OctoPlex™

SEATELLIGENT™

Monitoring & Control Systems
for Cruisers to Superyachts

Moritz Aerospace
A Carling Technologies Company

Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com

Contents

OctoPlex System Overview

The Moritz Aerospace OctoPlex System remotely controls and monitors all AC and DC power distribution and is capable of providing complete vessel status using a standard NMEA 2000 network.

Reliability and safety is achieved by utilizing two NMEA 2000 networks in parallel with all OctoPlex hardware, independently communicating on both databuses, offering complete redundancy and elimination of single point failures.

Ease of installation and wiring is accomplished with the use of NMEA 2000 network controlled AC and DC circuit breakers, making it possible to locate circuit breaker panels in close proximity to their respective loads.

Configurable displays allow for control and monitoring of the OctoPlex System via the NMEA 2000 network in multiple locations throughout the vessel.

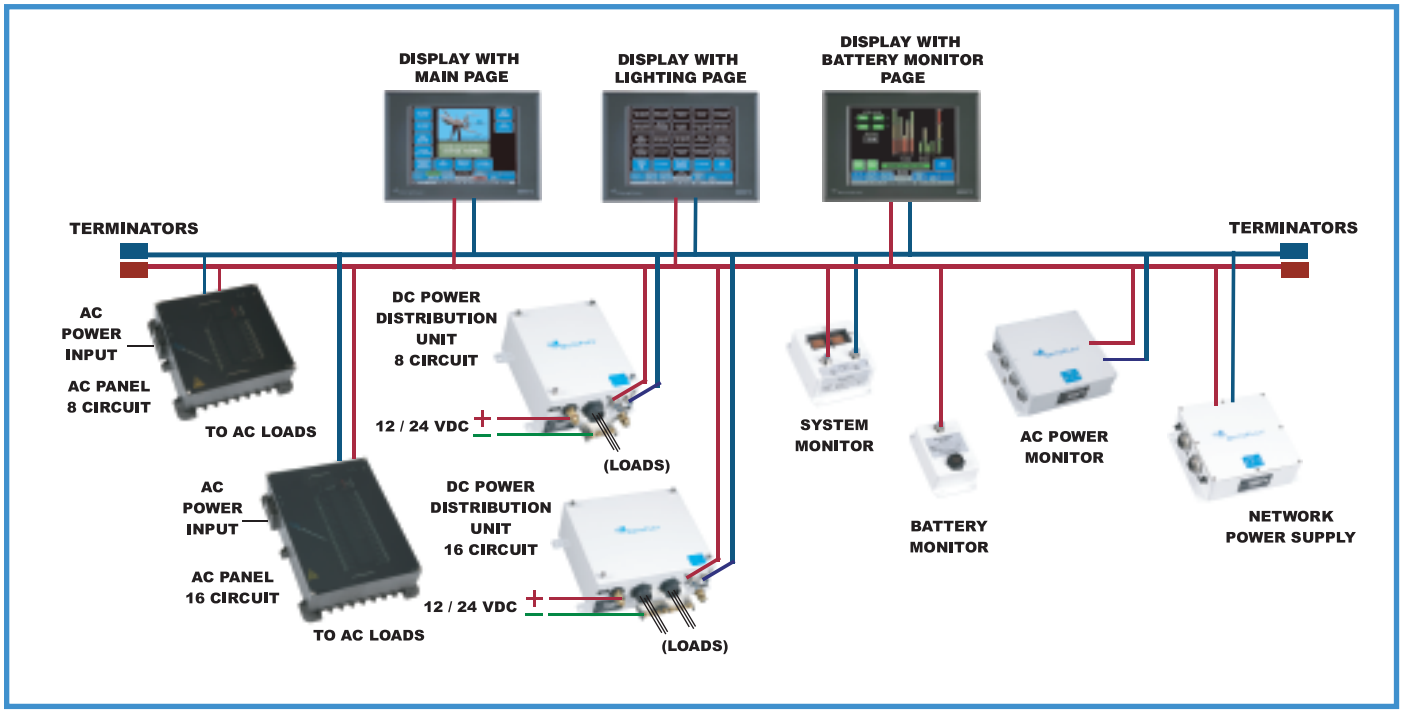
Extensive monitoring capabilities are available and future upgrades to the functionality of the system are facilitated by the use of the NMEA 2000 standard for all network communication.

Features of the system include:

- Remote activation, control, and status of all AC and DC circuit breakers
- Enhanced DC circuit breaker functionality including no-load indication, dimming and current usage
- Extensive monitoring capabilities, including bilge areas, tank levels, battery status, engine and generator status, AC source status, user defined alarms, etc.
- Fully configurable displays
- Configurable brownout functionality
- Configurable loadshedding functionality
- Redundant databuses and hardware interfaces eliminating single point failures
- Simplified vessel wiring and reduced installation costs
- Standard NMEA 2000 network allowing for 3rd party hardware additions and upgrades

Components of the system include:

- AC Power Distribution Boxes (16 and 8 position)
- DC Power Distribution Boxes (16 and 8 position)
- Electronic Circuit Breakers (ECB's)
- System Monitor (Sensor Interface Unit, SIU)
- Battery Monitor
- AC Power Monitor
- Network Power Supply
- Touch Screen Display



AC Power Distribution Box (16 and 8 position)

AC Power Distribution Boxes provide AC circuit protection and distribution. A single AC power source is distributed to the branch circuits. 16 and 8 position versions are available.

In both versions, a main circuit breaker is provided for shut-off of all 16 or 8 branch circuits within the box. The AC Power Distribution Box can accommodate single, dual, or three phase AC power.

Hydraulic-magnetic circuit breakers are used for the main breakers as well as the 16 or 8 branch circuits. Solenoids are employed to allow remote control of all breakers through the NMEA 2000 network. All breakers can be operated manually in addition to network control.

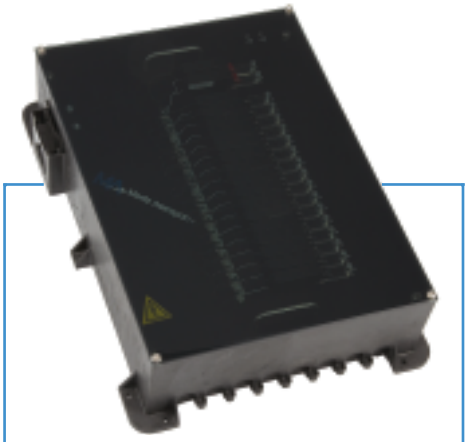
The AC Power Distribution Box uses redundant connections to the NMEA 2000 network for control and monitoring functions. Links to the network are made with Micro-C connectors specified by the NMEA 2000 standard.

