

ECL-PTU Series

LONMARK® Certified Powered
Terminal Unit Programmable
Controllers



Overview

The ECL-PTU Series controllers are microprocessor-based programmable controllers designed to control powered terminal units such as powered fan coil units, heat pumps units, and chilled beams.

Each controller uses the LonTalk® communication protocol and is LONMARK certified as an SCC Fan Coil Controller.

These controllers are optimized for ultra-low power consumption and can be operated as stand-alone units or as part of a networked system to suit any installation requirement



Features & Benefits

- Flexible inputs and outputs support all industry-standard terminal unitary applications
- Rugged hardware inputs and outputs eliminate the need for external protection equipment
- Factory pre-loaded applications allow for out-of-the-box, energy efficient operation of standard terminal unitary equipment
- End-to-end solution for support of Smart Room Control of HVAC equipment, lighting and sunblinds
- 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-PTU-208 (SI)**

Series	Model	Units
ECL-PTU-	107: 12 Points, 3 Powered Relay Outputs, 2 Line-Powered Triac Outputs	(SI): Preloaded Apps in SI (Metric) units (IMP): Preloaded Apps in Imperial (US) units
	207: 16 Points, 3 Powered Relay Outputs, 2 Line-Powered Triac Outputs, 4 Analog Outputs	
	208: 14 Points, 3 Powered Relay Outputs, 2x24 VAC Triac Output ¹ , 2 Analog Outputs, 24 VAC Power Supply Output	
	307: 17 Points, 3 Powered Relay Outputs, 4 Line-Powered Triac Outputs, 2 Analog Outputs	
	308: 16 Points, 3 Powered Relay Outputs, 4x24 VAC Triac Output ¹ , 2 Analog Outputs, 24 VAC Power Supply Output	

1. Can be used to power certain types of valves and air dampers, thereby eliminating the need for a transformer.

Recommended Applications

Model	ECL-PTU-107	ECL-PTU-207	ECL-PTU-208	ECL-PTU-307	ECL-PTU-308
Fan Coil Unit:					
● 2/4 pipes - 3 speed fan - On/Off / thermal valves	■				
● 2/4 pipes - Variable / 3-speed fan - On/off / thermal valves		■	■		
● 2/4 pipes - Variable / 3-speed fan - Analog actuator		■	■		
● 2 pipes - Variable / 3-speed fan - Floating actuator		■	■		
● 4 pipes - Variable / 3-speed fan - Floating actuator				■	■
● Two Room: 2/4 pipes - Variable speed fan - On/Off / thermal valves				■	■
Heat Pump Unit:					
● 3-speed fan	■				
● Variable speed fan		■	■		
Chilled Beam:					
● On/Off / thermal valves	■		■		
● 2 pipes - Floating actuator	■		■		
● 4 pipes - Floating actuator				■	■
● Two Room: 2/4 pipes - On/Off / thermal / analog valves				■	■
Reversible Ceiling with 6-way valves		■	■		
Unit Ventilator		■	■		

Objects List

Objects

Calendar Objects	1
Special events per calendar	25
Schedule Objects	2
Special events per schedule	5
Lamp Actuator Objects	8
Sunblind Actuator Objects	8
PID Loop Objects	8

Constants

Boolean	124
Enumeration	62
Numeric	56

Variables

Boolean	124
Enumeration	54
Numeric	56
nciSetpoint	Yes
Total Network Variables	236 (ECL-PTU-107) 244 (ECL-PTU-207)

240 (ECL-PTU-208)
246 (ECL-PTU-307)
244 (ECL-PTU-308)

Network Variable Input (General Usage)

NVI Changeable Type, Up to	50
31 Bytes	

Network Variable Output (General Usage)

NVO Changeable Type, Up to	50
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

Voltage Range	100-240 VAC; -15%/+10%;
Frequency Range	50/60Hz
Overcurrent Protection	4.0A external circuit breaker type C or 4.0A fast acting high breaking external fuse (250 VAC min)
Device Insulation Type	Type Double Insulation
Overvoltage Category	II - 2.5 kV
Power Consumption (ECL-PTU-107 / 207 / 307)	0.9 W plus all external loads ¹
Power Consumption (ECL-PTU-208 / 308)	<2.7 W plus all external loads ¹
Maximum Consumption (ECB-PTU-107 / 207 / 307)	4.0 A
Maximum Consumption (ECB-PTU-208 / 308)	3.5 A

