Digital Automation

Engine Monitoring Displays

The AHD 880 E and AHD 880 E Double Engine are touch screen glass displays, designed to be compatible with the most reputable marine engine manufacturers (MAN, MTU, Caterpillar, Volvo-Penta, Cummins etc.)

Compatible protocols: SAE J1939, NMEA 2000 and MAN proprietary protocol

- Power supply: 9 / 32 VDC
- Dimension W x H x D: 270mm x 130mm x 95mm
- Desk cut-out W x H: 259mm x 114mm
- Degree of protection: IP 56 (front side) IP 22 (rear side) – suitable for external installation
- Luminous intensity: 250 cd/m², transflective
- Display resolution: 640(H) x 240(V) pixels
- Operating temperature: -20°C/+70°C

AHD 880 E

AHD 880 E

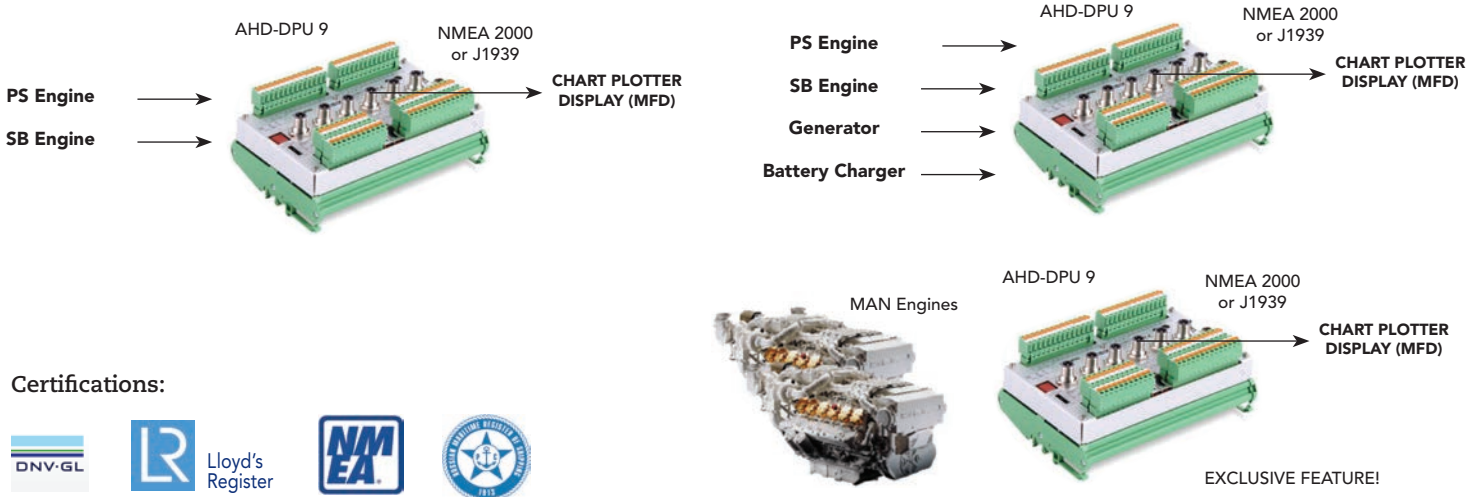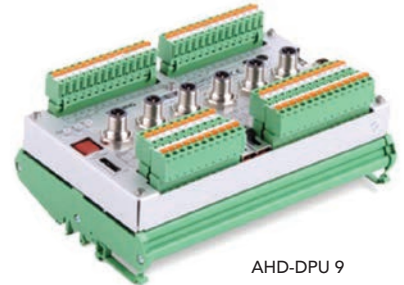**Certifications:**

Item Number	Description	Price
If custom programming is required, this will be quoted separately.		
AHD 880 E - S	Single Engine Display	$5,646.00
AHD 880 E- D	Double Engine Display	$8,880.00

List pricing in catalog is subject to change without notice.

Universal Marine Interface Converter AHD-DPU 9

- Power Supply: 24 VDC (+30% -25%)
- Current Consumption: Ca. 170 mA (24VDC)
- Environmental Temp.: -30°C/+70°C
- Storage Temperature: -50°C/+85°C
- Weight : app . 0.7 kg
- Protection Class: IP 20
- Overall Dimensions (mm): 188 x 126 x 63, 28 x binary input/output channels
- Interfaces: (optocoupler, serial, static)
  - 6x CAN (galvanically isolated, termination and address)
  - 1x LAN (RJ45, 10/100 MBit)
  - 1x serial (RS232/RS485)
  - 2x serial (RS232/RS485/RS422), switchable, termination switchable)
- Inputs: 4x optocoupler (alarm acknowledgement, optional special functions)
- Outputs: 5x relay output (galvanically isolated, 2x contact 2-pin, 3x contact 1-pin)
- Approvals: GL (IAMC System) RS
- Required distance to compass:
  - Standard magnetic compass: 55cm.
  - Steering magnetic compass: 40cm

AHD-DPU 9

PS Engine → AHD-DPU 9 → NMEA 2000 or J1939 → CHART PLOTTER DISPLAY (MFD)
SB Engine →

PS Engine →
SB Engine → AHD-DPU 9 → NMEA 2000 or J1939 → CHART PLOTTER DISPLAY (MFD)
Generator →
Battery Charger →

MAN Engines → AHD-DPU 9 → NMEA 2000 or J1939 → CHART PLOTTER DISPLAY (MFD)

EXCLUSIVE FEATURE!

Certifications:

DNV·GL   Lloyd's Register   NMEA

Item Number	Description	Price
If custom programming is required, this will be quoted separately.		
AHD-DPU 9	AHD-DPU 9 is a universal data station, capable of converting CAN Bus and serial data to protocols compatible with MFD (Multifunctional displays), of many different brands, such as Garmin, Furuno, Raymarine, SimRad, etc. The AHD-DPU 9 can concentrate data from engine, generators, charges, or any other device on board with an open protocol, such as NMEA 2000, J1939, ModBus, NMEA 0183, etc. EXCLUSIVE FEATURE: the AHD-DPU 9 is compatible with the MAN Engines proprietary protocol.	$3,072.00

Images are representative of products listed and may not be actual product.

Digital Automation

Navigation Light Panels

The modular-designed AHD-DPS02 controls and monitors navigation and signal lights on vessels.

- Modular design (from 14 to 42 lights)
- Control panel with custom layout
- Maintenance-free: no need to replace fuses after a short circuit
- Record operating hours and the number of switching cycles
- Collective alarm and ModBus interface to integrate with third-party alarm systems
- Compatible with AC or DC lights, bulbs or LEDs.

Certifications:

Compatibility Table

| System	Current Range	Voltage Range	Frequency Range
230 VAC	20mA/300mA (ca. 5W/65W at 230VAC)	140/240V	47-65Hz
115 VAC	20mA/600mA (ca. 3W/65W at 115VAC)	80/130V	47-65Hz
24 VDC Bulb	200mA/2500mA (ca. 5W/65W at 24VDC)	18/32V	—
24 VDC LED	15mA/800mA (ca. 0,5W/20W at 24VDC)	18/32V	—

Navigation Lights Panel

Item Number	Description	Price
Custom programming is available if required and will be quoted separately.		
AHD-DPS02 - 14L	For 14 lights	$4,051.00
AHD-DPS02 - 21L	For 21 lights	$5,194.00
AHD-DPS02 - 28L	For 28 lights	$6,337.00
AHD-DPS02 - 35L	For 35 lights	$7,480.00
AHD-DPS02 - 42L	For 42 lights	$8,623.00
AHd-DPS02 GC	Communication Module with ModBus RTU interface	$926.00

List pricing in catalog is subject to change without notice.

