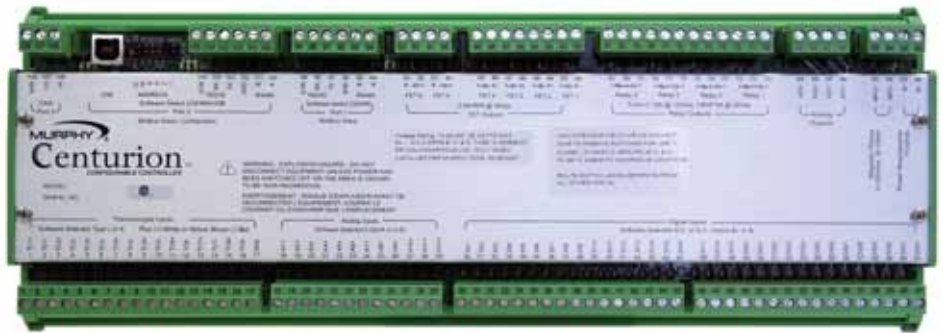# Centurion™ Configurable Controller – C4 Series

Display Module (Head)

Main I/O Module

The C4 Series Centurion Configurable Controller is a control and monitoring system. Primarily designed for engine/electric motor driven compressors, the Centurion 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 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 Centurion allows for start/stop based on parameters such as pressure setpoints or by digital signals.

The Centurion provides real-time data via communication 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® RTU protocol means greater support for a wide variety of communication equipment including radio and satellite communications systems.

Features

- Fully-configurable control and monitoring system. Applications include reciprocating / 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-configured.
- No programming experience required.
- Local and remote communications, Modbus RTU via RS485/232.
- USB 1.1 support for laptops without a serial port.
- Upload / Download capabilites for configuratons and setpoints.
- Approved Certification for Class I, Division 2, Groups B, C, & D areas

- Shutdown History List (Last 20 events)
- Event History List (Last 32 events)
- Active Alarm List
- 10 Maintenance Timers
- Run Hourmeter
- Support for No-flow Totalization
- Number of starts per hour (Electric Motor)
- 6 PID Loops w/ Override (up to 3 each)
- Configuration Templates provided for simple user configuration.
- Configurations stored in non-volatile flash memory.
- Setpoints stored in non-volatile eeprom memory.

Basic Components

The Centurion consists of a Display Module, a Main I/O Module, and optional Expansion I/O Module. No special cables are required. The Centurion is designed for use within a weatherproof enclosure only.

– Display Module (Head): C4-3: LCD Graphic Display.
– Main I/O Module: C4-1-A: 32 DI, 10 DO, 12 AI, 8 TC, 2 AO, 1 MPU.
– Expansion Module: MX4: 18 TC (Type J or K). MX5-A: 6 DO, 8 AI, 4 AO, 1 MPU.

DI= Digital Input; DO= Digital Output; AI= Analog Input; AO= Analog Output;
TC= Thermocouple Input; MPU= Magnetic Pick Up Input.
RTD= Resistive Temperature Device
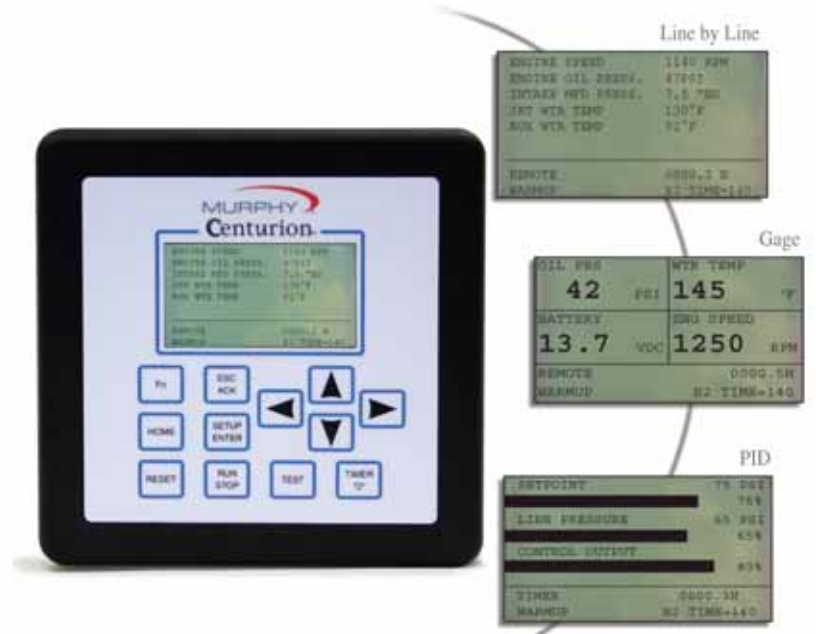
C4 Series General Specifications

