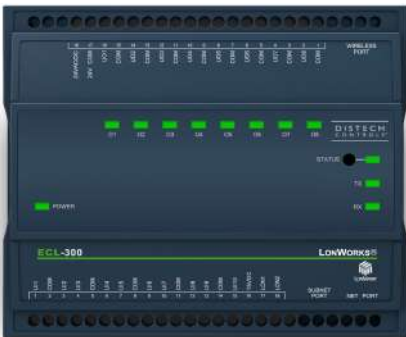


ECL-300 Series

LONMARK® Certified 18-Point
Programmable Controllers



Overview

The ECL-300 Series controllers are microprocessor-based programmable controllers designed to control equipment such as air handling units, chillers, boilers, pumps, and cooling towers.

The ECL-300 can also be used for lighting control and power measurement applications. This controller uses the LonTalk® communication protocol and is LONMARK certified as a Static Programmable Device, guaranteeing compatibility and interoperability with other manufacturers' LONMARK certified controllers.



Features & Benefits

- Flexible inputs and outputs support all industry-standard HVAC unitary applications
- Rugged hardware inputs and outputs eliminate the need for external protection equipment
- An optional full-color backlit display with jog dial provides direct access to a wide range of controller functions
- Supports EC-gfxProgram, making Building Automation System programming effortless
- Open-to-Wireless™ ready, supporting a wide variety of wireless sensors and switches and helping to reduce installation costs
- Supports the Allure™ Series Communicating Sensors, providing intelligent sensing and environmental zone control

Model Selection

Example: ECL-350

Series	Model
ECL-	300: 18 Points, 15 Vdc Power Supply, 10 UI, 8 UO
	350: 18 Points, Color display, 15 Vdc Power Supply, 10 UI, 8 UO

Recommended Applications

Model	ECL-300 / 350
Air Handling Unit	■
Chiller	■
Boiler	■
Cooling Tower	■
Pumps	■

Objects List

Objects

Calendar Objects	2
Special events per calendar	50
Schedule Objects	8
Special events per schedule	10
PID Loop Objects	30

Constants

Boolean	124
Enumeration	62
Numeric	56

Variables

Boolean	124
Enumeration	54
Numeric	56
nciSetpoint	Yes
Total Network Variables	161

Network Variable Input (General Usage)

NVI Changeable Type, 35
Up to 31 Bytes¹

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

Network Variable Output (General Usage)

NVO Changeable Type, Up to 35
31
Bytes

Hardware Input Network Variable

nvoHwInput per Hardware Yes
Input

Hardware Output Network Variable

nviHwInput per Hardware Yes
Output
nvoHwInput per Hardware Yes
Output

Product Specifications

Power Supply Input

Voltage Range	24VAC/DC; ±15%; Class 2
Frequency Range	50/60Hz
Overcurrent Protection	Field replaceable fuse
Fuse Type	3.0A
Power Consumption ECL-300	16 VA typical plus all external loads ¹ , 38 VA max.
Power Consumption ECL-350	19 VA typical plus all external loads ¹ , 41 VA max.

- 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

Communications	LonTalk Protocol
Transceiver	FT 5000 Free Topology Smart Transceiver
Channel	TP/FT-10; 78Kbps
LonMark Interoperability Guidelines	Version 3.4
Device Class	Static Programmable Device

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

Subnetwork

Communication	RS-485
Cable	Cat 5e, 8 conductor twisted pair
Connector	RJ-45
Connection Topology	Daisy-chain

Room Devices Support

Maximum combined number of devices per controller 12¹

- A controller can support a maximum of 2 Allure sensor models equipped with a CO₂ sensor. Any remaining connected sensors must be without a CO₂ sensor.

Allure EC-Smart-Vue Series	Up to 12
Allure EC-Smart-Comfort Series	Up to 6
Allure EC-Smart-Air Series	Up to 6

1. A controller can support a maximum of 2 Allure sensor models equipped with a CO₂ sensor. Any remaining connected sensors must be without a CO₂ sensor.

Hardware

Processor	STM32 (ARM Cortex™ M3) MCU, 32 bit
CPU Speed	72 MHz
Applications Memory	1 MB Non-volatile Flash
Storage Memory	2 MB Non-volatile Flash
RAM Memory	96 kB RAM
Real Time Clock (RTC)	Built-in Real Time Clock with rechargeable battery Network time synchronization is initially required
RTC Battery	20 hours charge time, 20 days recharge time Up to 500 charge/discharge cycles
Green LEDs	Power status & LAN Tx
Orange LEDs	Controller status & LAN Rx
Communication Jack	LON® audio jack

Wireless Receiver

Communication Protocol	EnOcean wireless standard ¹
Number of Wireless Inputs ²	28
Supported Wireless Receivers	Refer to the Open-to-Wireless Application Guide
Cable	Telephone cord
Connector	4P4C modular jack
Length (maximum)	6.5ft (2m)