Features:

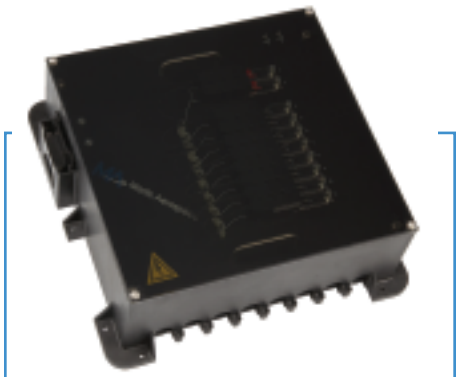
- Full control and monitoring via all OctoPlex Touchscreen Displays employed in system
- Two connections to NMEA 2000 network for redundancy
- Capable of automatic Loadshedding and Brownout functions employed by OctoPlex
- Capable of line voltages up to 240 VAC
- Single, double, or three pole main circuit breaker (maximum of 100 Amps)
- Single, double, or three pole branch circuit breakers in any combination
- Connection points for line, neutral, and ground conductors for all branch and main circuits
- Manual operation of all breakers in addition to network control
- Hydraulic-magnetic circuit breaker operating temperature range allows for installation in any location, including engine rooms

Specifications:

Approximate Weight:	19.7 LBS (16-position) 16.4 LBS (8-position)
Operating Temperature:	-20°C to 70°C
Storage Temperature:	-55°C to 85°C
Operating Voltage:	up to 240 VAC
Approximate Dimensions:	4.85”Hx21.26”Lx15.76”W (16-position) 4.85”Hx15.22”Lx15.22”W (8-position)

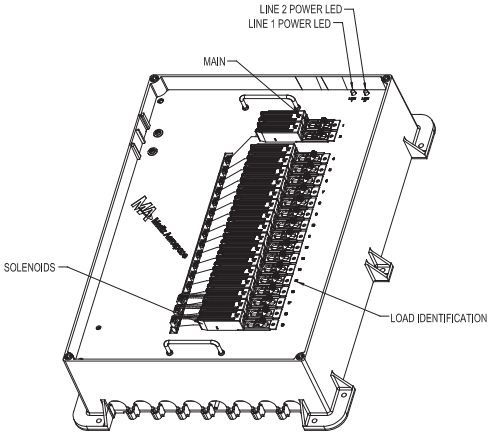


16-Position
AC Power Distribution Box

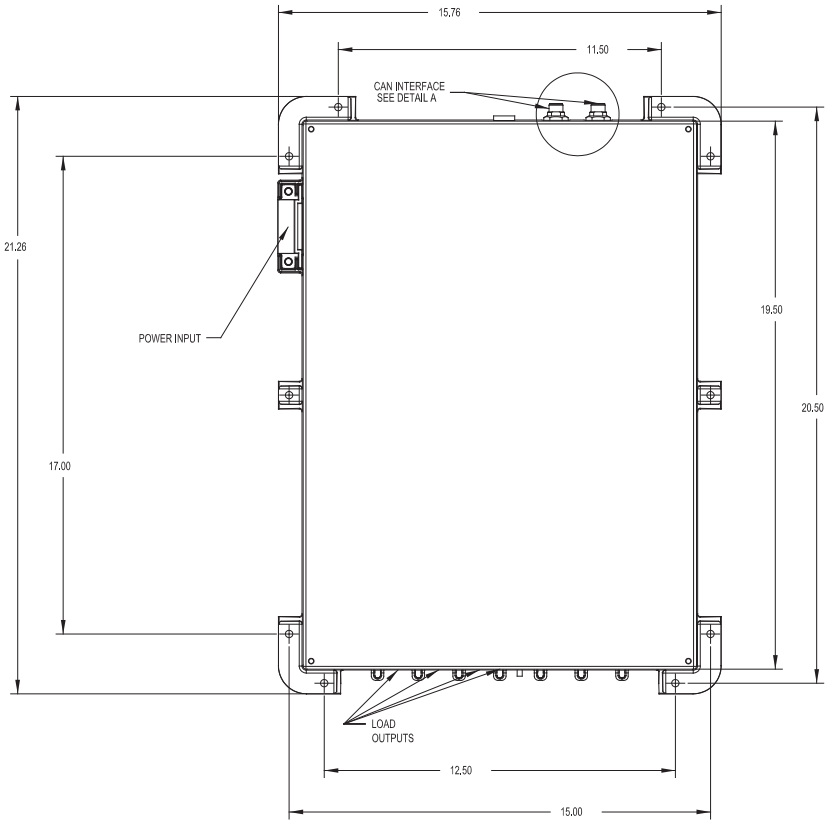


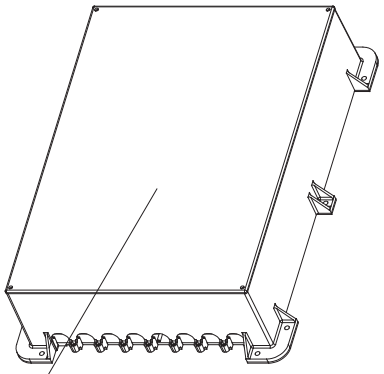
8-Position
AC Power Distribution Box

AC Power Distribution Box
Dimensional Specifications (16 position)

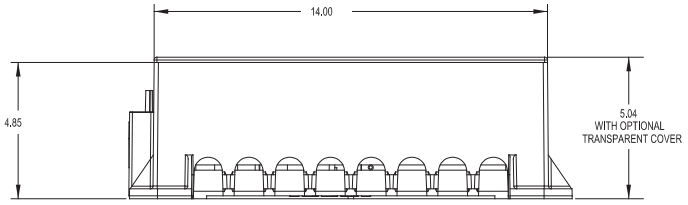


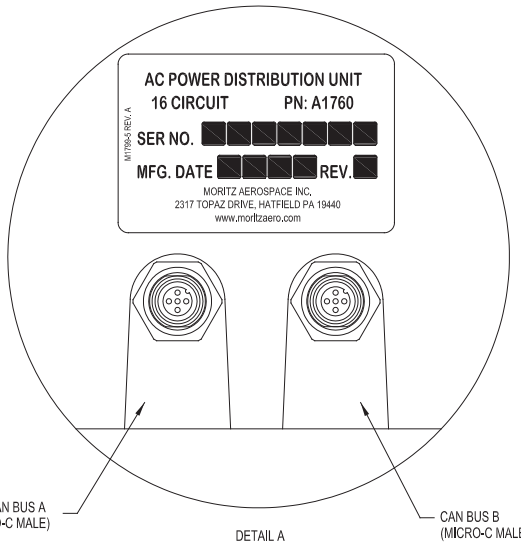
AC PANEL SHOWN WITH
STANDARD ALUMINIUM COVER
AND SOLENOID ACTUATORS





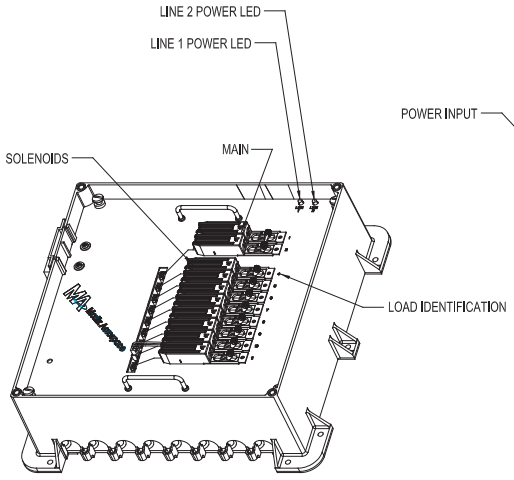
AC PANEL SHOWN WITH
OPTIONAL TRANSPARENT COVER