Stand-alone Alarm and Monitoring Systems
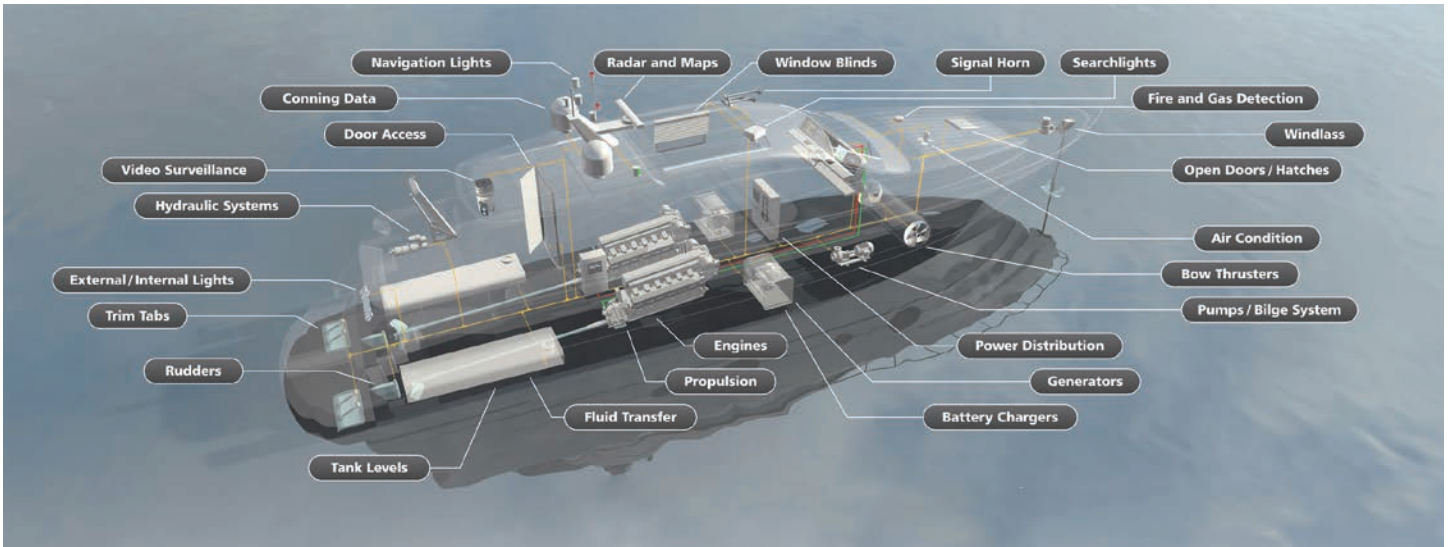
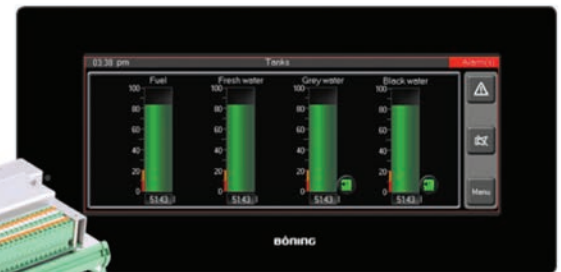AHD-AMS – 15 inputs

AHD-AMS – 45 inputs

Certifications:

The Böning Alarm and Monitoring system is a robust solution for monitoring any kind of sensor in a vessel. Suitable for refits and new builds, utilizes the latest technologies for data processing, displayed on an elegant 8" glass touch screen.

Tank Sensors

Bilge Sensor

Rudder Angle Sensor

Battery Voltage

Door Sensor

DATA STATION
AHD-SAS 15

Item Number	Description	Price
Custom programming is required and will be quoted separately.		
AHD-AMS – 15 inputs	Vessel monitoring system for 15 inputs/sensors (15 programmable inputs – analog or binary)	$7,895.00
AHD-AMS – 45 inputs	Vessel monitoring system for 45 inputs/sensors (15 analog + 30 binary inputs)	$9,129.00

Images are representative of products listed and may not be actual product.

Digital Automation

Compact Alarm System AHD 414A

AHD-414A-S – Smoke Monitoring System
- Monitor up to 10 smoke detectors
- Customizable labels
- NO / NC contacts
- Relay output for external horn
- Dimensions: 144x144 mm / 5.6 x 5.6 in
- Low power consumption: 0.15A
- Certificate: Bureau Veritas

AHD-414A-T – Tank Monitoring System
- Monitor up to 10 tank level switches
- Customizable labels
- NO / NC contacts
- Relay output for external horn
- Dimensions: 144x144 mm / 5.6 x 5.6 in
- Low power consumption: 0.15A
- Certificate: Bureau Veritas

AHD-414A-B – Bilge Monitoring System
- Monitor up to 10 bilge switches
- Customizable labels
- NO / NC contacts
- Relay output for external horn
- Dimensions: 144x144 mm / 5.6 x 5.6 in
- Low power consumption: 0.15A
- Certificate: Bureau Veritas

Item Number	Description	Price
AHD-414A -S	Smoke Monitoring	$599.00
AHD-414A-T	Tank Monitoring	$599.00
AHD-414A-B	Bilge Monitoring	$599.00

Custom configurations/combinations available

Ship Whistle Control Panels

AHD-WOP – Whistle Operation Panel

The whistle operation panel AHD-WOP is designed for the control and operation of one or more whistles on board ship, providing pre-programmed outputs for most frequently used sound signals for maneuvering and warning, as well as sound signals in restricted visibility according to "Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)" inclusive amendments.

Features

- Outputs:
  - 2 x Horn relay for whistle control perm. contact load
  - 24VDC (+30%/-25%) / 0,5A
  - 2 x Lamp relay for signal light control perm. contact load
  - 24VDC (+30%/-25%) / 0,5A

Certifications:

LR Lloyd's Register

AHD-GAP F - General Alarm Panel with Fire Alarm Function

The control panel AHD-GAP F is designed for the control of acoustic and optical signals in emergency situations. In addition to the manual activation of the horn, common mandatory signals such as "Abandon Ship", "General Alarm," and "Fire Alarm" are already hard-coded and can be activated in selectable intervals.

Features

- Outputs:
  - 4 x relay for acoustic and visual signal control potential-free admissible contact load 0.5 A
  - 1 x relay for status indication, potential-free, admissible contact load 0.5 A
  - Signal Sequences General Alarm (7x short, 1x long) Abandon Ship (short, long, short, long)
  - Fire Alarm (continuous sound)
 - Manual Operation (push-button)

Certifications:

LR Lloyd's Register

Item Number	Description	Dimensions	Price
AHD-WOP	Whistle Operation Panel	70W x 130H x 45mmD	$881.00
AHD-GAP F	General Alarm Panel with Fire Alarm Function	70W x 130H x 45mmD	$881.00

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Digital Automation

Custom Monitoring and Automation Systems
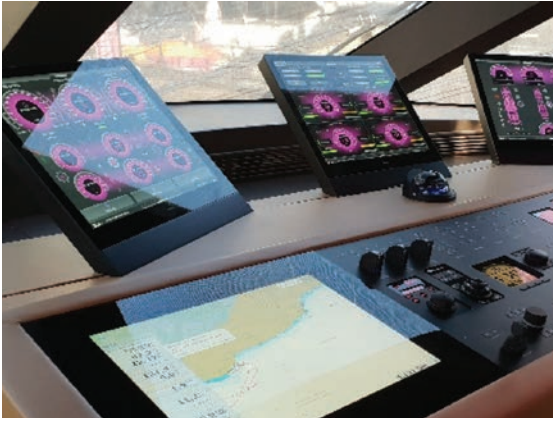
Böning ship electronics are not only extremely well-suited for initial installations of engines in new vessels or engine retrofits, but also refit measures for used ships.

Using state of the art technology, Böning manufactures durable, modular products. This allows ships to be outfitted in an individualized, reaction-free manner, matched precisely to the customer's needs and requirements. As you'll see on the following pages, we are able to offer initial outfit and retrofit solutions that can be expanded when needed.

The use of modern communications media on the bridge – such as user-friendly touch screen displays, powerful panel PCs, and multiple redundant safety systems – allows the skipper convenient and clear access to all safety and operationally relevant data.