1. Available when an optional external Wireless Receiver module is connected to the controller. Refer to the Open-to-Wireless Application 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 ECL-300 (H × W × D)	4.7 × 5.7 × 2.03" (119.38 × 144.78 × 51.47 mm)
Dimensions ECL-350 (H × W × D)	4.7 × 5.7 × 2.55" (119.38 × 144.78 × 64.68 mm)
Shipping Weight ECL-300	0.97lbs (0.44 kg)
Shipping Weight ECL-350	1.08lbs (0.49 kg)
Enclosure Material ¹	FR/ABS
Enclosure Rating	Plastic housing, UL94-5VB flammability rating Plenum rating per UL1995
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	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 Regulation

CE Emission	EN61000-6-3: 2007; A1:2011
CE Immunity	EN61000-6-1: 2007
FCC	Compliance 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-350 Display

Display Type	Backlit-color LCD
Display Resolution	400 W x 240 H pixels (WQVGA)
Effective Viewing Area (W × H) diagonal:	2.4 × 1.4" (61.2 × 36.7mm) (71mm)
Menu Navigation	Jog dial turn, select navigation with Exit button

Universal Inputs (UI)

General

Input Type	Universal; software configurable
Input Resolution	16-Bit analog / digital converter
Power Supply Output	15VDC; maximum 200mA

Contact

Type	Dry contact
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Counter

UI1 to UI4:

Type	SO output compatible
Maximum Frequency	50Hz maximum
Minimum Duty Cycle	10milliseconds On / 10milliseconds Off

UI5 to UI10:

Type	Dry contact
Maximum Frequency	1Hz maximum
Minimum Duty Cycle	500ms On / 500ms Off

0 to 10VDC

Range	0 to 10VDC (40kΩ input impedance)
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0 to 5VDC

Range	0 to 5VDC (high input impedance)
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0 to 20mA

Range	0 to 20mA 249Ω jumper configurable internal resistor
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Resistance/Thermistor

Range	0 to 350 KΩ
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Supported Thermistor Types Any that operate in this range

Pre-configured Temperature Sensor Types:

Thermistor 10K Ω Type 2, 3 (10K Ω @ 77°F; 25°C)
 Platinum Pt1000 (1K Ω @ 32°F; 0°C)
 Nickel RTD Ni1000 (1K Ω @ 32°F; 0°C)
 RTD Ni1000 (1K Ω @ 69.8°F; 21°C)

0 or 12VDC (On/Off)

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

PWM

Range Adjustable period from 2 to 65 seconds

Thermal Actuator Management Adjustable warm up and cool down time

Floating

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

0 to 10VDC

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

0 to 20mA

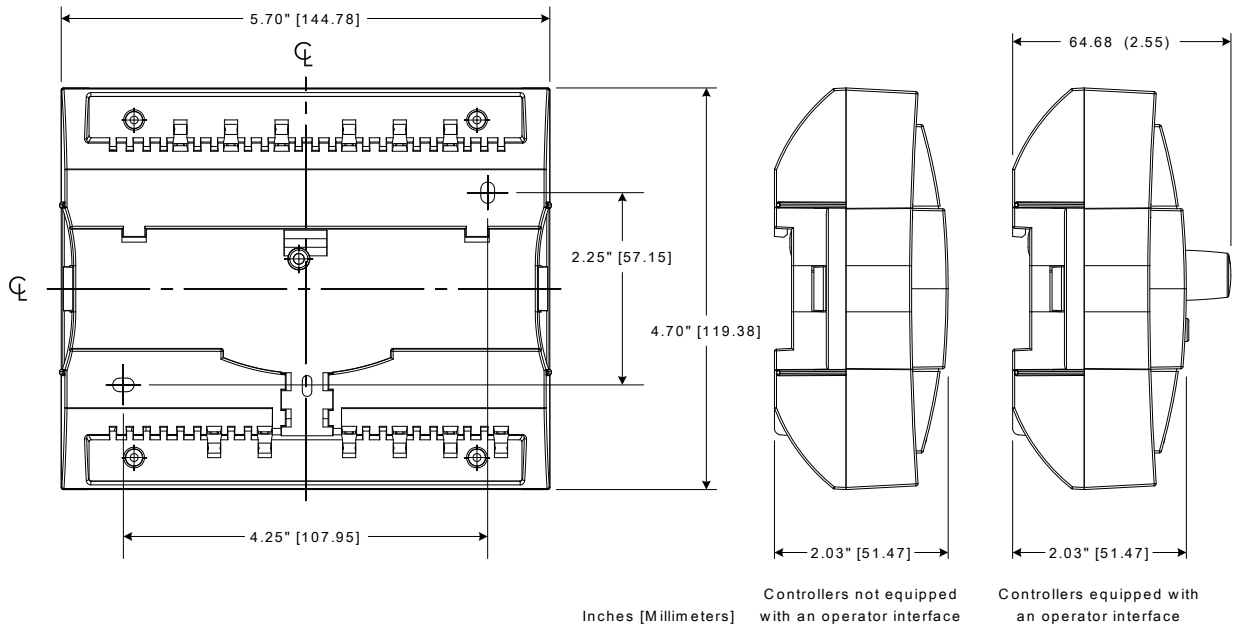
Range 0 to 20mA
 Type Current source (jumper configurable)