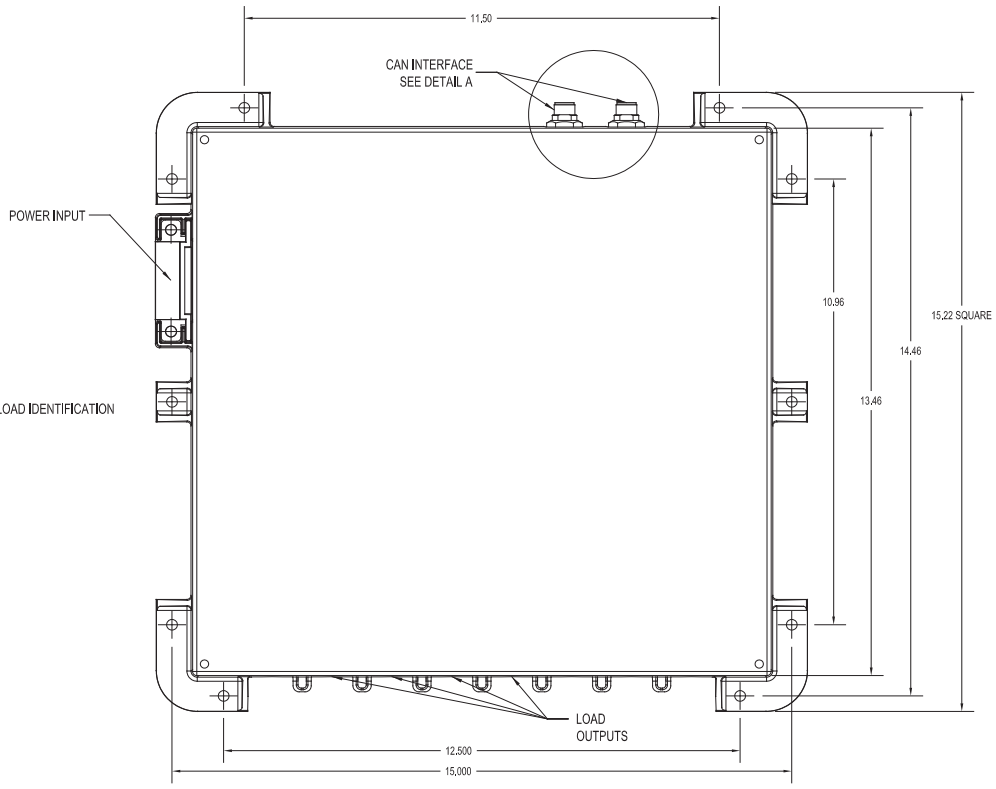


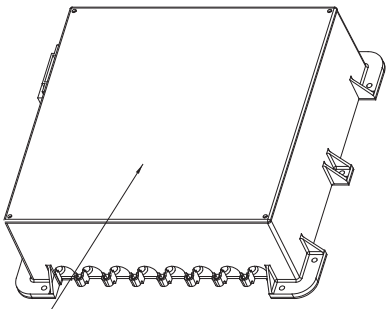
DETAIL A

AC Power Distribution Box
Dimensional Specifications (8 position)

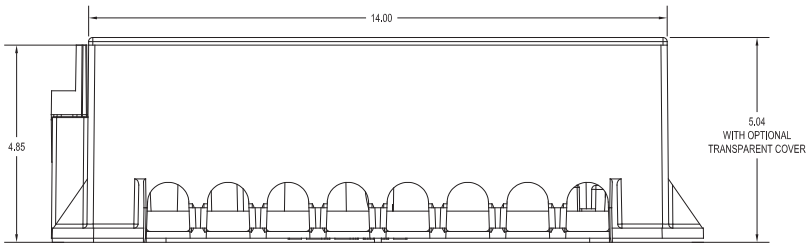


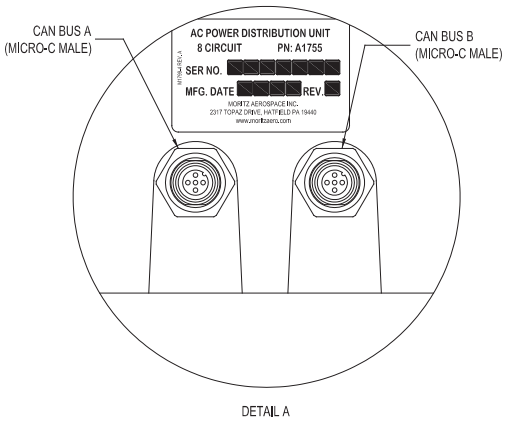
8 CIRCUIT AC PANEL SHOWN WITH
STANDARD ALUMINIUM COVER
AND SOLENOID ACTUATORS





8 CIRCUIT AC PANEL SHOWN WITH
OPTIONAL TRANSPARENT COVER





DETAIL A

DC Power Distribution Box (16 and 8 position)

DC Power Distribution Boxes provide DC circuit protection and distribution. A single DC power source is distributed to the branch circuits. 16 and 8 position versions are available.

In both versions, a traditional 100 Amp main circuit breaker is provided for shutoff of all 16 or 8 branch circuits within the box. Electronic Circuit Breakers (ECB's) are employed for branch circuit control and protection.

All 16 or 8 branch circuit ECB's can be controlled, monitored, and configured through the NMEA 2000 network. A manual override is provided for all breakers within the box in addition to network control.

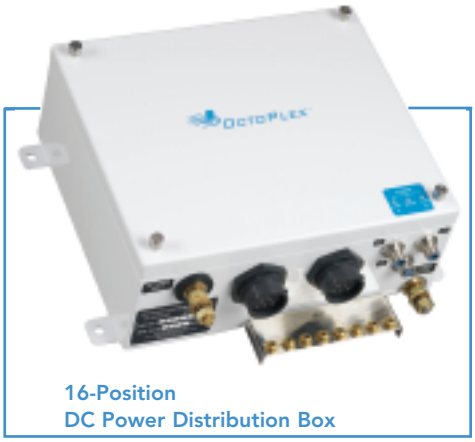
The DC Power Distribution Box uses redundant connections to the NMEA 2000 network for control, monitoring, and configuration functions. Links to the network are made with Micro-C connectors specified by the NMEA 2000 standard.

Features:

- Full control, monitoring, and configuration via all OctoPlex Touchscreen Displays employed in system
- Two connections to NMEA 2000 network for redundancy
- 12 or 24 VDC operation
- Traditional 100 Amp main breaker
- Branch circuit ECB's configurable up to 30 Amps
- All ECB's are identical and individually replaceable
- All 16 or 8 positions/ECB's have dimming capability, controlled by discrete inputs or OctoPlex Touchscreen Displays
- Replaceable fuses in series with ECB's provide redundancy and added safety measure for all branch circuits
- Manual operation of all breakers in addition to network control
- ECB operating temperature range allows for installation in any location, including engine rooms

Specifications:

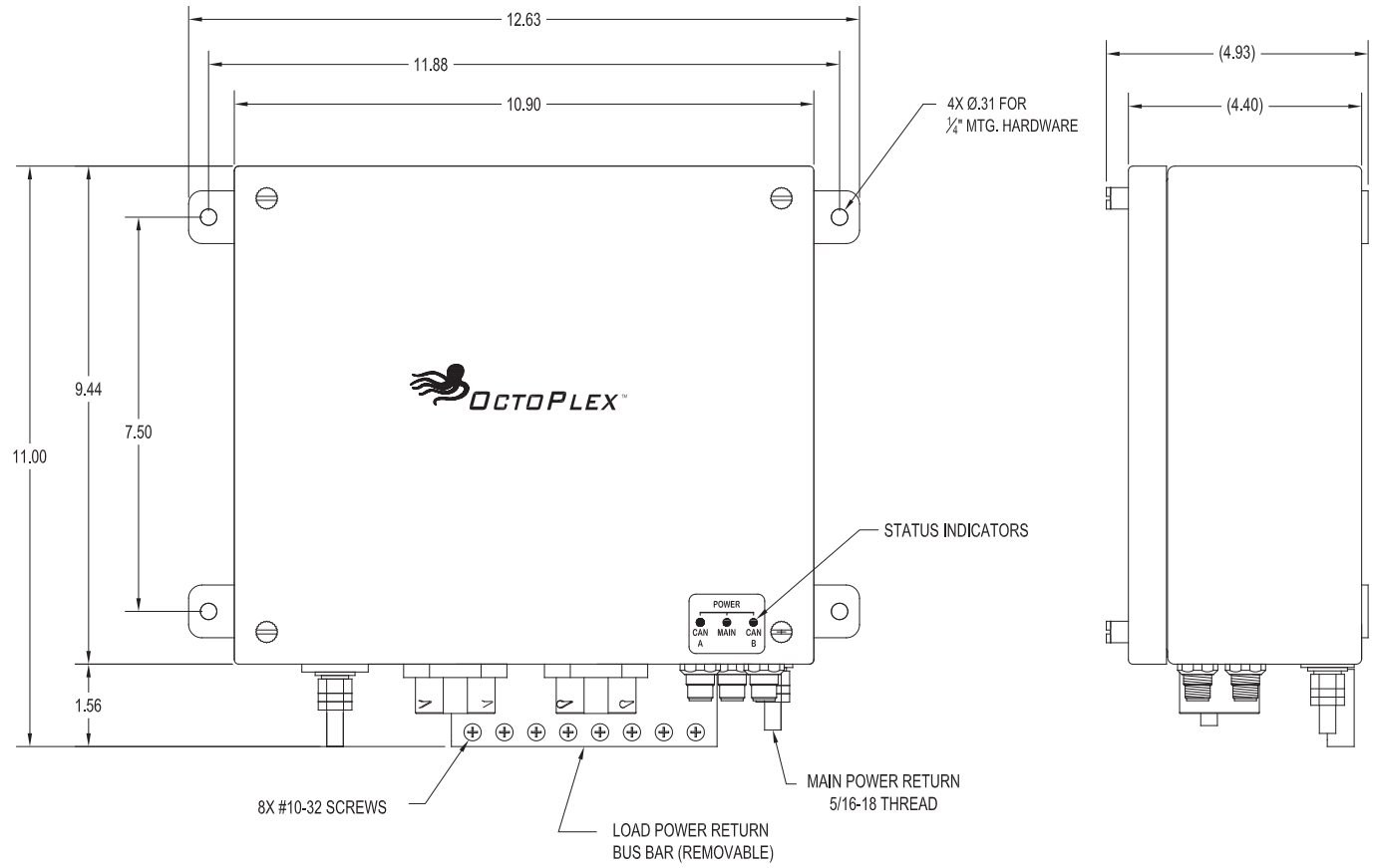
Approximate Weight:	6.1 LBS (16-position) 4.3 LBS (8-position)
Operating Temperature:	-20°C to 70°C
Storage Temperature:	-55°C to 85°C
Operating Voltage:	12 or 24 VDC
Approximate Dimensions:	4.4" H x 11.0" L x 12.63 " W (16-position) 4.4" H x 11.0" L x 9.5" W (8-position)

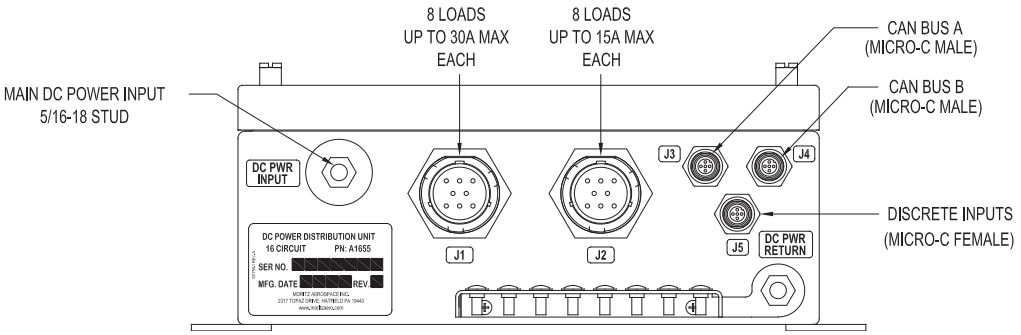


16-Position
DC Power Distribution Box

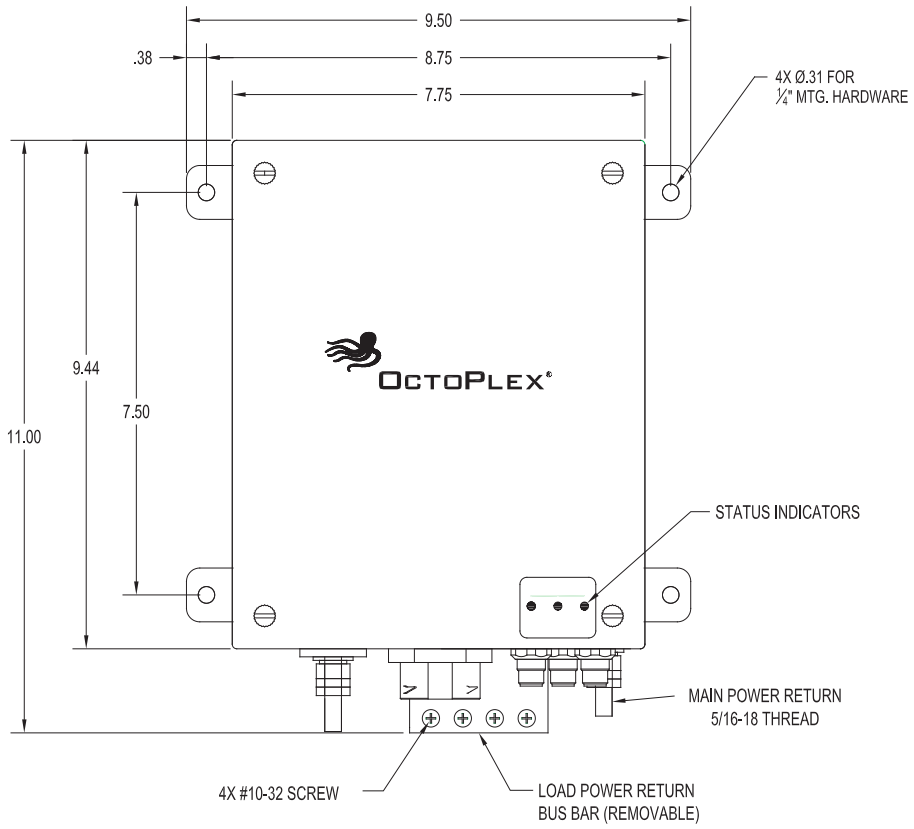
8-Position
DC Power Distribution Box

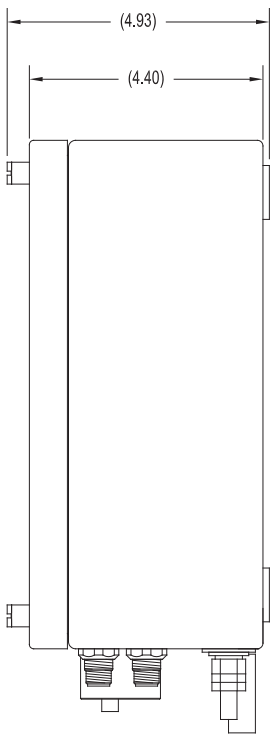
DC Power Distribution Box
Dimensional Specifications (16 position)