Panel PC Systems – Ordered by Size

Lloyd's Register

Integrated panel PC system with glass front, provides a central visualization and operation platform for alarm and monitoring systems. The large 19" and 15" screens provide sufficient room for presenting complex correlations, even within the context of extensive systems. High capacity, increased functionality, and appealing design contribute to an increase in operational safety and comfort on ship bridges. The panel PC system was developed specifically for maritime use. Dispensing with mechanically movable parts and equipping the unit with a passive cooling system secures error-free operation even under extreme conditions. The integrated PC runs on a self-contained XP Embedded® operating system. This prevents any changes during normal operation and thus, it runs with the highest degree of stability. The excellent color graphics monitor with integrated touchscreen operation facilitates coverage of any incurring visualization and control tasks on board. High luminosities ensure the best readability even during strong sunlight. When cruising at night, automatic dimming with variable minimum brightness ensures glare-free operation.

List pricing in catalog is subject to change without notice.

The CZone digital control & monitoring network simplifies installation of electrical systems through the replacement of complicated wiring. CZone replaces switch and fuse panels with state-of-the-art, robust interfaces and light NMEA 2000 network cable. It provides a sophisticated solution via automation of the control and monitoring issues required by today's complex on-board and in-vehicle systems.

CZone allows the user to control multiple circuits with "One Touch", dramatically simplifying operation. With control potentially available at any point in the NMEA network, fingertip control is available anywhere around the boat, through the dedicated CZone screens, iPad, remote keyfob or through the navigation MFDs of our integration partners.

Modes

Ease of operation assured. With one press of the key users can turn on a group of circuits without having to search for, and turn on the individual circuits that they need for the operation of their vessel. When leaving, simply press 'systems off' to turn off all non-essential circuits. Entertainment mode allows preset activation of lounge lights, music, etc. All functions can be controlled remotely.

Installation

The CZone system integrates many stand-alone components into one intuitive system. Wiring is dramatically simplified as the CZone system is designed to remove complex switching clusters and wiring runs. Modules can easily be added into the system to best suit the OEM and end-users' needs.

Versatility & Security

The CZone system, designed for 9V to 32V systems, features built-in timers, dimmers (including support for halogen lighting), alarms, voltage reducers and load shedding. With safety in mind, the CZone™ system features a manual bypass. A No-Single-Failure-Point technology ensures a plug & play system with redundancies that are designed to handle mishaps. If a module is damaged, the system will automatically program the replacement module when it is plugged in.

Integration

CZone technology is integrated with easy-to-read graphics into chart plotters and multi-function displays. View CZone monitoring data, tank levels and battery capacity alongside radar, fish finder, video and chart plotter information or navigate to the CZone™ page to operate any circuit from the intuitive control page. With CZone technology, control and monitoring is available at the touch of your fingertips, at the helm or flybridge, at desired locations on the boat, programmed into the remote key fob, or from an app on your tablet.

Images are representative of products listed and may not be actual product.

Digital Automation

Displays

Touch 10

- Premium touch interface with glass dash styling and low profile mounting
- Screen: 10.1" LED-backlit projected capacitive touch display with IPS technology
- Aspect ratio: Widescreen 16:10
- Resolution : 1280 x 800 pixels
- Weight: 4.0 lb / 1.8 kg
- Power consumption: 1A @ 12V, 500mA @ 24V
- Interfaces: NMEA 2000, USB2.0, Ethernet

80-911-0100-00

Item Number	Protection	Dimensions	Brightness	Input voltage	Price
80-911-0100-00	IP66	7.72"W x 10.83"H x 1.61"D (196W x 275H x 41D mm)	500 cd/m2	8–32V	$3,711.71

Touch 5

- Built-in Wifi allows direct-connection of Ipad for Wireless Control and Monitoring of the system
- Screen: 5" LED-backlit projected capacitive widescreen touch
- Resolution: 800 x 480 pixels
- Power consumption: 900mA @ 13.5v
- Interfaces: NMEA 2000, Micro SD

80-911-0124-00

Item Number	Protection	Dimensions	Brightness	Input voltage	Price
80-911-0124-00	IPX7	5.98"W x 4.72"H x 2.28"D (152W x 120H x 57.9D mm)	1200 cd/m2	12VDC	$1,295.66

List pricing in catalog is subject to change without notice.

Wireless Interface

- User-friendly homepage to monitor and control onboard circuits
- Integrated control and monitoring of power products including battery chargers and inverters
- Monitor AC/DC
- Monitor tank levels
- Receive visible alarms
- Connect a maximum of three devices simultaneously

- Ability to personalize homepage to display favorite circuits, modes & monitoring
- Customize your layout
- Connects to CZone or MasterBus networks for control and monitoring of systems
- No MasterBus powering
- Weight: 1.5 lb / 0.685 kg
- Protection degree: IP54
- Delivered with power cable, WiFi antenna, USB extension cable, user's manual

80-911-0090-00
WIRELESS INTERFACE

80-911-0095-00
WIRELESS INTERFACE W/
MASTERBUS CONNECTOR

Item Number	Description	Dimensions	Price
80-911-0090-00	Wireless Interface	4.1"H x 7.5"W x 2.4"D / 105H x 190W x 60D mm	$980.43
80-911-0095-00	WI MasterBus connector	4.1"H x 7.5"W x 2.4"D / 105H x 190W x 60D mm	$64.54

Wired Interface

Combination Output Interface

- The Combination Output Interface (COI) combines multiple input and output devices into one module, offering a compact and intelligent replacement for traditional DC fuse and circuit breaker panels with digital control and monitoring technology.
- Communication protocol: NMEA 2000
- Channels: 30
- Output channels (high): 4 x 25A
- Output channels (low): 12 x 10A (dimmable)
- Analogue inputs: 8 (positive or negative switching, 0–32V)
- Additional monitoring: 2 voltage sensors (on main positive stud and NMEA 2000 power)
- Circuit current monitoring: all 16 output channels
- Circuit protection: Configurable electronic fuse + mechanical fuse and bypass
- Digital switch inputs: 6 digital input switches with backlight via digital breakout)
- Max. continuous current: 150A at 40°C (derating > 40°C)
- NMEA 2000 power consumption: 250 mA at 12V 180mA at 12V standby
- Connectors: Deutsch
- Power supply: M8 (5/16") stud positive, M6 (1/4") stud negative
- Voltage: 9–32V (with power available LED and voltage monitoring)
- Bilge pump circuits: 4 high current channels: integrated manual control and 'pump running' detection
- Protection degree: IPx5 (mounted at 0°C +/-90°C)
- Weight: 1.9 kg / 4.2 lb
- Approvals: CE, ABYC, NMEA

80-911-0119-00

80-911-0134-00

Item Number	Description	Dimensions	Price
80-911-0119-00	COI with Connectors (includes 80-911-0131-00 COI Deutsch Connector Kit)	13.3"H x 9.3"W x 2.4"D / 338H x 235W x 62D mm	$1,692.42
80-911-0120-00	COI No Connectors	13.3"H x 9.3"W x 2.4"D / 338H x 235W x 62D mm	$1,650.16
Options			
80-911-0134-00	COI Digital Switch Breakout	13.3"H x 9.3"W x 2.4"D / 338H x 235W x 62D mm	$153.52
80-911-0129-00	5m COI to DSB Cable (16ft)	13.3"H x 9.3"W x 2.4"D / 338H x 235W x 62D mm	$43.77

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Digital Automation

Wired Interface (Continued)

Contact 6

The Contact 6 is a digital control and monitoring module that can be networked with other CZone products or a stand-alone. The Contact 6 has six independent channels that are positively or negatively switched and is ideal for smaller marine applications or recreational and specialty vehicles.