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

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

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
Lamp Objects	Lamp Actuator #3040
Sunblind Objects	Sunblind Actuator #6110
SCC Object	SCC Fan Coil #8501

Subnetwork

Communication	RS-485
Cable	Cat 5e, 8 conductor twisted pair
Connector	RJ-45
Connection Topology	Daisy-chain
Maximum number of room devices supported per controller combined	4
Allure EC-Smart-View Series ¹	4
Allure EC-Smart-Comfort Series	4
Allure EC-Smart-Air Series ¹	4
EC-Multi Sensor	4
ECx-Light-4 / ECx-Light-4D / ECx-Light-DALI	4
ECx-Blind-4 / ECx-Blind-4LV	4

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	68 MHz
Applications Memory	384 kB Non-volatile Flash
Storage Memory	1 MB Non-volatile Flash
RAM Memory	64 kB RAM
Green LEDs	Controller and Power Status,
Orange LEDs	LAN Tx & Rx

Wireless Receiver

Communication Protocol	EnOcean wireless standard ¹
Number of Wireless Inputs ²	24
Supported Wireless Receivers	Refer to the Open-to-Wireless Application Guide
Cable	Telephone cord
Connector	4P4C modular jack
Length (maximum)	2m (6.5ft)



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 (H × W × D)	132 × 132 × 44 mm (5.2 × 5.2 × 44")
Dimensions with Terminal Covers (H × W × D)	182 × 132 × 44 mm (7.2 × 5.2 × 44")
Shipping Weight (ECL-PTU-107 / 207)	0.37 kg (0.82lbs)
Shipping Weight (ECB-PTU-307)	0.39 kg (0.86lbs)
Shipping Weight (ECB-PTU-208 / 308)	0.42 kg (0.93lbs)
Enclosure Material ¹	ABS
Enclosure Rating	Plastic housing, UL94-5VB flammability rating
Mounting	Din-rail or wall-mounting

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	+5°C to +40°C (+41°F to +104°F)
Storage Temperature	-20°C to +70°C (-4°F to +158°F)
Relative Humidity	0 to 90% Non-condensing
Ingress Protection Rating	IP30 (with terminal block cover and strain relief)
Altitude	< 2000m (6561ft)
Pollution Degree	2

Certified Performances

Cooling Control Accuracy

Chilled Ceiling Systems	0.36°F (0.2°C)
Fan Coil Systems (2 pipes + electric heater)	0.18°F (0.1°C)

Fan Coil Systems (4 pipes)	0.18°F (0.1°C)
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Heating Control Accuracy

Fan Coil Systems (2 pipes + electric heater)	0.18°F (0.1°C)
Fan Coil Systems (4 pipes)	0.18°F (0.1°C)

Standards and Regulation

CE Emission	EN61000-6-3: 2006; A1:2010
CE Immunity	EN61000-6-1: 2005
FCC	Compliance with FCC rules part 15, subpart B, class B
UL Listed (CDN & US)	UL 61010-1 Energy management equipment CSA C22.2 NO. 61010-1 File number: E352591
PEP ecopassport®	Compliant environmental declaration



Universal Inputs (UI)

General

Input Type	Universal; software configurable
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Contact

Type	Dry contact (0 – 3.3VDC)
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Counter

Type	Dry contact (0 – 3.3VDC)
Maximum Frequency	1Hz maximum
Minimum Duty Cycle	500ms On / 500ms Off

0 to 10VDC

Range	0 to 10VDC
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Resistance/Thermistor

Thermistor	10KΩ Type 2, 3 (10KΩ @ 77°F; 25°C)
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Sensor Inputs (SI)

General

Input Type	Sensor; software configurable
Accuracy	± 0.1°C, 32.18°F @ 25°C; 77°F (controller only)

Contact

Type	Dry contact (0 – 3.3VDC)
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Counter

Type	Dry contact (0 – 3.3VDC)
Maximum Frequency	1Hz maximum
Minimum Duty Cycle	500ms On / 500ms Off

