

# EC240

## SMART I/O™

### DESCRIPTION

The Smart I/O™ EC240 programmable controller incorporates 24 channels of cost effective analog and digital I/O with a real time clock. The I/O is monitored and controlled by a Neuron 3150 chip with Free Topology communication over a LonWorks® network. The EC240 has expanded data storage with additional FLASH, SRAM and EEPROM memory. The EC240 can be utilized in many custom or fixed distributed control applications.

The I/O of the EC240 makes it perfect for a variety of equipment control applications. The wide operating temperature range, -20 to 70 °C, makes the EC240 well suited for many demanding applications.

The twelve universal inputs (UI) can be configured in a variety of ways. The controller can interface with resistive type sensors for temperature measurements. The UI's can measure voltage from humidity or transducer readings. The UI's can input current for pressure measurements. The UI's can also be used to read digital inputs and dry contacts. With 12 bits of resolution, the universal inputs are field adaptable and accurate for many types of measurements.

Terminal number three of the universal inputs provides a regulated +20 VDC to source power to current transducers for interfacing. The +20 VDC source is protected by an internal auto-resettable fuse.

The six universal outputs (UO) can be configured as Triac or 0-10 VDC outputs. The controller can use Triac outputs to provide on/off or pulsed control for controlling damper positions, valves, alarms, lights or other loads where the current does not exceed 1A at 24 VAC for each output. The 0-10 VDC output has 10 bits of resolution for accurate control of external devices.

The six digital outputs (DO) are Triac outputs for control of additional on/off or pulsed external devices where the current does not exceed 1A at 24 VAC for each output.

The EC240 controller is protected from reverse power supply input wiring, over-voltages, transients, and other common events that can damage unprotected inputs and outputs.

The versatile I/O allows numerous applications to be development and implemented with the EC240. The Real Time Clock and expanded memory allow applications for data logging, scheduling and time stamp monitoring and control.

User defined algorithms and functions can be programmed using VisualControl™, NodeBuilder, LonBuilder or other third party LONWORKS programming tools. The application program can be downloaded over the free topology network and is stored in non-volatile memory so it is retained even after loss of power.

The enclosure snaps right onto a 35mm DIN-rail for quick and easy mounting. Its spring-loaded latching mechanism makes it easy to remove.

### APPLICATIONS

- Air Handling Units
- Fan Coil Units
- Roof Top Units
- Heat Pumps
- VAVs
- Chillers
- Boilers
- Lighting
- Energy Management
- Refrigeration
- Custom Applications

### FEATURES

- LonTalk Protocol
- Free Topology Communication (FTT-10)
- 12 universal inputs with 0-5V, 0-10V, 0-20mA, thermistor or dry contact
- 6 universal outputs with Triac or 0-10V
- 6 digital outputs with Triac
- Real Time Clock
- FLASH Memory
- DIN-rail mounting
- Fully programmable
- 2 Year Limited Warranty

### SELECTION GUIDE

S-EC240P-F-

B - 56K Flash Memory Only

**M - STANDARD OPTION:**

**Selectable Memory (FLASH, SRAM)**

C - Real Time Clock with Super Cap Back-up, Selectable Memory (Flash, SRAM) and 8K Serial EEPROM

# SPECIFICATIONS

### General

Communication: LONTALK™ Protocol  
 Transceiver: FTT-10, Free Topology  
 Processor: Neuron FT3150 @ 20 MHz  
 Memory: 64K bytes FLASH  
 2K bytes SRAM (Neuron)  
 0.5K bytes EEPROM (Neuron)  
 Real Time Clock (Option C)  
 Back up: Super Cap

### Inputs

Number: 12  
 Universal: Jumper selectable  
 Voltage; 0-5 Volts, 0-10 Volts  
 Current; 4-20 mA  
 Thermistor; Type 2,3 10Kohms or 20Kohms (25°C, 77°F)  
 Digital; Dry Contact, TTL  
 Resolution: 12 bits  
 Accuracy: ±1% FS (25°C, 77°F)  
 Protection Circuitry: Transient Over voltage, ESD

### Power

Nominal Input Voltage: 24 VAC  
 Input Voltage Range: 21-28 VAC  
 Typical Consumption: 6 VA  
 Maximum Consumption: 10 VA  
 Output Power Protection: +20V Output auto-reset fuse

### Outputs

Number: 12  
 6 - Digital: Triac 1.0 A @ 24 VAC Internal Source  
 Jumper selectable  
 6 - Universal: Digital; Triac 1.0 A @ 24 VAC Internal Source  
 Voltage; 0-10 Volts