- Circuit Bypass: Yes (electronic)
- Connector: Amp 18 Way Connector
- Max Wire Size: 16AWG (1 mm2)
- Maximum Current: 30A Continuous
- Power Consumption: 35mA (standby)
- Voltage: 9-16V

CONTACT 6

Item Number	Description	Price
80-911-0139-00	Contact 6 (Interface Only)	$164.38
80-911-0140-00	Contact 6 (Include seal & plug kit)	$232.56

Switch Control Interface (SCI)

The Switch Control Interface provides an interface between the CZone network and the traditional mechanical switches with which manufacturers and users are familiar. The SCI simplifies your wiring, supports your existing choice of switches, protects against failures and allows for more installation options.

80-911-0011-00

Features

- Single switch position can control multiple OI channels
- Attached to switch panels via custom SCI cable
- Multiple SCI switches can control single OI channel
- Output for backlighting of switch labels (dimmable)
- Outputs systems on and function/fault codes to systems on LED of switches (dimmable)
- Choice of push button or rocker style switch
- IPX5 water ingress protection
- Programmable switch types
- 8 inputs per module (16 individual controls)
- Sequential button press functionality
- Choice of push button or rocker style switch

Item Number	Description	Dimensions	Price
80-911-0011-00	Switch Control Interface with seal	3.94"H x 6.14"W x 1.65"D (100H x 156W x 42D mm)	$233.78

Wired Interface (Continued)

Signal Interface (SI)

The Signal Interface connects the CZone system to your external sensors, alarms and switching devices. The SI allows intelligent, automated operation of circuits depending on the state of the input.

Features

- Accepts inputs from traditional switch types being used to control outputs
- Accepts inputs from switches to trigger alarm i.e. high water float switch
- Accepts inputs from industry-standard tank senders (0.5V. 10-180 Ohm, 240-33 Ohm)
- Accepts inputs from general voltaic or resistive signals, can be used for controlling outputs or to display a physical position i.e. show a hatch is partially open
- LED status indicators for each input

- IPXS water ingress protection
- Outputs standard NMEA 2000 fluid, temperature and pressure sentences
- Resistive input range 0-1000 Ohms
- Voltage sensing input range 0-34VDC

80-911-0013-00

Item Number	Description	Dimensions	Price
80-911-0013-00	Signal Interface with seals, connector	3.94"H x 6.14"W x 1.65"D (100H x 156W x 42D mm)	$187.10

Output Interface (OI)

The Output Interface provides an intelligent replacement for traditional circuit breaker and fuse panels. It has six high power, robust output channels which provide the power supply, control and fusing for a circuit as well as integrating many other features such as timers and dimmers.

Features

- 4 levels of backup fusing including manual override (as required by ABYC)
- Multiple channels can be bridged together to offer higher current switching
- Power consumption 12V: 85 mA
- Small, non-metallic, easy to install care
- 6 x 20 amps circuits
- Programmable software 'fuse' size

80-911-0009-00

Item Number	Description	Dimensions	Price
80-911-0009-00	Output interface with connector and protective boot	5"H x 7.87"W x 1.75"D (128H x 200W x 45D mm)	$636.73

Images are representative of products listed and may not be actual product.

Digital Automation

Wired Interface (Continued)

Motor Output Interface (MOI)

The Motor Output Interface has an output pair for controlling DC motors which require a reversal of polarity to change the direction of their mechanical operation.

Features

- Single motor control and two normal channels per unit, 20A per output
- Built-in circuit protection
- IPX5 water ingress protection
- Dimensions: 5"H x 7.87"W x 1.75"D (128H x 200W x 45D mm)

MOTOR OUTPUT INTERFACE

Item Number	Description	Dimensions	Price
80-911-0007-00	Motor Output Interface with connector and protective boot	5"H x 7.87"W x 1.75"D (128H x 200W x 45D mm)	$461.99

Meter Interface (MI)

The Meter Interface accepts inputs from external AC and DC power metering sensors such as: AC and DC voltage and amps, AC kWatts, and DC battery capacity in amp hours and % remaining. All with user definable high and low alarms.

General

- Dimensions: 6.14"H x 3.94"W x 1.65"D (156H x 100W x 42D mm)
- IPX% water ingress protection
- Outputs standard NMEA 2000 power monitoring sentences

AC

- 3 x AC voltage inputs (multi voltage)
- 2 x AC current inputs
- Calculates true RMS power

DC

- 3 x DC voltage inputs (multi voltage)
- 2 x DC current inputs
- Calculates battery capacity as ampere hours and percentage charge remaining
- Resolution for current metering down to 0.1A

METER INTERFACE (MI)

Item Number	Description	Dimensions	Price
80-911-0005-00	Meter Interface, with seal and plug	6.14"H x 3.94"W x 1.65"D (156H x 100W x 42D mm)	$334.95

List pricing in catalog is subject to change without notice.

Accessories

80-911-0137-00

80-911-0047-00

80-911-0048-00

80-911-0029-00

80-911-0046-00

Item Number	Model	Description	Price
80-911-0137-00	NMEA 2000 Power Isolator	Used for isolating power between 2 independent NMEA 2000 networks	$31.34
80-911-0047-00	2 Way Tee Connector	Connects multiple devices into the NMEA backbone	$53.42
80-911-0048-00	4 Way Tee Connector	Connects multiple devices into the NMEA backbone	$74.84
80-911-0029-00	Single Tee Connector	Connects a single device into the NMEA backbone	$28.52
80-911-0031-00 (Male)	Terminating Resistors	Use at either end of the NMEA backbone to complete the network. Each network must have a male and female terminator.	$7.39
80-911-0030-00 (Female)	Terminating Resistors	Use at either end of the NMEA backbone to complete the network. Each network must have a male and female terminator.	$10.79
80-911-0046-00	90° Elbow Connector	Space saving connector for modules, displays and cabling connections.	$20.97

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Digital Automation

Accessories (Continued)

BLANKING CAPS

80-911-0050-00

80-911-0051-00

80-911-0123-00

80-911-0052-00

80-911-0044-00

Item Number	Model	Description	Price
80-911-0050-00 (Male)	Blanking Caps	Protects unused Tee Connector from dust and water.	$1.82
80-911-0051-00 (Female)	Blanking Caps	Protects unused Tee Connector from dust and water.	$1.82
80-911-0123-00	COI Cable Cover	Accessories & Spares for Combination Output Interface (COI) and Digital Switch Breakouts (DSB).	$22.64
80-911-0131-00	COI Deutsch Con Kit	Accessories & Spares for Combination Output Interface (COI) and Digital Switch Breakouts (DSB).	$64.74
HDT-48-00	Deutsch Crimp Tool	Deutsch Crimp Tool	$305.33
CT4-8	Deutsch Crimp Tool	Deutsch Crimp Tool	$104.00
80-911-0052-00	Through Bulkhead Adaptor	Use on the backbone to transition through a waterproof bulkhead	$10.66
80-911-0044-00	USB CAN Adapter for configuration and system set up	Connects PC to the Czone network	$475.20

List pricing in catalog is subject to change without notice.