Resistance

Thermistor	10KΩ Type 2, 3 (10KΩ @ 77°F; 25°C)
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Digital Inputs (DI)

General

Input Type	Digital; software configurable
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Contact

Type	Dry contact (0 – 3.3VDC)
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Counter

Type	Dry contact (0 – 3.3VDC)
Maximum Frequency	1Hz maximum
Minimum Duty Cycle	20ms On / 20ms Off

Power Supply (Vref)

Output (Vref)	5 VDC for polarization ($I < 1$ mA)
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Triac Outputs

General

(ECL-PTU-107 / 207 / 307)

Output Type	Triac
Voltage Range	100-240 VAC (same as device power supply)
Maximum Current per Output	0.5 A continuous 1 A @ 15% duty cycle for a 10-minute period
Inrush Current	3.0 A maximum (<20ms)
Common Terminal	1 per pair of outputs

General

(ECL-PTU-208 / 308)

Output Type	Triac
Power Source	Internal on-board 24 VAC power supply
Voltage Range	See on-board 24 VAC power supply
Current	See on-board 24 VAC power supply
Common Terminal	1 per pair of outputs

Digital (On/Off)

Voltage Range (ECL-PTU-107 / 207 / 307)	0 or 100-240 VAC (same as device power supply)
Voltage Range (ECL-PTU-208 / 308)	0 or 24 VAC

PWM

Application	Typical Thermal Valve Control
Range	Adjustable period from 2 to 65 seconds

Floating

Minimum Outputs	2 consecutive outputs
Minimum Pulse On/Off Time	500ms
Drive Time Period	Adjustable from 10 to 600 seconds

Powered Relay Outputs

General

Output Type	Digital
Application	Typical Fan Speeds
Current	3.0 A max. (inductive or resistive load) for the total sum of the 3 outputs
Resting State	Normally Open
Common Terminal	Shared

Digital (On/Off)

Voltage Range	0 or 100-240 VAC (Same as device power supply)
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Digital Relay Contact Outputs

General

Output Type	Digital
Application	Typical Electric Heater
Protection	Must be protected with a 10.0 A external circuit breaker or a 10.0 A external fast acting, high breaking fuse (250 VAC min.)

Contact

Type	Dry contact
Voltage Range	100-255 VAC
Current (ECL-PTU-107 / 207 / 208 / 308)	9.0 A max. on a resistive load (2 kW @ 230 VAC)
Current (ECB-PTU-307)	6.0 A max. on a resistive load (1.4 kW @ 230 VAC)
Resting State	Normally Open
Common Terminal	Dedicated digital

Analog Outputs

(ECL-PTU-207 / 208 / 307 / 308)

Output Type	Analog
Voltage Range	0-10 VDC linear
Current	5 mA max

24 VAC Outputs

(ECL-PTU-208 / 308)

Power Source	Internal on-board 24 VAC power supply
Voltage Range	See on-board 24 VAC power supply
Current	See on-board 24 VAC power supply

On-board 24 VAC Power Supply

(ECL-PTU-208 / 308)

Power Source	Internal on-board 24 VAC power supply
Voltage Range	24 VAC; $\pm 10\%$
Frequency	50 Hz
Current	500 mA max. on a resistive load (12 VA @ 24 VAC)
Peak current	800 mA
Short-circuit protection	Fuse
Overload protected	Yes