### Environmental

Operating Temperature: -20 °C to +70 °C,  
 -4 °F to 158 °F  
 Storage Temperature: -40 °C to +70 °C,  
 -40 °F to 158 °F  
 Relative Humidity: 5% to 95%  
 (non-condensing)

### Analog Output

Resolution: 10 bit  
 Accuracy: ±1% FS (25°C, 77°F)  
 Protection Circuitry: ESD

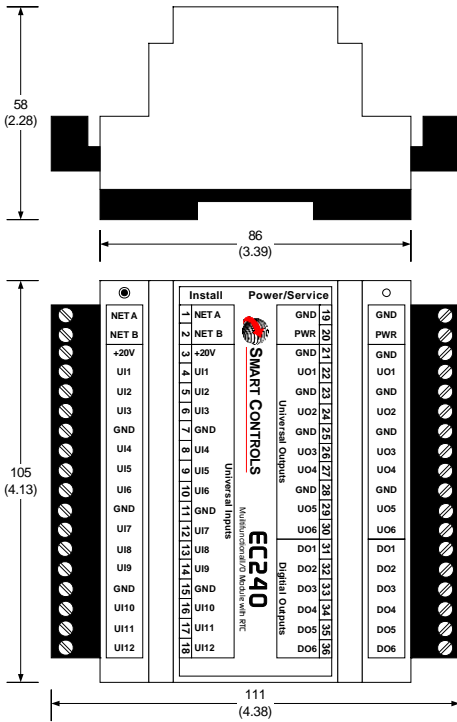
### Warranty

Period: 2 Years (Limited)

### Enclosure

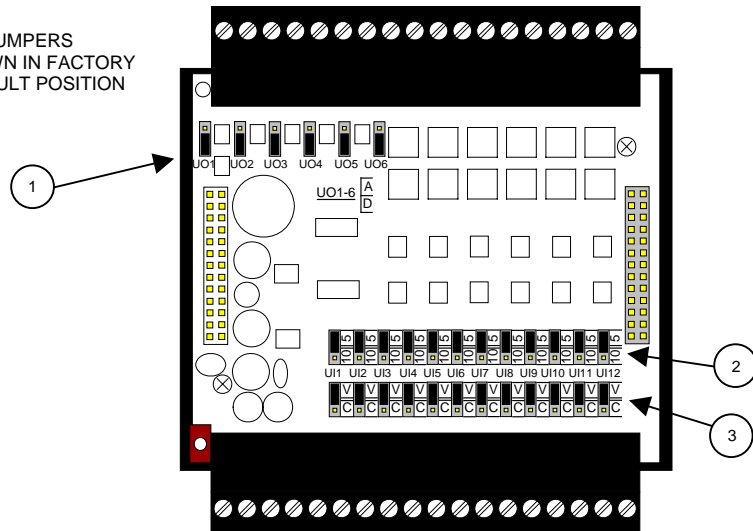
Dimensions: L 105 x W 86 x H 58 mm  
 (4.13" x 3.39" x 2.28")  
 Cover: Lexan 940, UL94-V0 rated  
 Base: Noryl VO1550, UL94-V0 rated

## DIMENSIONS

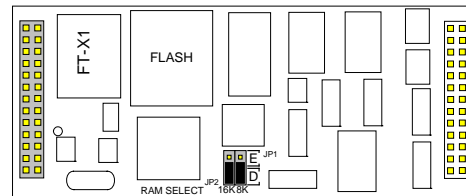


## OPTION JUMPER SELECTIONS

ALL JUMPERS SHOWN IN FACTORY DEFAULT POSITION



I/O Board



Processor Board - Header Post Side View

### 1- Output Selection

**A** – Analog Output (Voltage 0-10V)  
**D** – Digital Output (Triac, 24Vac, 1A)

### 2- 5V/10V Selection

**5V** – Input Sensing for 5V Signals  
**10V** – Input Sensing for 10V Signals

### 3- Input Selection

**V** – Voltage Input (0-5V, 0-10V, Dry Contact, Resistive)  
**C** – Current Input (4-20 mA)

### 4- RAM Memory Selection\*

**E** – Enable  
**D** – Disable  
 \*Optional – Only available on models with "M" and "C" option.

| FLASH | RAM | 16K(JP20) | 8K(JP19) |
|-------|-----|-----------|----------|
| 56K   | 0K  | D         | D        |
| 48K   | 8K  | D         | E        |
| 40K   | 16K | E         | D        |
| 32K   | 24K | E         | E        |

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