EC231

SMART I/O™

APPLICATIONS

- Air Handling Units
- Chillers
- Boilers
- Roof Top Units
- Lighting
- Energy Management
- Refrigeration
- Access Control
- Equipment Control
- Machine Control
- Factory Automation
- Custom Applications

FEATURES

- 5 universal analog inputs for 0-5V, 0-10V, 0-20mA, thermistor & dry contact
- 4 analog outputs for 0-10V or 4-20 mA devices
- 7 digital inputs for dry contact sensing
- 7 digital relay (N.O.) outputs
- Real Time Clock
- FLASH, SRAM and Serial EEPROM Memory
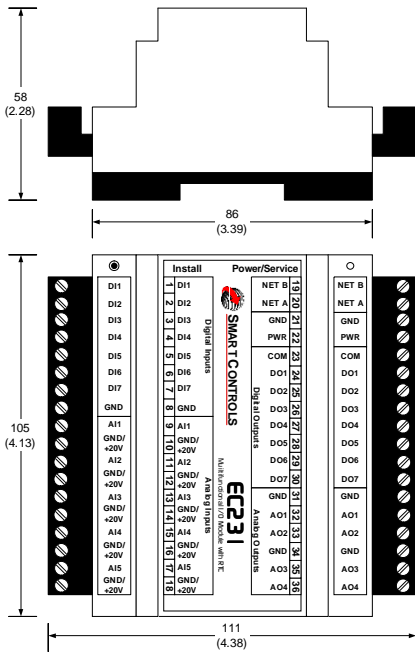- DIN-rail mounting
- Fully programmable

DESCRPTION

The Smart I/O™ EC231 programmable controller incorporates 23 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 EC231 has expanded data storage with additional FLASH, SRAM and EEPROM memory.

The I/O of the EC231 makes it perfect for a variety of equipment control applications. The wide temperature range, -20 to 70 ℃, makes the EC231 wi ll suited for indoor and outdoor use.

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

The even pins of the analog inputs can be configured to provide regulated 20 Vdc to provide power to transducers with current outputs for simplified interfacing. The 20 Vdc source is protected by an internal auto-resetable fuse.

The analog outputs can be used to control damper positions, valve or other variable position or speed devices. The AO's have 10 bits of resolution for selectable voltage or current output control.

The seven digital inputs can interface to a variety of devices such as alarms, switches, occupancy sensors and many other digital type application devices.

The digital relay outputs can be used to control HVAC outputs, small motors, valves, alarm outputs, lights, or other loads where the current does not exceed 1A at 24 Vac.

The EC231 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 complement of I/O allows numerous applications to be development and implemented with the EC231. 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 or other third party LONWORKS programming tools. The 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-EC231P-F

Standard Model (no options)

DIMENSIONS

58 (2.28)

86 (3.39)

105 (4.13)

111 (4.38)

Install | **Power/Service**

	Digital Inputs		
DI1	1 DI1	19 20	NET B
DI2	2 DI2	21 22	NET A
DI3	3 DI3		GND
DI4	4 DI4		PWR
DI5	5 DI5		COM
DI6	6 DI6	23 24	DO1
DI7	7 DI7	25 26	DO2

SMART CONTROLS
Multifunction I/O Module with RTC
EC231

Analog Inputs / Digital Outputs / Analog Outputs

SPECIFICATIONS

General
Communication: LONTALK™ Protocol
Transceiver: FTT-10A, Free Topology
Processor: Neuron 3150 @ 10MHz
Memory: 64Kbytes Flash (External)
2 Kbytes RAM (Neuron)
24K bytes SRAM (External)*
0.5K bytes EEPROM (Neuron)
8K bytes Serial EEPROM (Ext.)
Clock: Real Time Clock
Back up: Super Cap
Application: Fixed, non-programmable

Power
Nominal Input Voltage: 24 VAC/VDC
Input Voltage Range: 21-28 VAC or 21-39 VDC
Maxium Consumption: 6 VA, does not include
relay loading
Protection: +20V Outputs protected with
170mA auto-reset fuse