Accessories (Continued)

80-911-0045-00

80-911-0057-00

80-911-0072-00

CT-HD

CT-10-3

LB-450-50

AC-VSEN-4

Item Number	Model	Description	Price
80-911-0045-00	Czone Wireless Remote Kit	• 250 ft (80) operating range • includes (2) key fobs and a receiver box • Rolling code	$103.44
80-911-0057-00	Czone Network Bridge Interface	• For Isolating sections of an NMEA 2000 network to decrease standby current draw.	$287.80
80-911-0072-00	Czone MasterBus Bridge Interface	• Connects the MasterBus and Czone networks together enabling the two	$287.01
CT-HD	Heavy-duty Current Transformer	• Maximum current 150A AC • CT-HD is available for systems with large mains cable, too large for CT-10-3 (ordered separately) • CT-HD dimensions: 1.85" x 0.4" (47 x 10.5 mm) • Hole size: 1.25" (32 mm)	$37.88
CT-10-3	Current Transformer	• Maximum current 150A AC • One CT-10-3 current transformer is supplied with ACSM. If a twin line system in in use, a second CT must be ordered. • Dimensions: 1.5"x1.55"x.55"(37.5x39.2x13.7mm) • Hole size: 0.5" (12 mm)	$29.84
LB-450-50	DC Current Shunt	• Includes 3 voltage transformers for up to 3 voltage inputs • 2.75" x 5.5" x 2" (69 x 140 x 50 mm) • Used for AC voltage measurement	$122.98

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Digital Automation

Push Buttons

For use with CZone systems only (3.5 Volt)
- Momentary and latched actuation options available
- Blue and red circuit status indication LED options
- 19 mm mounting hole
- IP67 environmental protection
- Stainless Steel components
- Maximum 5 amps each

PUSH BUTTON RED

PUSH BUTTON BLUE

PUSH BUTTON CABLE ASSEMBLY

Item Number	Description	Color	Price
80-911-0085-01	Suitable for Switch Control Interface (SCI) and Digital Switch Breakout (DSB) Compatible with push buttons.	—	Call for Pricing
80-911-0086-01	Suitable for Switch Control Interface (SCI) and Digital Switch Breakout (DSB) Compatible with push buttons.	—	$10.28
80-911-0088-01	Suitable for Switch Control Interface (SCI) and Digital Switch Breakout (DSB) Compatible with push buttons.	—	$20.77
80-911-0060-00	Momentary (ON)OFF	Red LED	$31.72
80-911-0063-00	Latching ON/OFF	Red LED	$31.72
80-911-0062-00	Momentary (ON)OFF	Blue LED	$31.72
80-911-0061-00	Latching ON/OFF	Blue LED	$31.72

Back Bone
- Special low volt drop Backbone Cable ensures ultimate reliability for your NMEA 2000 network.

80-911-0026-00

Power Cable
- Provides power to the NMEA 2000 network.

80-911-0028-00

Drop Cable
- Thinner, more flexible Drop Cables connect individual devices to the NMEA network.

Spare Power Cable for Touch 10
- Supplies power for Touch 10 display

COI to DSB Cable 5m
- Accessories & Spares for Combination Output Interface (COI) and Digital Switch Breakouts (DSB).

80-911-0129-00

Item Number	Model	Length ft(m)	Price
80-911-0026-00	Backbone Cable	1.6(.5)	$24.32
80-911-0027-00	Backbone Cable	6.5(2)	$30.72
80-911-0024-00	Backbone Cable	16(5)	$45.30
80-911-0025-00	Backbone Cable	32(10)	$67.19
80-911-0116-00	Drop Cable	1.6(.5)	$20.77
80-911-0117-00	Drop Cable	3.2(1)	$23.75
80-911-0118-00	Drop Cable	6.5(2)	$26.77
80-911-0115-00	Drop Cable	16(5)	$40.31
80-911-0116-00	Drop Cable	1.6(.5)	$20.77
80-911-0117-00	Drop Cable	3.2(1)	$23.75
80-911-0118-00	Drop Cable	6.5(2)	$26.77
80-911-0115-00	Drop Cable	16(5)	$40.31
80-911-0028-00	Power Cable	3.2(1)	$33.78
80-911-0032-00	Spare Power Cable for Touch 10	—	$23.44
80-911-0129-00	COI to DSB Cable 5m	—	$43.77

List pricing in catalog is subject to change without notice.

MasterBus

EasyView5

- Water proof, 'daylight readable' color display.
- Intuitive touch control
- Customizable favorite pages.
- Log book for warnings and alarms.
- Buzzer and Home button.
- Easy mounting: front mount, wall mount or retrofit.
- MasterBus powered, or 12/24 V input.
- Easy updating through MasterBus and USB.

77010310

Item Number	Power Supply	Dimensions in" (mm)	Weight lbs. (kg)	Price
77010310	Masterbus powered, or 12/24V input	4.4(113)x5.0(127)x1.7(43)	0.7(0.315)	$397.42

MasterShunt 500

- Digital shunt providing the energy system with extensive information and historical data.
- Very accurate and reliable determination of State of Charge (SOC).
- Easy connection to all MasterBus devices.
- Power saving mode for reduced idle consumption.
- Service mode prevents memory loss during system maintenance.
- Realistic and precise indication of the time remaining.
- Smart MasterBus powering mode reduces idle consumption to a bare minimum.
- For higher current, multiple MasterShunt models may be installed in parallel.
- MasterConnect system makes connecting to the DC'Distribution product very easy.
- Straight forward, easy to install.
- Freedom of choice for fuse type, rating and location. Suitable for T-fuse and ANL-fuse (to be ordered separately).

- Robust housing with isolation of the DC connections.
- Battery voltage: 12. 24 or 48 VDC
- Current: 300 A continuously, 400 A for 10 min. 500 A for 5 min. and 600 A for 2 min.
- Main fuse: Bus bar included in MasterShunt, class T fuse or ANL fuse to be ordered separately
- Idle consumption: 23 mA (normal operation), <1 mA (power saving, MasterBus off)
- System functionality: Alarms, timers, auto start/stop for the generator
- System information: E.g. time remaining, voltage, current, state of charge
- Programmable alarms: Warning low voltage, low state of charge, high voltage

77020110

Item Number	Price
77020110	$310.45

Images are representative of products listed and may not be actual product.

Digital Automation

MasterBus (Continued)

DC Distribution 500

- Languages on display: ENG, NL, DE. SP, IT, FRA, FIN, SWE, DEN, NOR
- Battery voltage: 12. 24 or 48 VDC
- Current: 300 A cont. / 500 A for 5 minutes
- Standard fuses: 80 A (2x), 160 A and 125 A – ANL type (deviating values can be ordered separately)
- Spare fuse: 125 A – ANL type
- Alarms: Fuse monitoring

77010210

Item Number	Dimensions in" (mm)	Weight lbs. (kg)	Price
77020200	5.9(150)x 7.9(216)x2.5(65)	2.6(1.2)	$487.93

Digital DC 10x10A

- Follow me home (light stays on for the specific time).
- Delayed dimming of lights (including ten built-in dimmers).
- Alarm signal for overload.
- Every output has hardware and software fuse.
- Reset the fuses via the MasterBus network.
- Possibility of higher currents (up to 100 A) with parallel switching of multiple outputs.
- Logical blocks.
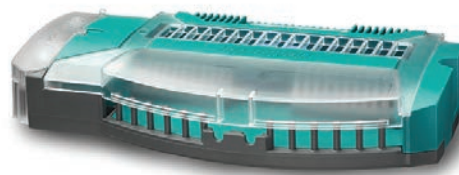
77020400

DC Output	
Connection	Cable max. 4 mm2
Maximum software fuse current	10A per channel
Hardware fuse current	15A per channel
DC Input	
Connections	Max. 95 mm2 or directly connected to MasterShunt or DC Distribution
Maximum current	100A
Supply voltage	8-30VDC

Item Number	Dimensions in" (mm)	Weight lbs. (kg)	Price
77020400	1.6(40)x9.0(229)x4.3(110)	1.7(0.75)	$978.48

MasterBus (Continued)

Interfaces

| 77030100 | 77030475 | 77030500 | 77031800 |

Item Number	Description	Price
77030100	The MasterBus USB Interface enables you to read and configure the MasterBus network via your PC.	$215.00
77030475	This interface integrates a Mastervolt Mass Combi in a MasterBus network and allows it to be operated or monitored via a EasyView 5 panel or PC.	$289.59
77030500	This potential-free programmable contact can be customized and programmed to give your MasterBus network unprecedented possibilities. Use it, for example, to control a ventilator, or to operate a generator.	$170.03
77031800	The MasterBus NMEA2000 Interface provides the MasterBus network with NMEA information, and vice versa.	$592.35

