

MURPHY[®]

by **ENOVATION** CONTROLS



PowerCore[®]
Model MPC-20
Installation Manual



*Approved by CSA for non-hazardous locations (Group Safety Publication IEC 61010-1 Third Edition).

Products covered in this document comply with European Council electromagnetic compatibility directive 2004/108/EC and electrical safety directive 2006/95/EC.

00-02-0897
2018-06-25
Section 40

In order to consistently bring you the highest quality, full-featured products, we reserve the right to change our specifications and designs at any time. The latest version of this manual can be found at novationcontrols.com.

Warranty - A limited warranty on materials and workmanship is given with this Murphy product. A copy of the warranty may be viewed or printed by going to www.novationcontrols.com/warranty



BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT:

- Read and follow all installation instructions.
- Visually inspect this product before installation for any damage during shipping.
- Disconnect all electrical power to the machine. Failure to do this before welding can result in damage to the panel and/or its components.
- It is your responsibility to have a qualified technician install the unit and make sure the installation conforms to local codes including but not limited to double insulation and fire containment.
- Observe all Warnings and Cautions in each section of these instructions.
- The MPC-20 is designed for use in industrial environments for monitoring and control which include engine driven pumps, compressors, grinders, chippers, & rock crushers. Potential difficulties may exist when ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

Contact Enovation Controls Technical Service if you have any questions or concerns at: +1 918-317-4100.

IMPORTANT! Improper use and operation of electronic products can be dangerous. It is required that point-of-operation guarding devices be installed and maintained. All such devices must meet OSHA and ANSI Machine safety standards. The manufacturer shall not accept any responsibility for installation, application, or safety of systems.

Table of Contents

Operations Manual Location	1
Hardware Installation	1
Inspecting Package Contents	1
Tools Needed	1
Installation	2
Dimensions for Installation	4
Wiring Instructions	6
PIN Specifications for FCI Connection	6
Connector	7
Accessories	8
Specifications	9
Electrical	9
Environmental	10
Mechanical	10
Mounting Template	11
Panel Opening Cutout	11

-NOTES-



LENS CLEANING PROCEDURES



The lens on the MPC-20 is composed of Polycarbonate materials. Use only mild soap and water to clean the lens/display window. Evidence of improper cleaning techniques or chemicals includes cracks, smear marks, scratches, or fogged/hazy lenses.

Operations Manual Location

After installation, please review the MPC-20 Operations Manual prior to placing the controller into service. In order to access the MPC-20 Operation Manual please visit:
Support.enovationcontrols.com
and then search for MPC-20

Hardware Installation

The following instructions will guide you through installing the MPC-20 controller.

Inspecting Package Contents

Before attempting to install the product, it is recommended that you ensure all parts are accounted for and inspect each item for damage (which sometimes occurs during shipping). The items included in the box are:

MPC-20 Controller kit – P/N 40-70-0490 includes:

- MPC-20 Controller
- 4 (6-32) mounting screws
- 4 (#6) lock washers
- P/N 00-02-0897 MPC-20 Installation Manual

Tools Needed

Use a 1/4" drill bit to make the approximately sized 0.250" mounting holes.

Installation

Preparing the Enclosed Panel

Determine the location of the MPC-20 on the customer-supplied flat or enclosed panel. The suitability of the enclosure is subject to investigation by the local authority having jurisdiction at the time of the installation.

Use the Installation Template measurements (included at the end of the manual) as a guideline to cut a hole to the specified dimensions. Drill holes where indicated on the template for the mounting screws. Please read IMPORTANT note below:



IMPORTANT: When using the paper template from the manual, please be aware that the drawing is not represented to scale. The measurements provided are accurate, and should be referred to when preparing the placement of the unit.

Once the holes are cut, check to make sure that there is adequate clearance for the edges of the MPC-20 housing to mount flush against the outside surface of your panel.

