



# EC120

## SMART I/O™

### DESCRIPTION

### 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)
- 6 universal inputs with 0-5V, 0-10V, 0-20mA, thermistor or dry contact
- 4 universal outputs with Triac or 0-10V
- 2 digital outputs with Triac
- FLASH Memory
- DIN-rail mounting
- Compact Size for Minimal Panel Space
- Fully programmable
- 2 Year Limited Warranty

The Smart I/O™ EC120 programmable controller incorporates 12 channels of cost effective analog and digital I/O. The I/O is monitored and controlled by a Neuron 3150 chip with Free Topology communication over a LonWorks® network. As an option, the EC120 can be selected with a Super Cap backed-up Real Time Clock, selectable FLASH/SRAM and Serial EEPROM. The EC120 can be utilized in many custom or fixed distributed control applications.

The I/O of the EC120 makes it perfect for a variety of equipment control applications. The wide operating temperature range, -20 to 70 °C, makes the EC120 well suited for many demanding applications.

The six 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.

The even pins of the universal inputs can be configured to provide regulated 20 Vdc to current transducers for simplified interfacing. The 20 VDC source is protected by an internal auto-resettable fuse.

The four 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 control damper positions, valves, alarms, lights or other loads where the current does not exceed 1A at 24 VAC. The 0-10 VDC output has 10 bits of resolution for accurate control external devices.

The two 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.

The EC120 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 EC120. 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.

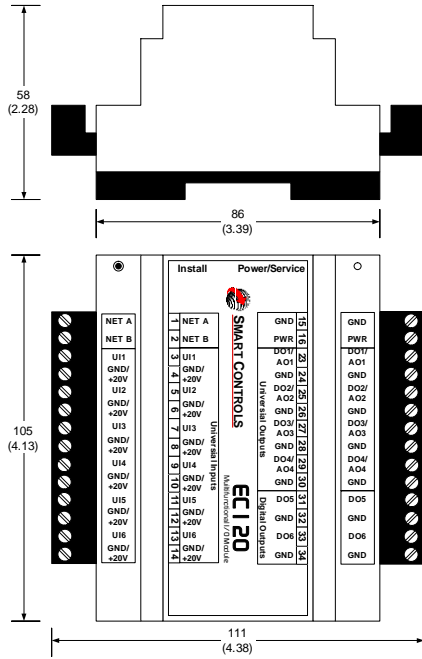
### SELECTION GUIDE

S-EC120P-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

## DIMENSIONS



**General**  
 Communication: LONTALK™ Protocol  
 Transceiver: FTT-10, Free Topology  
 Processor: Neuron 3150 @20 MHz  
 Memory: 64K bytes FLASH  
 2K bytes SRAM (Neuron)  
 24K bytes SRAM (External)\*  
 0.5K bytes EEPROM (Neuron)  
 8K bytes EEPROM (External)\*  
 Clock: Real Time Clock\*  
 Back up: Super Cap\*

**Inputs**  
 Number: 6  
 Voltage: 0-5 Volts  
 0-10 Volts  
 Current: 0-20 mA  
 Thermistor: Type 2, 3: 10Kohms (25°C, 77°F)  
 Digital: Dry Contact  
 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 or 21-39 VDC  
 Maximum Consumption: 8 VA, does not include Triac loading  
 On Board DC Power: +20V Output auto-reset fuse

**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)

**Warranty**  
 Period: 2 Years (Limited)

**Outputs**  
 Number: 6  
 6 - Digital: Triac 1.0 A @ 24 VAC  
 Voltage Sourcing  
 4 - Voltage: 0-10 Volts  
 Analog Resolution: 10 bit  
 Accuracy: ±1% FS (25°C, 77°F)  
 Protection Circuitry: ESD

**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

## CONTACT



**Office:**  
 10000 St. Clair Avenue  
 Fairview Heights, IL 62208  
 U.S.A.  
 Phone: 618-394-0300  
 Fax: 618-394-1575

**E-mail:**  
[sales@smartcontrols.com](mailto:sales@smartcontrols.com)

**Web site:**  
[www.smartcontrols.com](http://www.smartcontrols.com)

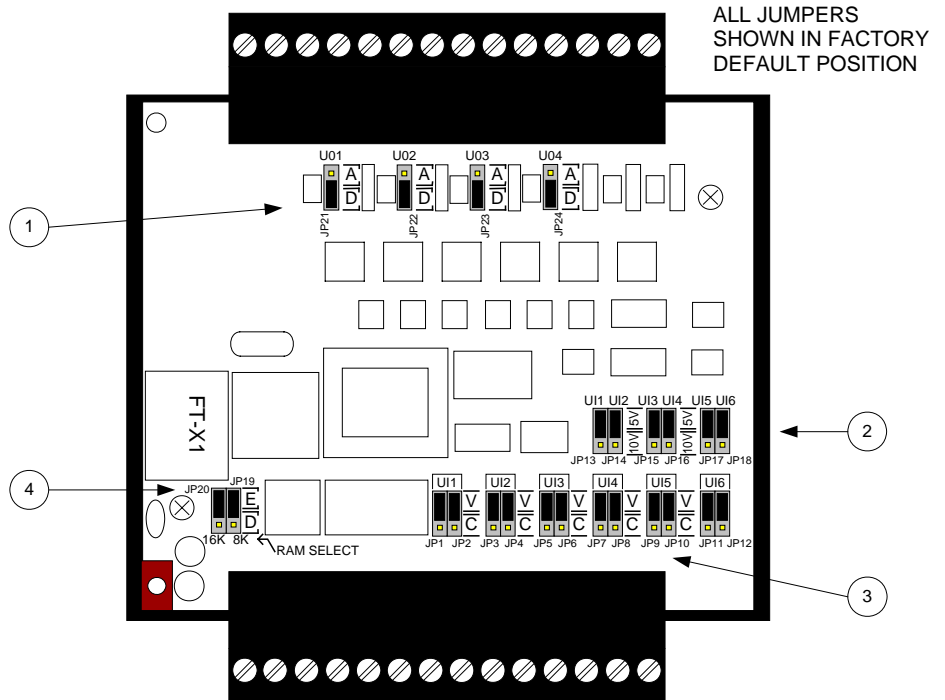
Echelon, LONWORKS, 3150, NEURON AND LONTALK are trademarks or registered trademarks of Echelon Corporation.

Smart I/O is a trademark of Smart Controls, LLC. SMART CONTROLS, LLC reserves the right to make changes without further notice to this product for improvements in design and reliability. SMART CONTROLS, LLC does not assume any liability arising out of the application or use of this product; neither does it convey any license under its patent rights of others.

## AGENCY



## OPTION JUMPER SELECTIONS



### 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        |