Centurion™ Configurable Controller

C3™ Series

Main I/O Module

Display Module (Head)

Expansion I/O Module

Description

The C3 Series Centurion Configurable Controller is a control and monitoring system. Primary designed for engine driven compressors, the C3 Series is well suited for many control applications using standard configurations to save money and reduce training. Additionally, Murphy can custom design a control package to meet exact specifications for a variety of applications.

The Centurion controller continuously monitors input signals and set points and commands outputs to maintain proper operation. When an out-of-limits event occurs, the controller will stop, shutdown, or control equipment to change conditions. The Auto-Start capabilities of the C3 Series allows for start/stop based on parameters such as pressure set points or by digital signals.

The Centurion provides real-time data via communications ports to a connected display and/or supervisory system. This advanced system offers multiple options for remote communications and operation including HMI's, PLC's, PC's, and SCADA systems. The industry standard Modbus® protocol means greater support for a wide variety of communication equipment including radio and satellite communications systems.

Basic Components

The C3 Series consists of a Display Module, a Main I/O Module, and optional Expansion I/O Module. No special cables are required.

The C3 Series is designed for use within a weatherproof enclosure only.

– **Display Module (Head)**: C3-3: LCD Graphic Display.

– **Main I/O Module**: C3-1: 32 DI, 10 DO, 12 AI, 8 TC, 1 MPU.

                                   C3-1-A: Same as C3-1, plus two (2) AO.

– **Expansion Module**: C3-2: 8 AI, 8 TC, and 4 AO.

DI= Digital Input; DO= Digital Output; AI= Analog Input; AO= Analog Output; TC= Thermocouple Input
MPU= Magnetic Pick Up Input.

Features

- Fully-configurable control and monitoring system. Applications include recip. and screw compressors and pump systems.

- System is expandable to meet most 3-stage compressor applications.

- User configurable with Windows®-based software. Allows the operator to point-and-click to implement standard processes. All I/O points can be custom-programmed.

- No programming experience required.

- Local and remote communications, Modbus RTU via RS485/232.

- USB 1.1 support for laptops without a serial port.

- Approved Certification for Class I, Division 2, Groups B, C, & D Areas

- Last 20 Shutdown History List

- Event History (up to 32) List

- Active Alarm List

- 10 Maintenance Timers

- Run Hourmeter

- Support for No-flow Totalization

- 4 PID Loops w/ Override

C3 Series General Specifications

Power Input: 10 -32 VDC.
Operating Temp.: -40 to 85° C (-40 to 185°F).
Configuration: PC-based software MConfigPro.

MURPHY™

Line by Line

Gage

PID

C3-3 Display Module with Graphical LCD

- Operating temperature: -40 to +85°C (185°F).

- 128x64 pixels, LCD Display with Yellow Backlight.

- 12-key keypad for user interface for set point entry, alarm acknowledgement, start, stop, reset, etc.

- 2 Serial Ports - Software Configurable
  - Port 1 - Modbus Master RS232 or RS485
  - Port 2 - Modbus Slave RS232, RS485, or USB

- Customizable Process Screens
  - Line by Line
  - Gage
  - PID

USB Port

C3-1 Main I/O Module

- All I/O options individually software selectable. No jumpers required.

- 32 Optically-isolated DC Digital Inputs: NO or NC, (active high/active low), non-incendive.
  - LED indicators.
  - Approved for use with general purpose switches in hazardous areas.

- 12 Analog Inputs: 4-20mA or 0-5V, 10 bit hardware.

- 8 Thermocouple Inputs: Type J or K, 12 bit hardware.
  - Open Thermocouple Detection: Drives channel reading high (max of scale).
  - Cold Junction Compensation.

- 1 Magnetic Pickup Input/AC Run Signal: 30 to 10kHz, 5VAC rms min, 120VAC rms max.

- 10 Digital Outputs:
  - LED indicators
  - Four (4) relay outputs, form C, dry contacts.
  - Four (4) FET outputs (source).
  - Two (2) IGBT outputs (sink).

- 2 Analog Outputs (C3-1-A Only)
  - 4-20mA, 16 bit hardware.

- 3 Communication Ports:

  Port 1: Interface: RS232 or RS485.
  - Protocol: Modbus RTU (Slave)

  Port 2 (SERIAL):
  - Interface: RS232 or RS485.
  - Protocol: Modbus RTU (Slave), Proprietary (Configuration Transfer)

  Port 2 (USB): Interface: USB 1.1 Compliant Port emulating RS232 communications via PC driver.
  - Protocol/Services: Modbus RTU (Slave), Proprietary (Configuration Transfer)
  - Connection: USB Type B connector
  - Automatic selection of USB when a signal is detected on the USB Type B connector.