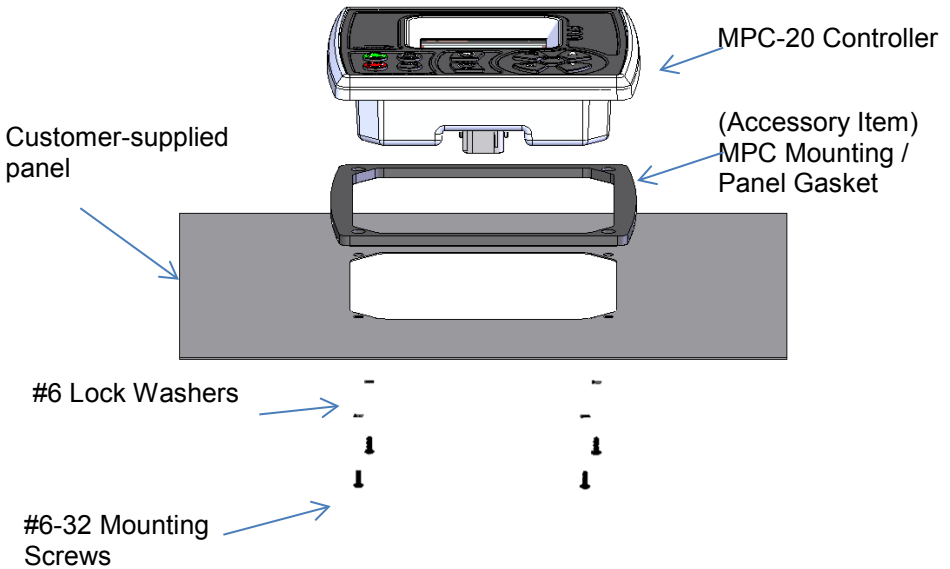
Recommended torque for tightening the mounting screws is 7.5-inch pounds. Although not required, only Blue polycarbonate compatible thread lock should be used for the MPC-20 mounting screws if thread lock is desired.

Insert the MPC-20 controller from the front side of the panel and install the four mounting screws and lock washers. Ensure that there is a good seal between the controller, the gasket (if used) and the mounting panel. Plan the MPC-20 mounting for easy wiring and access.

Installing the Display

Place the back side of the display through the opening in the panel.

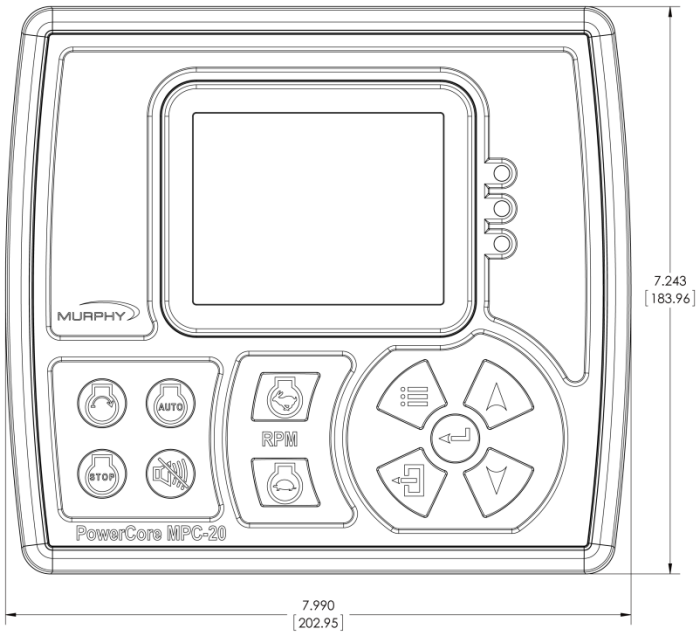
1. Use the 4 screws to line up the unit with the drilled holes.
2. Ensure that the back of the case is flush.
3. Use the screws provided to tighten unit to the panel. Use the appropriate wrench or socket to tighten. Torque screws to 7.5 inch pounds.