Universal Outputs (UO)

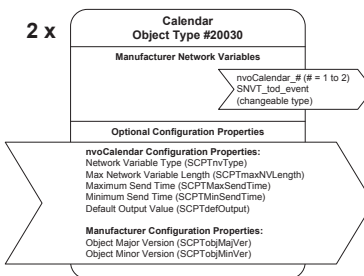
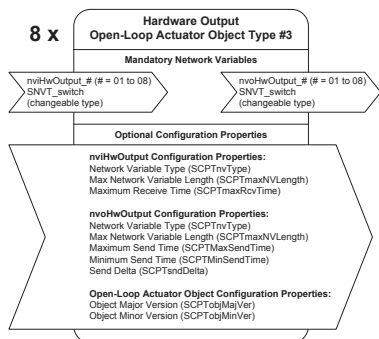
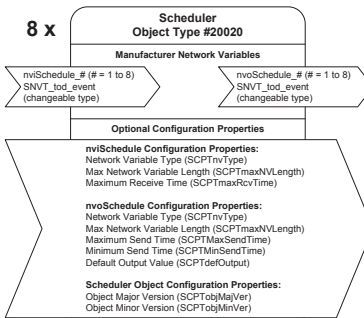
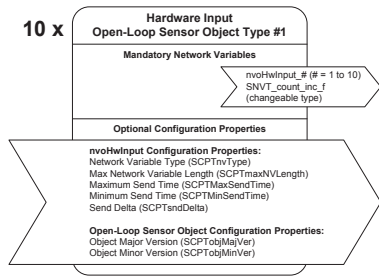
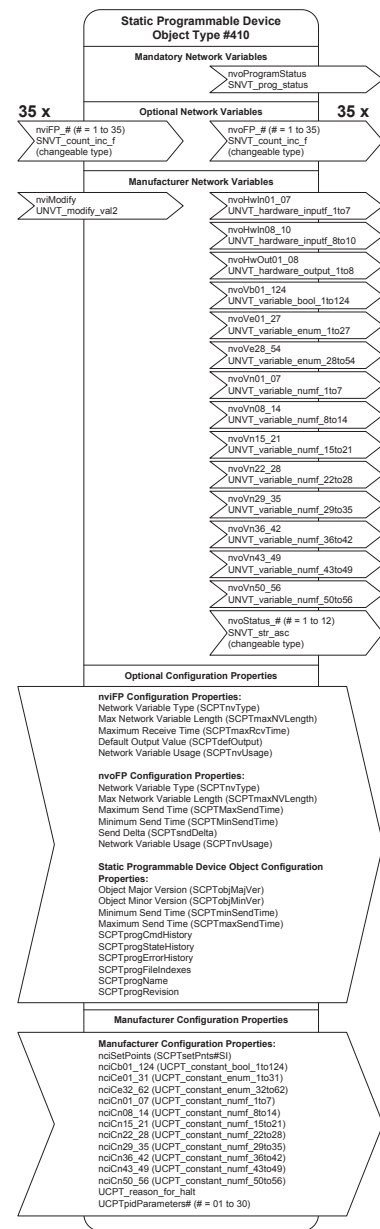
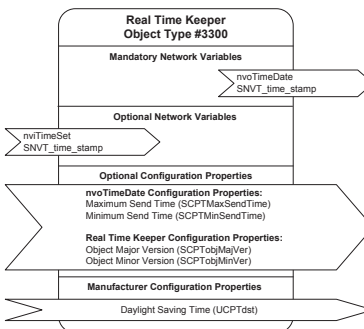
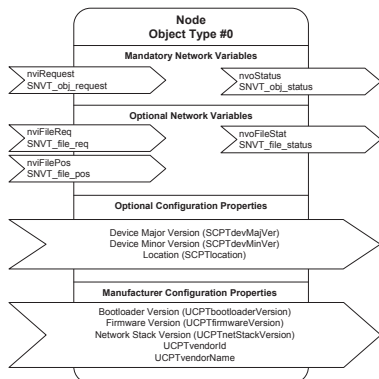
General

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
 Maximum 500 Ω for 0-20mA output
 Auto-reset fuse Provides 24VAC over voltage protection

Dimensions



Functional Profile



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