  Port 3: Interface: CAN
  - Protocol/Services: Proprietary communications for Expansion I/O Module support.
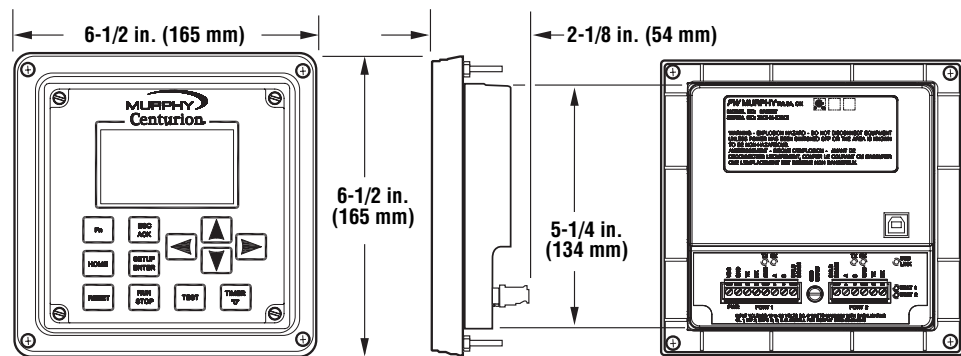
C3-2 Expansion I/O Module

- All I/O options individually software selectable. No jumpers required.
- 8 Analog Input: 4-20mA or 0-5V, 12 bit hardware.
- 8 Thermocouple Inputs: Type J or K, 12 bit hardware.
  - Open Thermocouple Detection: Drives channel reading high (max of scale).
  - Cold Junction Compensation.
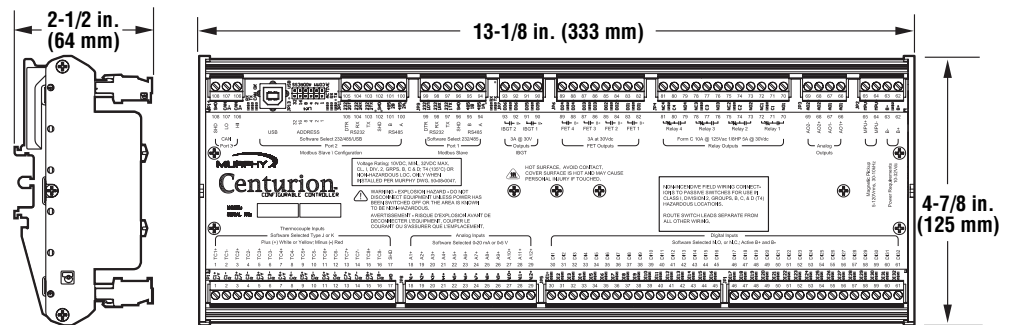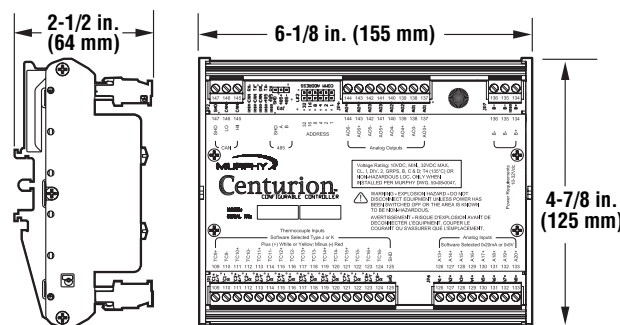- 4 Analog Outputs: 4-20mA, 16 bit hardware.

Dimensions

C3-3

6-1/2 in. (165 mm)

2-1/8 in. (54 mm)

6-1/2 in. (165 mm)

5-1/4 in. (134 mm)

C3-1

2-1/2 in. (64 mm)

13-1/8 in. (333 mm)

4-7/8 in. (125 mm)

C3-2

2-1/2 in. (64 mm)

6-1/8 in. (155 mm)

4-7/8 in. (125 mm)

How To Order

Selecting a Centurion Configurable Controller C3 Series Model:

1. Specify one **C3-1** Main I/O Module from **Table A**
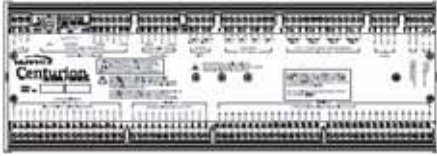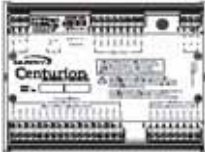
Main I/O Module
Model: C3-1

Table A: C3-1 Main module Options	
Model	Specifications
C3-1	no analog outputs
C3-1-A	two analog outputs

2. Specify one (*optional*) **C3-2** Expansion I/O Module

Expansion I/O Module
Model: C3-2
(*optional*)

3. Specify one (*optional*) **C3-3** Display Module

Display Module
Model: C3-3
(*optional*)

The minimum system requirements:
C3-1 Main I/O Module
Display capable of Modbus communications

The Murphy **C3-3** Display Module is a highly integrated HMI for use with the C3 Series system and is recommended for most customers.

Some systems may require additional I/O which is available on the **C3-2** Expansion I/O Module.*

* Only one C3-2 Expansion I/O Module can be used with each C3 System.

Accessories

Configuration Software

MConfig Pro - Configuration software for modifying sequence of operation, set points, timers, faults, and *displays for Centurion. Includes file transfer utilities for configuration and firmware upgrades.

* Display configuration and other settings for display are only for use with the C3-3 Display Module

Replacement Parts and Assemblies

C3-1 Plug Kit **(00000504)** Printed Replacement Terminal Plugs for Centurion (C3-1) Main I/O Module
C3-2 Plug Kit **(00000505)** Printed Replacement Terminal Plugs for Centurion (C3-2) Expansion I/O Module
C3-3 Plug Kit **(00000543)** Printed Replacement Terminal Plugs for Centurion (C3-3) Display Module
Choke **(50000774)** Ignition Noise (Choke) Filter

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