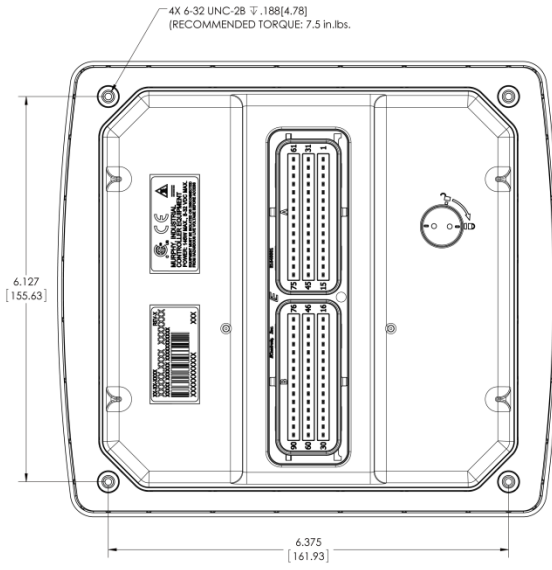
Dimensions for Installation

Front

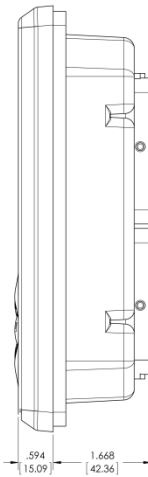
Inches
[mm]



Back



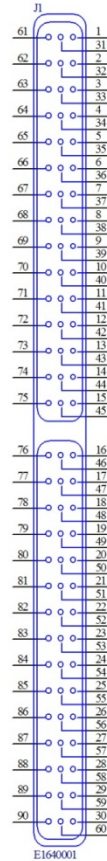
Side View



Wiring Instructions

PIN Specifications for FCI Connection

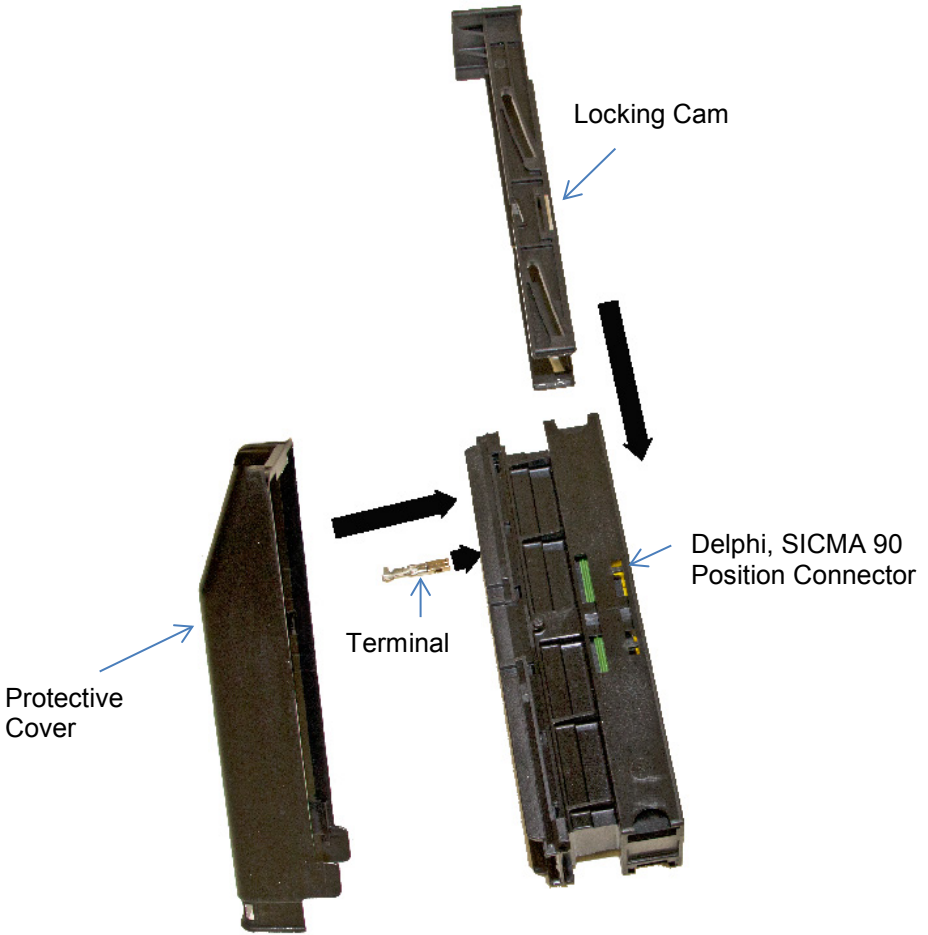
Pin #	Pin Assignments	Pin #	Pin Assignments	Pin #	Pin Assignments
1	SW_BATT	31	BATT	61	BATT
2	GND	32	GND	62	GND
3	AN1_IN	33	DIG_IN1	63	DIG_IN2
4	AN2_IN	34	DIG_IN3	64	DIG_IN4
5	AN3_IN	35	DIG_IN5	65	DIG_IN6
6	AN4_IN	36	Reserved	66	HS_2A_OUT_1
7	AN5_IN	37	Reserved	67	HS_2A_OUT_2
8	AN6_IN	38	Reserved	68	Reserved
9	AN7_IN	39	Reserved	69	FREQ_IN
10	AN8_IN	40	AN_OUT	70	GND
11	Reserved	41	Reserved	71	Reserved
12	RS485_L	42	Reserved	72	CAN1L
13	RS485_H	43	Reserved	73	CAN1H
14	ETH_TD_P	44	ETH_TD_N	74	CAN2L
15	ETH_RD_P	45	ETH_RD_N	75	CAN2H
16	USB_DP_OUT	46	USB_DM_OUT	76	USB1_VBUS
17	USB_GND	47	USB_SHLD	77	USB_ID_OUT
18	RLY4_NC	48	Reserved	78	RLY1_NC
19	RLY4_COM	49	Reserved	79	RLY1_COM
20	RLY4_NO	50	Reserved	80	RLY1_NO
21	Reserved	51	Reserved	81	Reserved
22	RLY5_NC	52	Reserved	82	RLY2_NC
23	RLY5_COM	53	Reserved	83	RLY2_COM
24	RLY5_NO	54	Reserved	84	RLY2_NO
25	Reserved	55	Reserved	85	Reserved
26	RLY6_NC	56	Reserved	86	RLY3_NC
27	RLY6_COM	57	Reserved	87	RLY3_COM
28	RLY6_NO	58	Reserved	88	RLY3_NO
29	LS_1A_OUT_1	59	Reserved	89	HS_5V_OUT_1
30	LS_1A_OUT_2	60	Reserved	90	HS_5V_OUT_2



