistor wired in parallel

Resistance/Thermistor

Range — 0 to 350 KΩ
Supported Thermistor Types — Any that operate in this range
Pre-configured Temperature Sensor Types:

- Thermistor — 10KΩ Type 2, 3 (10KΩ @ 77ºF; 25ºC)
- Platinum — Pt1000 (1KΩ @ 32ºF; 0ºC)
- Nickel — RTD Ni1000 (1KΩ @ 32ºF; 0ºC)
  — RTD Ni1000 (1KΩ @ 69.8ºF; 21ºC)

Specifications - Universal Outputs (UO)

General

Output Type — Universal; software configurable
Output Resolution — 10-bit digital to analog Converter
Output Protection — Built-in snubbing diode to protect against back-EMF, for example when used with a 12VDC relay
Output is internally protected against short circuits
Load Resistance — Minimum 200 Ω for 0-10VDC and 0-12VDC outputs
Auto-reset fuse — Provides 24VAC over voltage protection

0 or 12VDC (On/Off)

Range — 0 or 12VDC
Source Current — Maximum 60 mA at 12VDC (minimum load resistance 200Ω)

PWM

Range	Adjustable period from 2 to 65seconds
Thermal Actuator Management	Adjustable warm up and cool down time

Floating

Minimum Pulse On/Off Time	500milliseconds
Drive Time Period	Adjustable

0 to 10VDC

Voltage Range	0 to 10VDC linear
Source Current	Maximum 60 mA at 10VDC (minimum load resistance 200 Ω)

Specifications - Digital Output (DO)

General

Output Type	24VAC Triac; software configurable
Maximum Current per Output	0.5A continuous
	1A @ 15% duty cycle for a 10-minute period
Power Source	External

0 or 24VAC (On/Off)

Range	0 or 24VAC

PWM

Range	Adjustable period from 2 to 65seconds

Floating

Minimum Pulse On/Off Time	500milliseconds
Drive Time Period	Adjustable
Power Source	External