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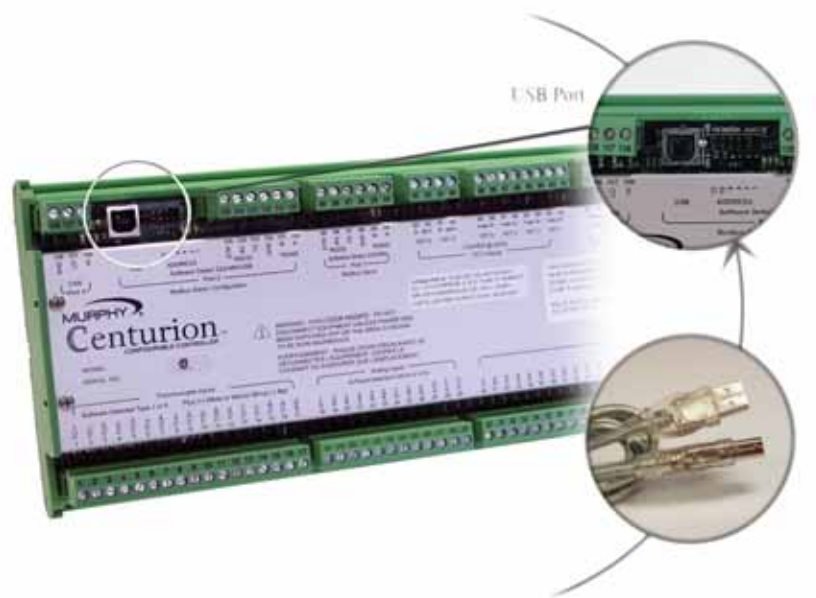**Configuration:** PC-based Centurion Configuration Software.

C4-3 Display Module with Graphical LCD

- Operating temperature: -40 to +85°C (185°F).
- 128x64 pixels, LCD Display with Green 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 (future)
- Customizable Process Screens (up to 9)
  - Line by Line
  - Gauge
  - Control Loop
  - Generic Register

C4-1-A 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: 0-24mA or 0-5VDC , 10 bit hardware.
- 8 Thermocouples
  - Open Thermocouple
  - Cold Junction Compensation.
- 1 Magnetic Pickup Input/AC Run Signal: 30 to 10kHz, 4.5VAC 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) FET outputs (sink).
- 2 Analog Outputs
  - 4-20mA, 16 bit hardware.

- 3 Communication Ports:
  Port 1 (SERIAL):
  - 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: CANBUS
- Protocol/Services: Proprietary communications for Expansion I/O Module support.

Expansion I/O Modules

MX4 Expansion I/O Module

- All I/O options individually software selectable. No Jumpers required.
- 18 Thermocouple Inputs: Type J or K, 12 bit hardware.
  - Open Thermocouple Detection: Drives channel reading high (max of scale).
  - Cold Junction Compensation.
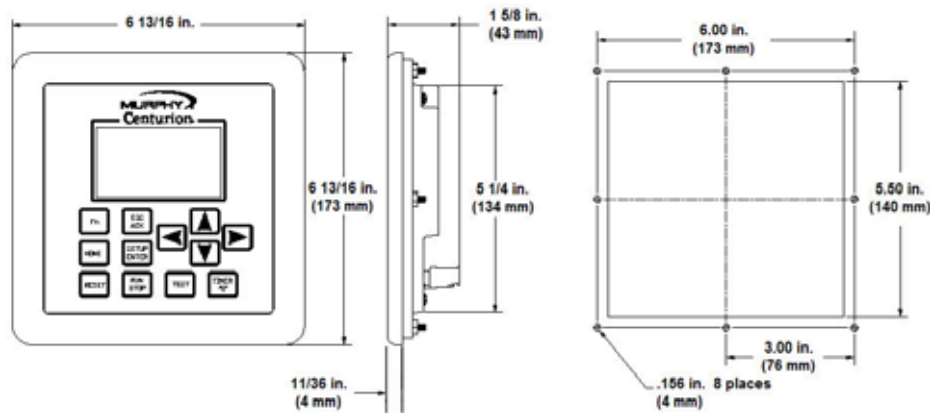- 1 Magnetic Pickup Input: 4.5VAC – 120 VAC, 30 – 10kHz.