Item Number	MasterBus Powering	Dimensions HxWxD	Weight	Protection Degree	Delivered with
77030100	yes	2.6" x 3.1" x 1.3" (66x78x32 mm)	0.18 lb / ± 80 g	IP21	USB connection
77030475	yes	2.6" x 3.1" x 1.3" (66x78x32 mm)	0.18 lb / ± 80 g	IP21	Interface
77031800	no	2.6" x 3.1" x 1.3" (66x78x32 mm)	0.22 lb / ± 100 g	IP21	NMEA
77030500	no	2.6" x 3.1" x 1.3" (66x78x32 mm)	0.18 lb / ± 80 g	IP21	MasterBus cable, MasterBus, Terminator user's manual

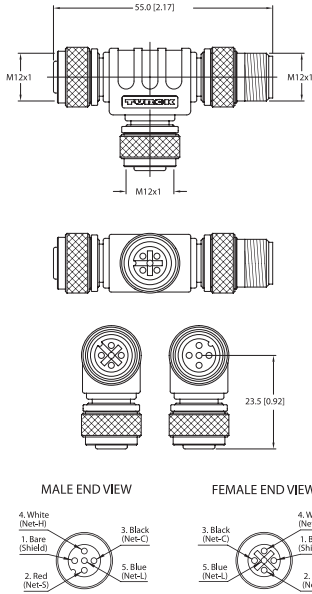## Accessories

77050000

77040010

77040015

77040000

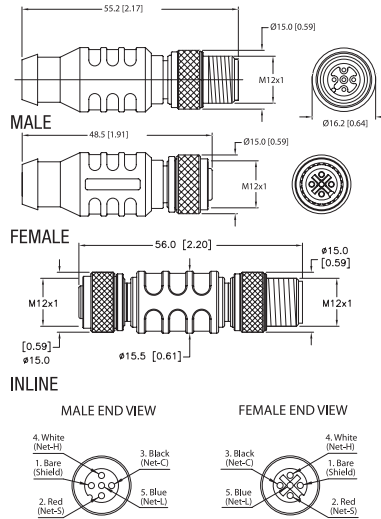| Item Number	Description	Price
77040000	Terminators ensure interference-free operation of the MasterBus network, prevent reflection of data signals and ensure high communication speeds.	$8.78
77040010	MasterBus RJ45 Connectors 8-pole 25 pcs	$14.25
77040015	Green isolation caps for RJ45 connector 25pcs	$14.00
77045000	Green MasterBus CAT5E UTP cable	$0.35 per ft

Images are representative of products listed and may not be actual product.
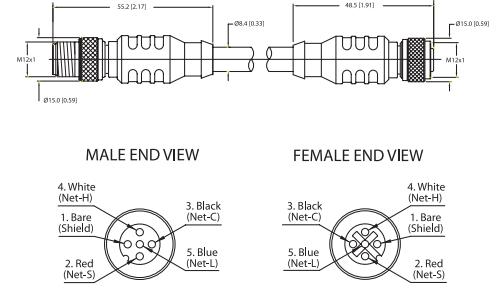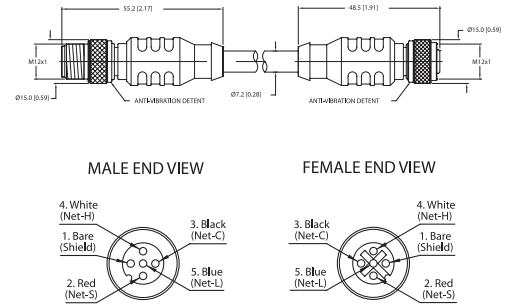
NMEA 2000

MICRO TEE

MALE END VIEW

4. White (Net-H)
1. Bare (Shield)
3. Black (Net-C)
2. Red (Net-S)
5. Blue (Net-L)

FEMALE END VIEW

3. Black (Net-C)
5. Blue (Net-L)
4. White (Net-H)
1. Bare (Shield)
2. Red (Net-S)

MICRO TERMINATION RESISTORS

MALE

FEMALE

INLINE

MALE END VIEW

4. White (Net-H)
1. Bare (Shield)
3. Black (Net-C)
2. Red (Net-S)
5. Blue (Net-L)

FEMALE END VIEW

3. Black (Net-C)
5. Blue (Net-L)
4. White (Net-H)
1. Bare (Shield)
2. Red (Net-S)

MID DOUBLE-ENDED CORDSETS

MALE END VIEW

4. White (Net-H)
1. Bare (Shield)
3. Black (Net-C)
2. Red (Net-S)
5. Blue (Net-L)

FEMALE END VIEW

3. Black (Net-C)
5. Blue (Net-L)
4. White (Net-H)
1. Bare (Shield)
2. Red (Net-S)

MICRO DOUBLE-ENDED CORDSETS

MALE END VIEW

4. White (Net-H)
1. Bare (Shield)
3. Black (Net-C)
2. Red (Net-S)
5. Blue (Net-L)

FEMALE END VIEW

3. Black (Net-C)
5. Blue (Net-L)
4. White (Net-H)
1. Bare (Shield)
2. Red (Net-S)

MULTIPORT BOX

MALE END VIEW

4. White (Net-H)
1. Bare (Shield)
3. Black (Net-C)
2. Red (Net-S)
5. Blue (Net-L)

FEMALE END VIEW

3. Black (Net-C)
5. Blue (Net-L)
4. White (Net-H)
1. Bare (Shield)
2. Red (Net-S)

WIRING DIAGRAM
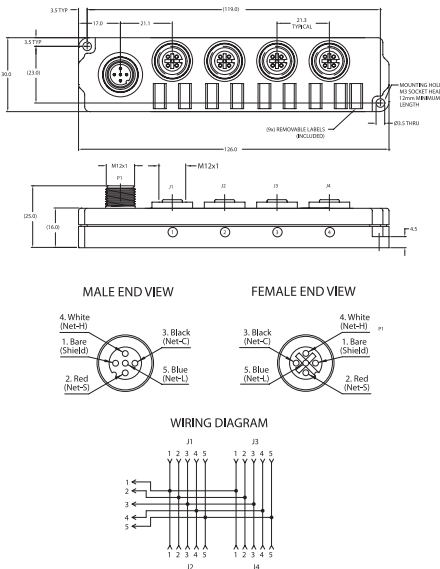
MICRO/MID POWERTAP TEE
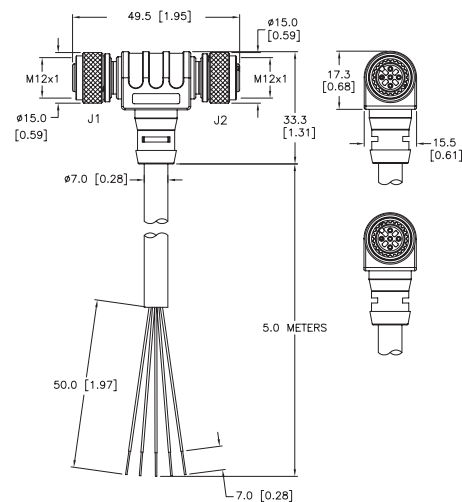
MICRO/MID FIELD-ATTACHABLE CONNECTORS (STRAIGHT)

MALE

FEMALE

MALE END VIEW

4. White (Net-H)
1. Bare (Shield)
3. Black (Net-C)
2. Red (Net-S)
5. Blue (Net-L)

FEMALE END VIEW

3. Black (Net-C)
5. Blue (Net-L)
4. White (Net-H)
1. Bare (Shield)
2. Red (Net-S)
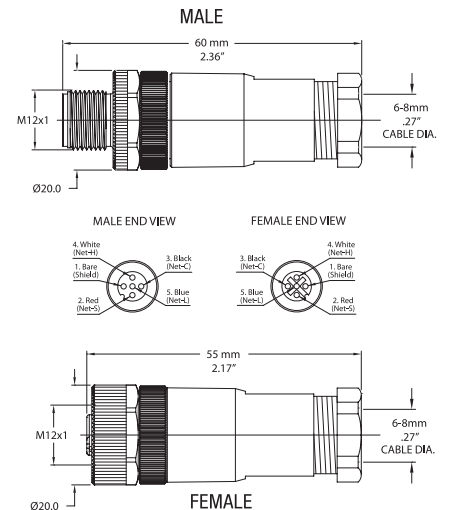
User Interface