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

Warranty
Period: 2 Years (Limited)

Digital Inputs
Number: 7
Type: Dry Contact
Protection Circuitry: Transient Over voltage
ESD

Analog Inputs
Number: 5
Voltage: 0-5 Volts
0-10 Volts
Current: 0-20 mA
Thermistor: Type 2, 3: 10Kohms
(25°C,77°F)
Resolution: 12 bits
Accuracy: ±1% FS (25°C, 77°F)
Protection Circuitry: Transient Over voltage, ESD

Digital Outputs
Number: 7
Type: Relay (N.O.), 1 A @ 24 V
Voltage Sourcing

Analog Outputs
Number: 4
Voltage: 0-10 Volts
Current: 4-20 mA
Resolution: 10 bit
Accuracy: ±1% FS (25°C, 77°F)
Protection Circuitry: ESD

CONTACT

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AGENCY

CE FC

OPTION JUMPER SELECTIONS
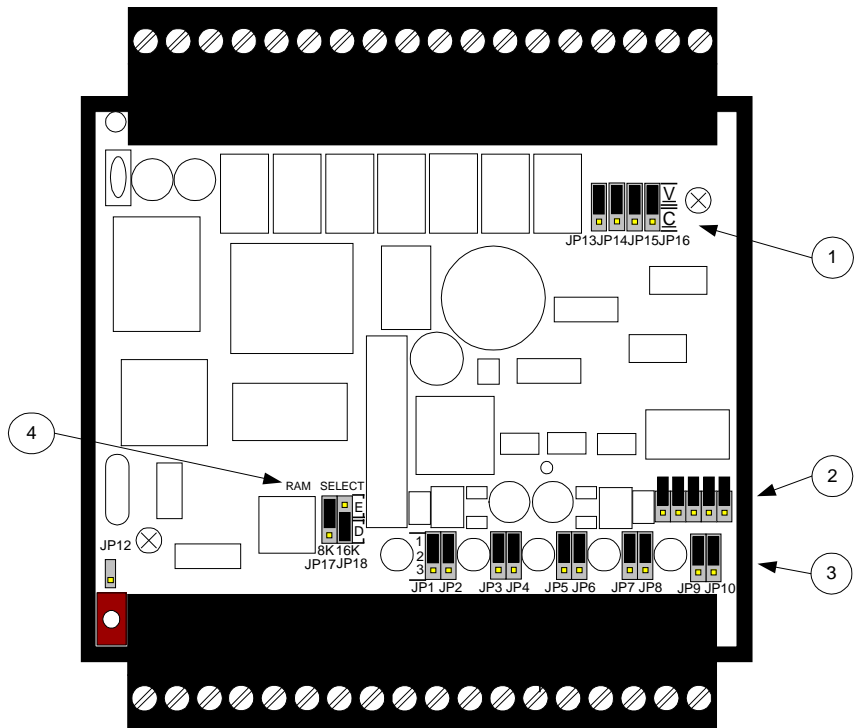
1- Output Selection
V – Voltage 0-10V
C – Current 0-20mA

2- 5V/10V Selection
Open – 0-5V Input
(hang on one pin)
Closed – 0-10V Input
(connect both pins)

Note: Set to 5V (open) for Resistance, Dry Contact and Current input sensing

3- Input Selection
Even Numbered Jumpers (JP2, JP4, JP6, JP8, JP10)
Open – Voltage Input
(0-5V, 0-10V)
1&2 – Resistance, Dry Contact
2&3 – Current
Odd Numbered Jumpers (JP1, JP3, JP5, JP7, JP9)
1&2 – Voltage, Resistance, Dry Contact
2&3 - Current

4- RAM Memory Selection*
E – Enable
D – Disable

Factory Default: 48K FLASH, 8K RAM

FLASH	RAM	16K(JP18)	8K(JP17)
56K	0K	D	D
48K	8K	D	E
40K	16K	E	D
32K	24K	E	E