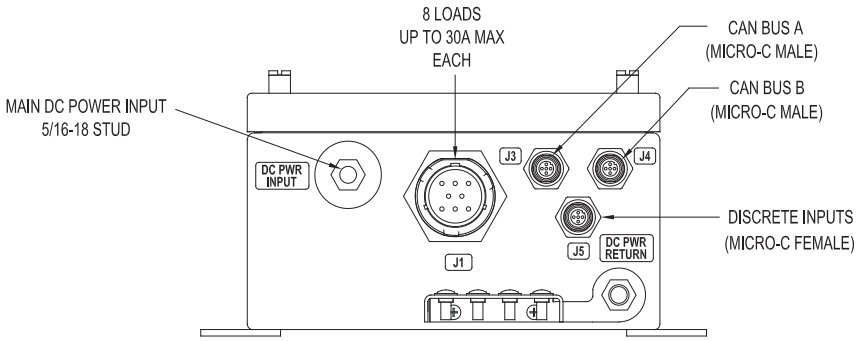




DC Power Distribution Box
Dimensional Specifications (8 position)







Electronic Circuit Breaker (ECB)

ECB's switch and protect DC loads up to 30 Amps within DC Power Distribution Boxes. Fully configurable through OctoPlex software or Touchscreen Displays.

Integrated self-testing and fault detection guard against ECB becoming locked in the "ON" position, ensuring proper operation and safety of equipment and wiring.

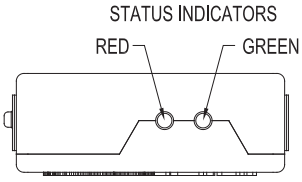
Electronic Circuit Breaker (ECB)

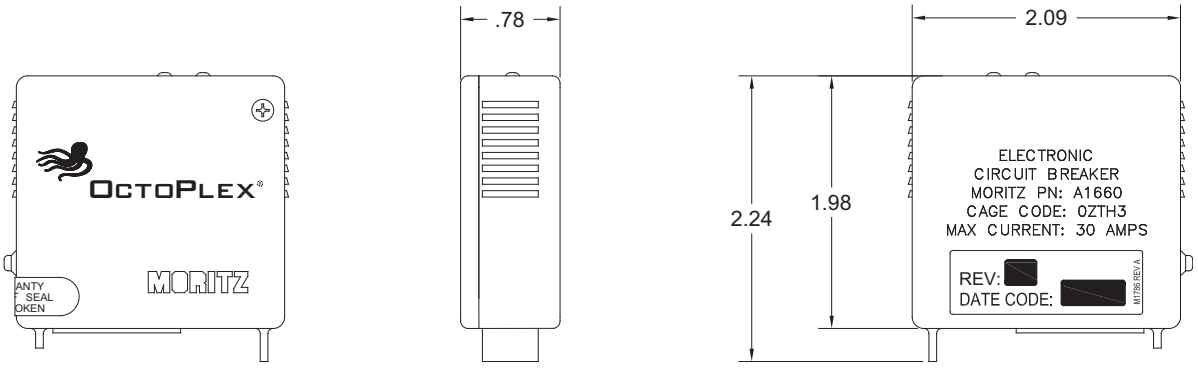
Features:

- 12 and 24 VDC operation
- Configurable trip current up to 30 Amps
- Configurable trip delay up to 750 ms
- Configurable in-rush delay up to 1.5 s
- Open load detection
- Current and voltage monitoring
- Remotely controlled via NMEA 2000 network
- LED's indicating status
- Pulse-Width-Modulation dimming functionality

Specifications:

Approximate Weight:	1.6 OZ
Operating Temperature:	-20°C to 70°C
Storage Temperature:	-55°C to 85°C
Operating Voltage:	12/24 VDC
Approximate Dimensions:	0.78" H x 1.98" L x 2.09" W





System Monitor (Sensor Interface Unit, SIU)

The System Monitor is used to place alarm, monitoring, and discrete input data on the NMEA 2000 network. This data is available to control functions and can also be used to display status on the touch screen displays.

Each System Monitor can accept up to 34 inputs. AC and DC Power Distribution Boxes can be configured to perform various functions based on status of inputs. OctoPlex Touchscreen Displays can be configured to present status of inputs for monitoring purposes. Status of inputs is either open (not connected) or closed (12/24VDC or grounded).

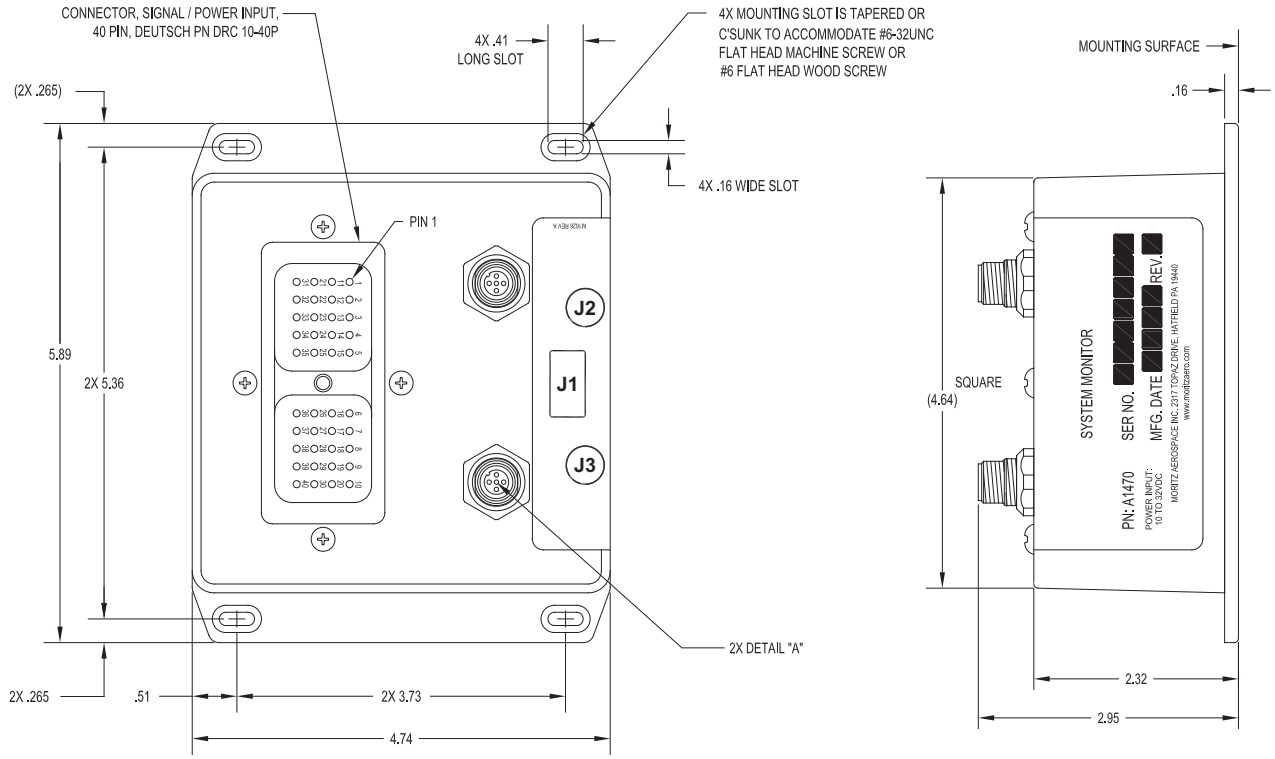
Common uses of System Monitor inputs are bilge monitoring, alarm indications, DC light dimming, control of one or more circuits with single discrete (momentary) switch/input, etc.