Dimensions

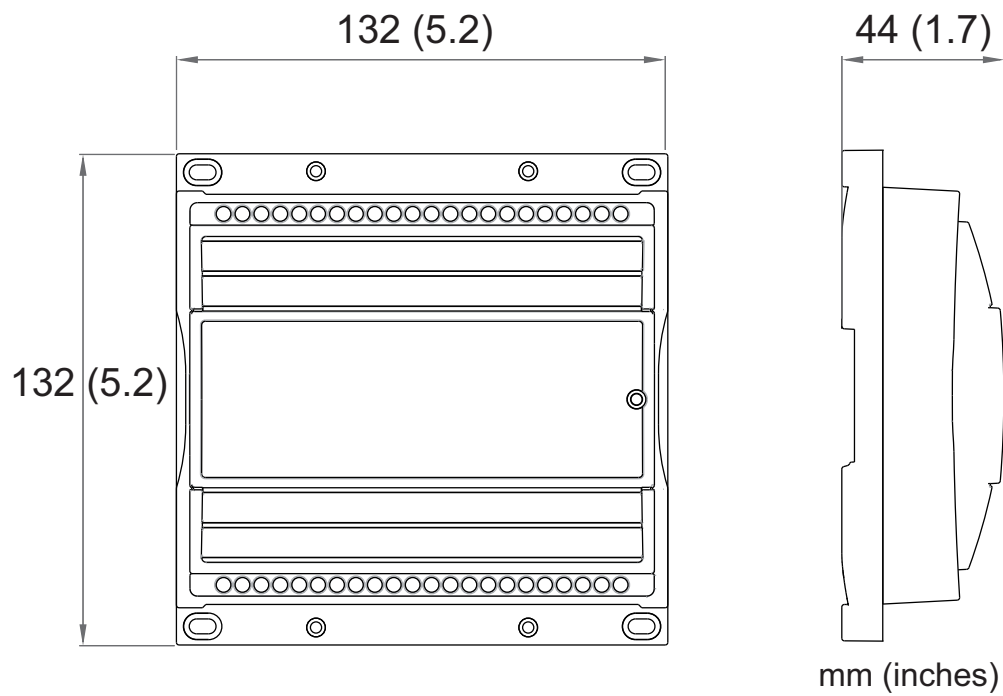


Figure 1: PTU Enclosure - Without strain relief

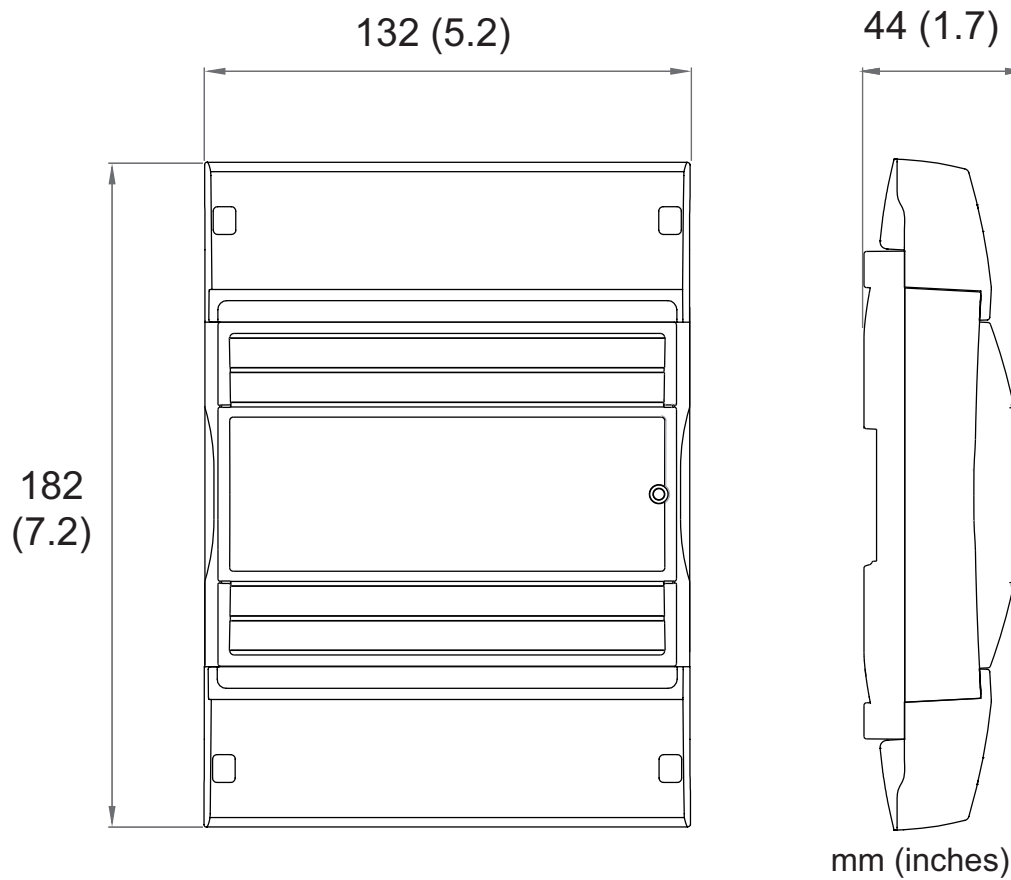
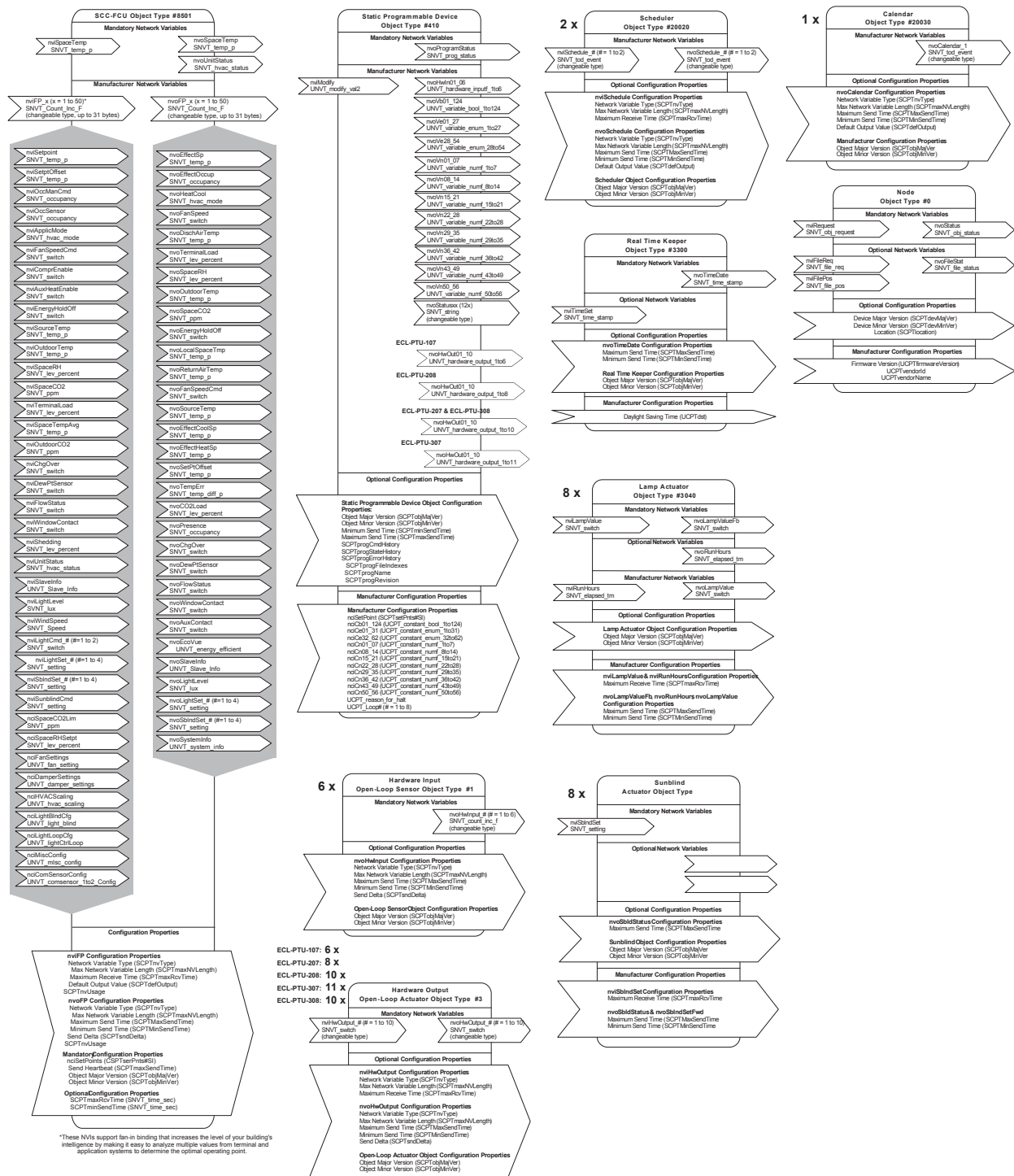


Figure 2: PTU Enclosure - With strain relief

Functional Profile



Specifications subject to change without notice.

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