- 8" TFT LCD panel, LED Backlit
- Widescreen aspect ratio 5:3
- 800 x 480 pixels
- 1350 nits brightness (Optically bonded)
- Solid state disk drive

- Fanless cooling system
- Flush or VESA mounting capability
- Dual CAN Bus for Single or Redundant NMEA 2000® Network Connectors
- Includes Maretron's N2KView

TSM810C-01

Item Number	Description	Price
TSM810C-01	8" vessel monitoring and control touchscreen	$2,795.00

- 5.7" high-resolution sunlight viewable color display
- Custom screen configurations and an easy-to-use five-key illuminated keypad
- Features an alert/ alarm package and electrical switching capability
- Mounting options: flush mount, surface mount, gimbal mount helm, gimbal mount ceiling
- Directly connects with any NMEA 2000® network and with the exception of AIS data will display any or all information captured throughout the vessel

- Displays a multitude of information including AC power, anchor status, battery, depth, electrical distribution, engine, environment, fuel management, GPS, heading, navigation, pressure/ vacuum, rudder, speed, status indicators, tanks, temperature, time, transmission, water makers, weather, wind and more

DSM250-01

Item Number	Description	Price
DSM250-01	High bright color display (black enclosure)	$995.00

- NMEA 2000 Network Interface
- Super loud 105dB audible alarm
- Bright Red LED visual alarm
- Green LED status indicator
- Multiple selectable alarm patterns
- Waterproof - Can be mounted indoors or outdoors
- Generates visual and audible alerts for any monitored condition

ALM100-01

Item Number	Description	Price
ALM100-01	Alarm Buzzer with Black Cover Plate	$395.00

Images are representative of products listed and may not be actual product.

Digital Automation

NMEA 2000 Gateways and Bridges

IPG100

- The Internet Protocol Gateway (IPG100) lets you connect PC's, Mac's, tablets, or smartphones to an NMEA 2000® network so you can monitor and control your vessel using Maretron's N2KView® software
- The IPG100 has an NMEA 2000® and an Ethernet data port for exchanging information between the onboard NMEA 2000® network and Internet Protocol (IP) enabled devices using conventional technology such as routers, switches, and wireless modems.
- IPG100 will automatically connect to Maretron's Real Time Cloud Service, which allows you to remotely connect to your vessel via the Internet

IPG100-01

Item Number	Description	Price
IPG100-01	Internet Protocol Gateway	$395.00

NBE100

- Maretron's NBE100 allows you to extend the maximum node count, network trunk length and cumulative drop length of any NMEA 2000® network
- Solves bus errors and other electrical issues caused by exceeding any of these limitations and makes design of large networks easier
- Segments a single large NMEA 2000® network into two smaller electrical segments.
- Optically isolates network segments, increasing signal integrity and network reliability.

NBE100-01

Item Number	Description	Price
NBE100-01	NMEA 2000® Network Bus Extender	$595.00

FPM100

- Maretron's Fluid Pressure Monitor is used to adapt up to six pressure transducers to the NMEA 2000® network (pressure transducers sold separately).
- The FPM100 also has a tank level mode, so that fluid levels in a tank can be monitored via a pressure transducer mounted at the bottom of the tank and transmitted over the NMEA 2000® network
- Allows 21 pressure sources types
- Operating voltage 9 to 32 volts.

FPM100-01   PT-0-3PSI-01

Item Number	Description	Price
FPM100-01	NMEA 2000® Network Bus Extender	$395.00
PT-0-3PSI-01	Pressure Transducer 0 to 3 PSI	$149.00

List pricing in catalog is subject to change without notice.

NMEA 2000 Gateways and Bridges

TLM100

- Maretron's TLM100 is used to sense fluid levels of tanks by using ultrasonic technology.
- TLM100 is capable of sensing fluid levels in tanks up to 40" (1.02m) in depth.
- It can be used for diesel, fresh water, waste water, black water, and oil tanks
- The TLM100 can be calibrated for irregular tank shapes so you can know the true fluid level in your tanks.
- Operating voltage 9 to 16 volts

TLM100-01

Item Number	Description	Price
TLM100-01	Tank Level Monitor (40" Depth Tanks)	$225.00

USB100 NMEA 2000® USB Gateway

- Maretron's USB100 is a gateway for bridging computers to an NMEA network.
- Allows you to use PC based vessel monitoring and control software
- The gateway provides one simple connection between the network and the PC
- For older PC based navigation software that requires receiving data in NMEA 0183 format, the USB100 automatically converts information from the NMEA 2000® network to NMEA 0183 sentences.

USB100-01

Item Number	Description	Price
USB100-01	Gateway NMEA 2000® / USB	$295.00

J2K100 J1939 to NMEA 2000

- Maretron's J2K100 attaches directly into J1939 networks of compatible engines, transmissions, and gensets and converts the J1939 data to the marine digital interface (NMEA 2000®).
- Critical engine, transmission, and genset data is then distributed throughout the vessel over a single cable where it can be monitored by any NMEA 2000® compatible display.
- The J2K100 can also be used as part of a complete fuel computer.
- The J2K100 is compatible with any engine, transmission, or genset equipped with a J1939 interface

J2K100-01

Item Number	Description	Price
J2K100-01	J1939 to NMEA 2000® Gateway	$395.00

Images are representative of products listed and may not be actual product.

Digital Automation

Engine Monitoring

J2K100 J1939 to NMEA 2000

- Maretron's J2K100 attaches directly into J1939 networks of compatible engines, transmissions, and gensets and converts the J1939 engine data to the NMEA 2000

- The J2K100 is compatible with J1939 products, including those from: Caterpillar,Cummins, Detroit Diesel, John Deere, Kohler, Ona, Perkins, Steyr, Volvo Penta, Yanmar

- Operating voltage 9-16 volts

MCF-2M-D12

Item Number	Description	Price
J2K100-01	J1939 to NMEA 2000® Gateway	$395.00
MCF-2M-D4	J2K100 adapter Micro female to Deutsch 4 Pin 2 Meter Cordset	$53.00
MCF-2M-D12	J2K100 adapter Micro female to Deutsch 12 Pin 2 Meter Cordset	$62.00

Electrical Monitoring and Controls

ACM100

- Maretron's ACM100 is a device which monitors AC power sources and outputs information about these sources onto the industry standard NMEA 2000® marine data network

- Monitoring AC Power Sources such as Utilities and Generators and transmitting: Voltage, Current, Frequency, Real Power, Reactive Power, Apparent Power, Power Factor, Total Energy Imported, Total Energy Exported

ACM100-01

Item Number	Description	Price
ACM100-01	Alternating Current (AC) Monitor	$495.00
M000630	100Amp AC Transducer with Cable	$59.00

DCM100

- Maretron's DCM100 DC Monitor is an advanced electronic monitoring device used to measure the voltage and current of any direct current (DC) power source or load.

- The DCM100 uses an included state-of-the-art Hall effect current sensor which simply slips over the wire - you don't have to break connections or install connectors as you do with inline shunts used by other solutions.

- DCM100 measures: Battery voltage, Battery current, Ripple voltage, Battery case, temperature, State of charge, Time remaining, Charge efficiency factor

DCM100-01

Item Number	Description	Price
DCM100-01	Alternating Current (AC) Monitor	$495.00
LEMHTA400-S	100Amp AC Transducer with Cable	$150.00
LEMHTA600-S	600 Amp Current Transducer with Cable	$195.00

List pricing in catalog is subject to change without notice.