MX5-A Expansion I/O Module

- 8 Analog Inputs: 0-24mA, or 0-5VDC, 10 bit hardware.
- 6 Digital Outputs: Open Collector Transistor, 150mA (sink)
- 4 Analog Outputs: 4-20mA, 16 bit hardware.
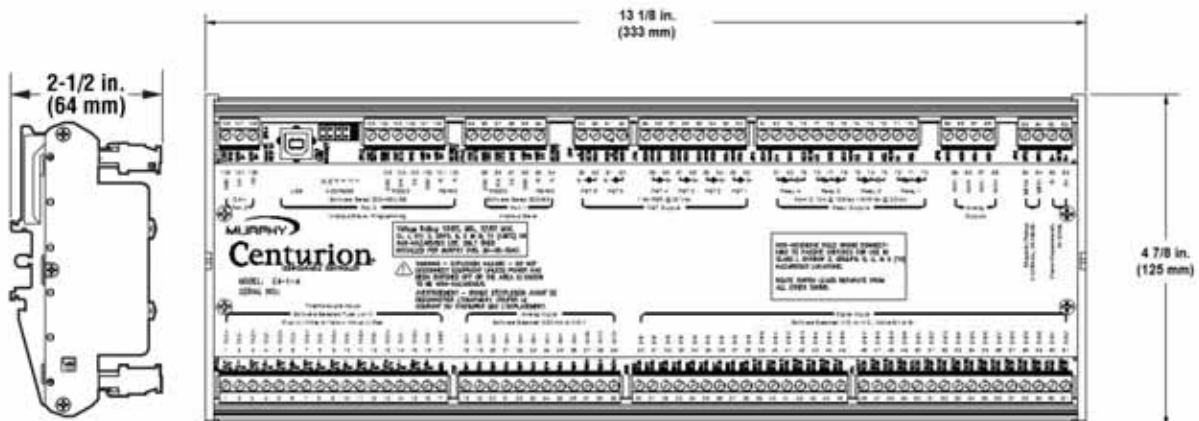- 1 Magnetic Pickup Input: 4.5VAC – 120 VAC, 30 – 10kHz.

Dimensions

C4-3

C4-1-A

How To Order

Selecting a Centurion Configurable Controller C4 Series Model:

1. Specify **C4-1-A** Main I/O Module

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

**MX4
or
MX5-A**

3. Specify one (optional) **C4-3** Display Module

The minimum system requirements:
C4-1-A Main I/O Module
Display capable of Modbus communications

The Murphy **C4-3** Display Module is a highly integrated HMI for use with the Centurion system and is recommended for most customers.

Some systems may require additional I/O which is available on the MX4 or MX5-A Expansion I/O Modules..[*]

Accessories

Configuration Software

MurphyNET Configuration Suite - Centurion configuration tool for modifying sequence of operation, set points, timers, faults, and [*]displays for Centurion. Includes file transfer utilities for configuration and firmware upgrades.

Replacement Parts and Accessories

C4-1-A Plug Kit	**(00000504)**	Printed Replacement Terminal Plugs for Centurion (C4-1-A) Main I/O Module
C4-3 Plug Kit	**(00000543)**	Printed Replacement Terminal Plugs for Centurion (C4-3) Display Module
Choke	**(50000774)**	Ignition Noise (Choke) Filter
MX4 Plug Kit	**(00030867)**	Printed Replacement Terminal Plugs for MX4 Expansion I/O Module
MX5 Plug Kit	**(00030868)**	Printed Replacement Terminal Plugs for MX5 Expansion I/O Module
Centurion Configuration Tool	**(50702313)**	Configuration tool for user application setup

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[*] Display configuration and other settings for display are only for use with the C4-3 Display Module.