The System Monitor uses redundant connections to the NMEA 2000 network for control and monitoring functions. Links to the network are made with Micro-C connectors specified by the NMEA 2000 standard.

Specifications:

Approximate Weight:	1.6 LBS
Operating Temperature:	-20°C to 70°C
Storage Temperature:	-55°C to 85°C
Operating Voltage:	12/24 VDC
Approximate Dimensions :	2.32" H x 5.89" L x 4.74" W

System Monitor
(Sensor Interface Unit, SIU)



Battery Monitor

The Battery Monitor monitors battery status and transmits data on NMEA 2000 databus.

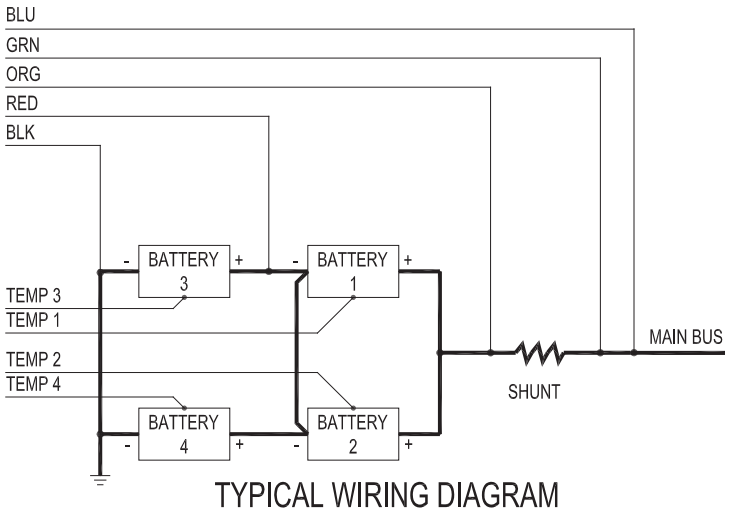
The Battery Monitor is capable of 1 current, 4 temperature, and 4 voltage measurements. Current measurement is software configurable depending on rating of the shunt being used.

Link to the network is made with Micro-C connector specified by the NMEA 2000 standard.

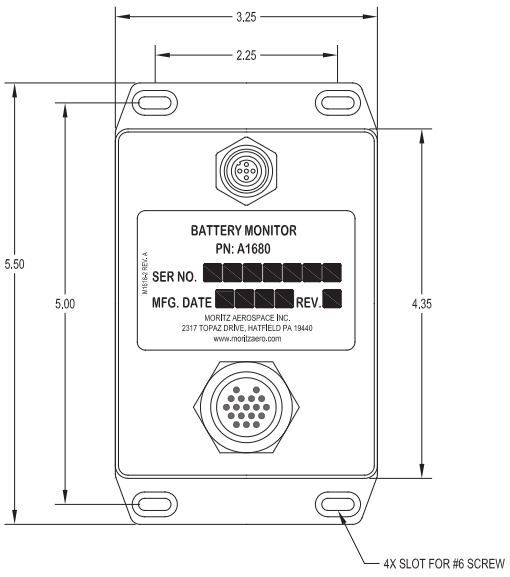
Specifications:

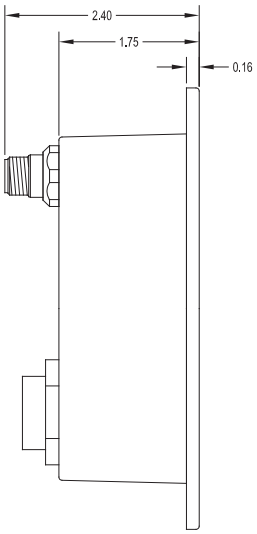
Approximate Weight:	0.75 LBS
Operating Temperature:	-20°C to 70°C
Storage Temperature:	-55°C to 85°C
Operating Voltage:	12/24 VDC
Approximate Dimensions:	1.75" H x 5.5" L x 3.25" W

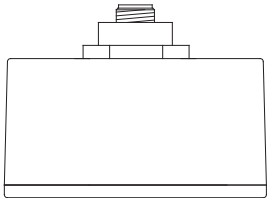
Battery Monitor



TYPICAL WIRING DIAGRAM







AC Power Monitor

The AC Power Monitor is capable of monitoring voltage, current, and frequency for up to 4 AC line inputs.

Only one AC Power Monitor is required for a dual 120/240 VAC system or a single three-phase AC system.

The AC Power Monitor uses redundant connections to the NMEA 2000 network. Links to the network are made with Micro-C connectors specified by the NMEA 2000 standard.