Wiring of this device must meet all applicable electrical codes.

Battery lines to the unit must all come through a single 10 Amp or less fuse or circuit breaker to retain the controller's CSA rating.

Connector



Accessories

Component	Part #
PowerCore 90 Position Conn Kit	40-70-0496
PowerCore 90 Position Conn Whip Harness 3'	40-00-0554
IP66 Panel Gasket	40-05-1031

Specifications

Electrical

Display: 3.8" Monochrome, Transflective, White Backlight LCD

Operating Voltage: 8-32 VDC, protected against reverse battery polarity and load-dump

Power Consumption: 18W max without 2 2A High-sides active, 146W max with 2 2A High-sides active

Communications

2-CAN: J1939

USB: 2.0B (Only supported for programming)

Ethernet: (Not supported in initial release)

RS485: Modbus RTU

Connection: Delphi SICMA 90 way connector, 1.5mm

Keyboard: 11 tactile feedback buttons

Inputs

6-Digital Inputs: high/low

8-Analog Inputs: configurable (4-20mA, 0-5V, resistive)

1-Frequency Input: supporting Magnetic Pickup or Engine Alternator
(2 Hz – 10 KHz, 3.6 VAC – 120 VAC)

Outputs

6-Relays: 10A, SPDT, Form C (30 VDC @ 10A or 125 VAC @ 10A max.), 40A maximum aggregate @ 85C

2-Low-side Outputs: 1A

2-High-side Outputs: 2A

2-5V Outputs: 200mA (to drive external relays)

1-Analog Output: 0-5V

Real-time clock: with battery backup

Environmental

Operating Temperature: -40°C to +85°C

Storage Temperature: -40°C to +85°C

Protection: IP67 front and back, when using accessory gasket and properly mounted the panel seal retains IP66.

Emissions: SAE J1113

Immunity: SAE J1113

Vibration: Random vibration, 7.86 Grms (5-2000 Hz), 3 axis

Shock: ± 50G in axis

Mechanical

Case Material: Polycarbonate/ABS

Keypad/Gasket Material: Silicone

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