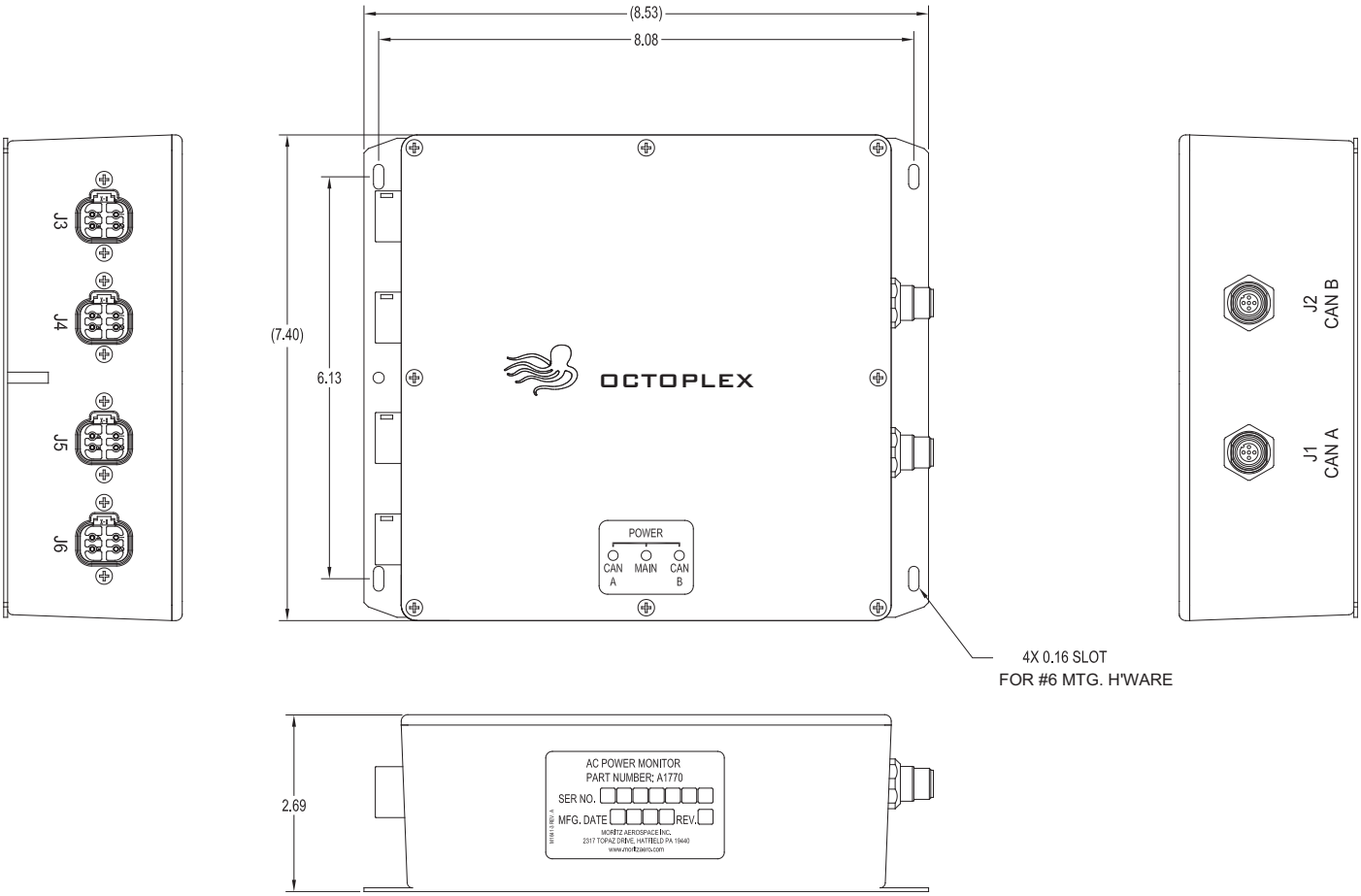
Features:

- Capable of line voltages up to 240 VAC
- Detects reverse polarity condition
- Sends voltage, current and frequency information to the flat panel for use in processing load shedding and brownout functions
- Two connections to NMEA 2000 network for redundancy
- Monitors up to 4 AC inputs for voltages, currents, and frequencies

Specifications:

Approximate Weight:	3.6 LBS
Operating Temperature:	-20°C to 70°C
Storage Temperature:	-55°C to 85°C
Operating Voltage:	up to 240 VAC
Approximate Dimensions:	2.69" H x 7.4" L x 8.53" W

AC Power Monitor



Network Power Supply

The Network Power Supply provides network power for two NMEA 2000 data buses. Utilizing redundant power sources ensures consistent power will be supplied to the dual NMEA 2000 buses. Both power outputs are protected by 10 Amp circuit breakers.

In addition, the Network Power Supply provides network power status to OctoPlex Touchscreen Displays.

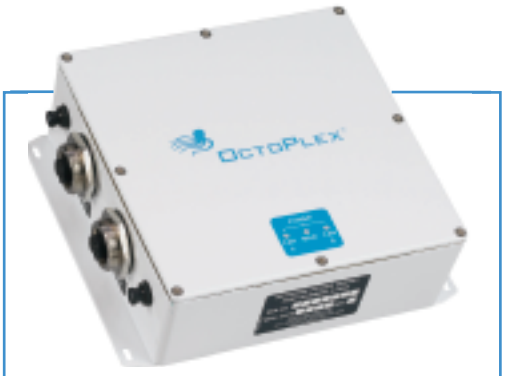
Links to the network are made with Mini-C connectors specified by the NMEA 2000 standard.

Specifications:

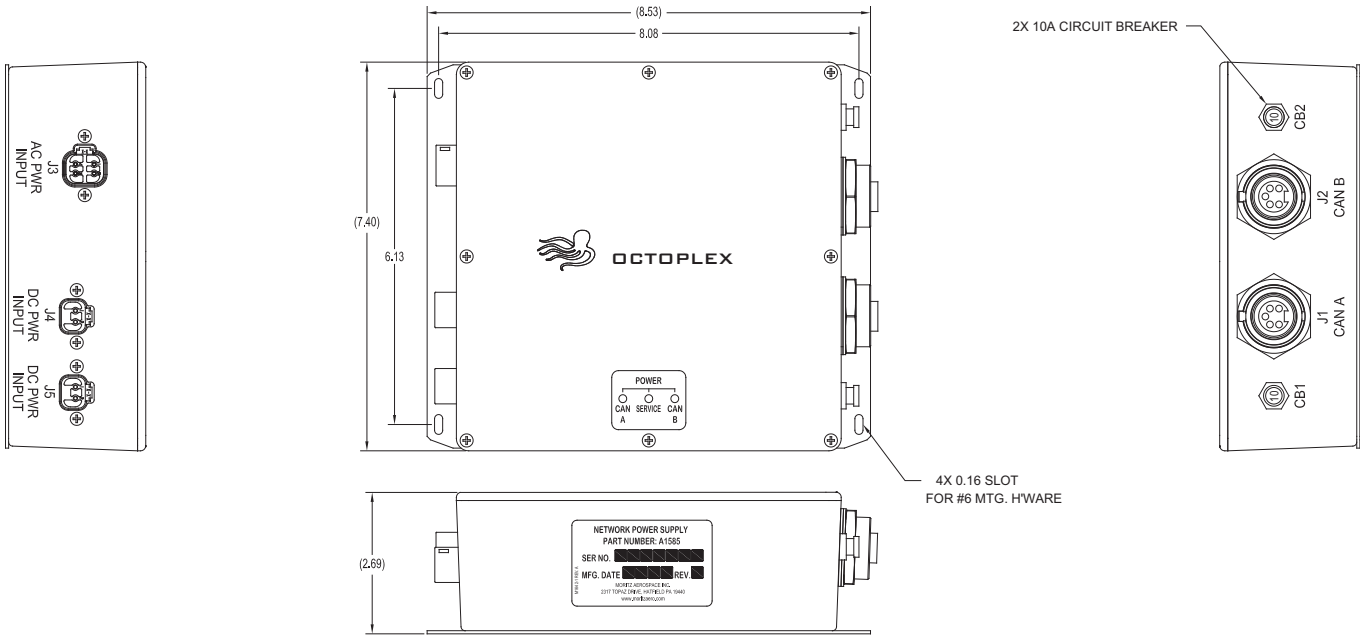
Approximate Weight:	4.4 LBS
Operating Temperature:	-20C to 70C
Storage Temperature:	-55C to 85C
Operating Voltage:	12/24 VDC &/or 90-240 VAC
Approximate Dimensions:	2.69" H x 7.4" L x 8.53" W

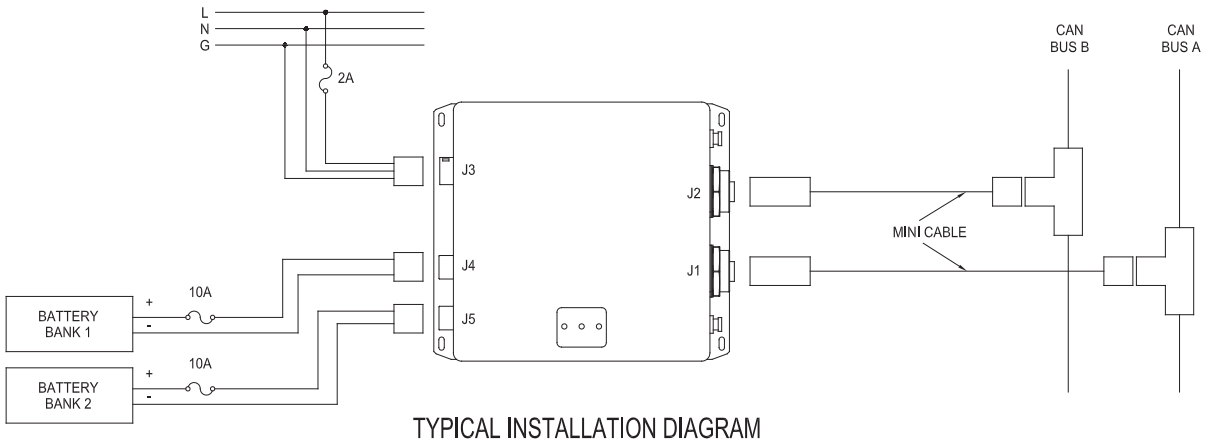
Features:

- Only one Network Power Supply is required to power two NMEA 2000 networks
- Outputs are protected by 10 Amp circuit breakers
- Provides two 15 VDC power outputs, up to 10 Amps each
- Redundant input power sources (1 AC and 2 DC)



Network Power Supply





TYPICAL INSTALLATION DIAGRAM

Touch Screen Display

Touch Screen Displays control and monitor the OctoPlex system. The appearance and layout of the displays are fully configurable using OctoPlex software and configuration pages provided in the displays themselves.

The Touch Screen Displays allow full control of all electrical loads in the AC and DC Power Distribution Boxes connected to the NMEA 2000 databus, including circuit breaker switching, circuit breaker reset, dimming, load groupings, loadshedding, brownout, etc.

The Touch Screen Displays are also capable of displaying any data available on the NMEA 2000 databus, including battery status, tank levels, circuit breaker settings and status, engine and generator status, AC power status, alarms, and electronics.

Touch Screen Displays use redundant connections to the NMEA 2000 network for control, monitoring, and configuration functions. Links to the network are made with Micro-C connectors specified by the NMEA 2000 standard.

Features:

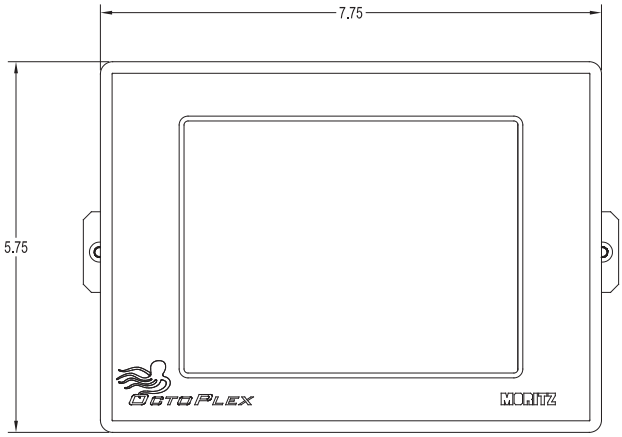
- Full control and monitoring of OctoPlex System
- Two connections to NMEA 2000 network for redundancy
- No additional power is required in 24VDC applications, all power is supplied by NMEA 2000 network connection
  An additional DC power input is provided for 12VDC applications
- Fully configurable using OctoPlex software and included memory card (Compact Flash)
- Sunlight readable, 6.5" LCD
- Audible alarm output
- Screen brightness/dimming control
- Power save mode
- Optional password protection for configuration pages

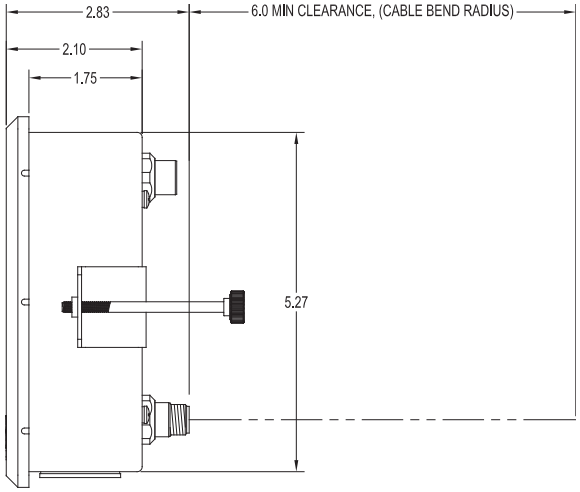
Specifications:

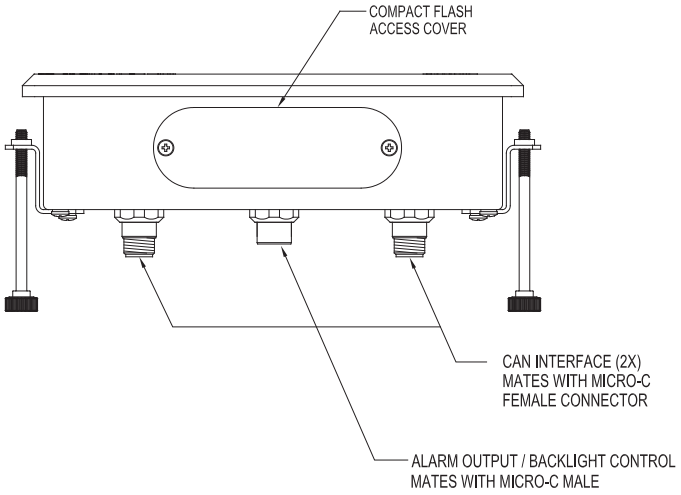
Approximate Weight:	2.2 LBS
Operating Temperature:	-10°C to 70°C
Storage Temperature:	-55°C to 85°C
Operating Voltage:	15 VDC (network power)
Approximate Dimensions:	2.1" H x 7.75" L x 5.75" W

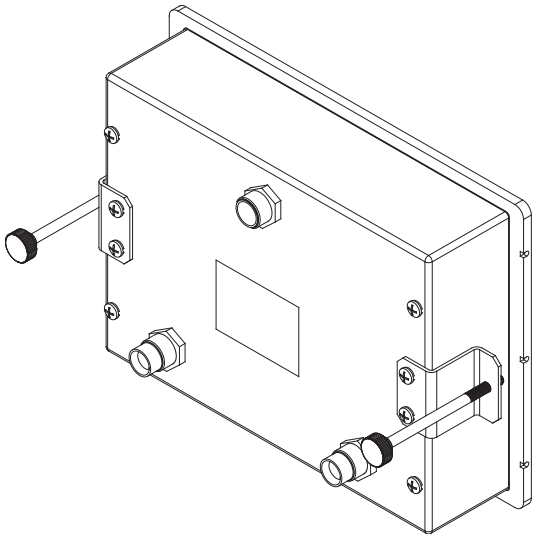
Touch Screen Display

Touch Screen Display









Notes

Notes

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