Electrical Monitoring and Controls (Continued)

RIM100

- Maretron's Run Indicator Module monitors both AC and DC electrical circuits and reports, over an NMEA 2000® network, whether or not the electrical circuit is energized and running.
- Monitors and reports the running status of connected devices
- Works with both automatically and manually switched loads
- Can indicate the status of a wide variety of loads: Bilge Pumps, Winches, Running Lights, Transfer Pumps, Exhaust/Intake Fans
- Includes built in timers and counters so you know how long and many times a load is energized

RIM100-01

Item Number	Description	Price
RIM100-01	Run Indicator Module	$295.00

General System Monitoring SIM

SIM100

- Maretron's Switch Indicator Module monitors switch closure devices including, but not limited to, safety equipment
- Advanced features of the SIM100 include the ability to detect whether or not power has been disconnected from the monitored device or if the signal wires have been disconnected due to either corrosion, tampering, or for any other reason (if the monitored device is so equipped).
- Monitors and reports the running statuses of six independently connected devices
- Can detect and report problems like opens and shorts in switch circuits

SIM100-01

Item Number	Description	Price
SIM100-01	Switch Indicator Module	$395.00

Images are representative of products listed and may not be actual product.

Digital Automation

General System Monitoring SIM (Continued)

TMP100

- Maretron's TMP100 measures the temperature for up to 6 temperature probes and reports the information over an NMEA 2000® network. The TMP100 supports up to 4 thermistor probes and 2 high temperature thermocouple probes.
- Six External Temperature Probes are Measured and Broadcast Over NMEA 2000 Network
- Four Channels for Thermistor Probes and 2 Channels for High Temperature Thermocouple Probes
- Wide Variety of Applications Supported with Optional Temperature Probes: Cabin Temperature, Engine Room Temperature, Under Bolt Temperature, Refrigerator/ Freezer Temperature, Tank Temperatures, Air Duct Temperature, Exhaust Gas Temperature

TMP100-01

TP-AAP-1
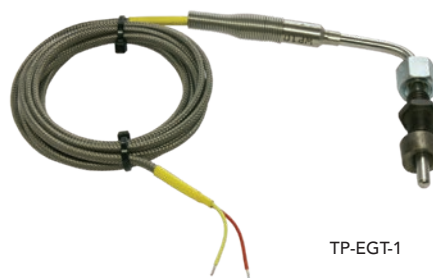
TP-EGT-1

Item Number	Description	Price
TMP100-01	Temperature Module	$295.00
TP-AAP-1	TMP100 Ambient Air Temperature Probe	$24.50
TP-EGT-1	TMP100 Exhaust Gas Temperature (EGT) Probe	$129.00

Navigation Instruments

GPS200

- Maretron's GPS200 is a state-of-the-art 99 channel GPS/ GLONASS antenna and receiver capable of providing ten position fixes per second
- GPS200 broadcasts precision magnetic variation information using the current position and world magnetic model

- The GPS200 antenna/receiver is a plug-and-play device that is fully compliant and certified to the NMEA 2000® Standard.
- The GPS200 is easily mounted to a standard marine mount with 1"-14 TPI male pipe end. It can also be mounted directly to a deck.

GSP200-01

Item Number	Description	Price
GPS200-01	GPS Antenna/Receiver	$295.00

*List pricing in catalog is subject to change without notice.*

NMEA 2000 Connectors, Resistors and Cable

Connectors

- Color coded screw terminals for error free installations
- Rugged housing designed to withstand harsh marine environments
- Field attachable
- MICRO Tees have gold contacts for greatest reliability with keyed connectors
- Powertap tee connects to network backbone to provide bus power. Tee provides two inputs permitting double power provisions. IP67
- MICRO terminator resistors are used to terminate both ends of the trunk line and have screw terminal connectors for positive connections, IP68

Cordsets

- Double ended for trunk or drop lines
- Keyed for error free connection
- Waterproof for continued operation even while submerged in the bilge
- MID cordsets are optimized for voltage drop sensitive networks (long runs) because power pair wires have half the resistance of MICRO cables
- IP68 rated

ELB-CM-CF

CM-CF-CF

TR-CF
TR-CM

FA-CF-ST
FA-CM-ST

CF-SPWR05-CF

CM-CF-4

CM-CG1-CF-1

DM-DB1-DF-1
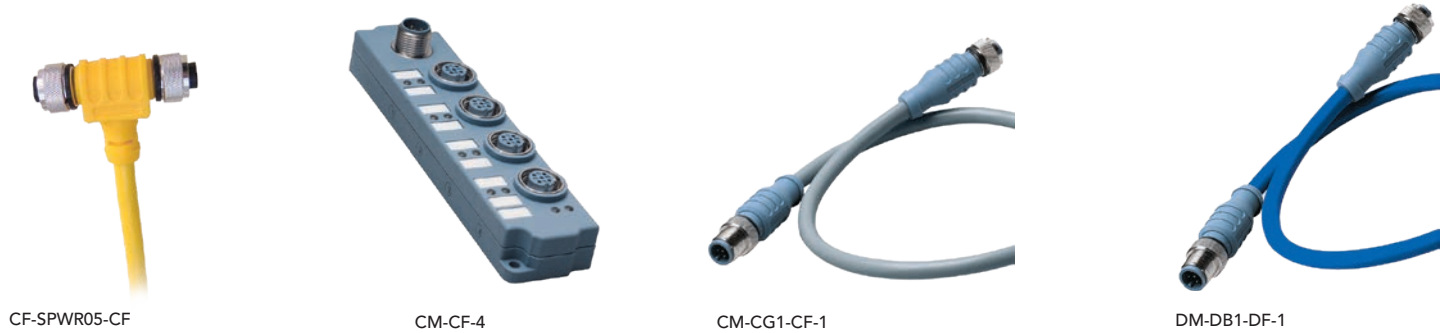
Item Number	Description	Color	Ratings	Volts
Call for Current Pricing				
	Connectors			
CABLE STARTER KIT	Includes: Powertap, two male terminators, two tees, two 2m and one 10m micro cables	Powertap: Yellow Connectors: Gray	—	—
CF-SPWR05-CF	MICRO/MID Powertap Tee: female (left))/5 meter yellow 4 wire power drop(bottom)/ female(right)	Yellow	4 amp	250VDC
CM-CF-CF	MICRO tee-male(left)/ female(bottom)/ female(right)	Gray	4 amp	60VDC
CM-CF-4	Multiport box (MICRO-MID male homerun, MICRO-MID female drops)	Gray	4 amp	250VDC
FA-CF-ST	MICRO/MID straight female	Gray	4 amp	30V AC/ 36VDC
FA-CM-ST	MICRO/MID straight male	Gray	4 amp	30V AC/ 36VDC
IT-CM-CF	MICRO inline terminator	Gray	121 Ohms (1/4W)	10-30VDC
ELB-CM-CF	MICRO 90° male to female connector	Gray	4 amp	50V
TR-CF	MICRO female termination resistor	Gray	120 Ohms (1/2W)	10-30VDC
TR-CM	MICRO male termination resistor	Gray	120 Ohms (1/2W)	10-30VDC

Item Number	Type	Ends	Color	Meters Sold
Call for Current Pricing				
	Cordsets			
CM-CG1-CF-XX	MICRO	Male to Female	Gray	0.5, 1, 3, 5, 8
DM-DB1-DF-XX	MID	Male to Female	Blue	0.5, 1, 2, 3, 4, 5

Images are representative of products listed and may not be actual product.

Digital Automation

NMEA 2000 Connectors, Resistors and Cable

Item Number	Description	Color	Ratings	Volts
Call for Current Pricing				
		Connectors		
FA-NF-ST	Mini Field Attachable Connector (Female)	Black	9 Amps	250V
FA-NM-ST	Mini Field Attachable Connector (Male)	Black	9 Amps	250V
NM-NF-NF	Mini Tee	Gray	9 Amps	600V
NM-CF-NF	Mini/ Micro	Gray	4 Amp (micro) 9Amp (mini)	250V
		Resistors		
Call for Current Pricing				
IT-CM-CF	Micro Inline Terminator	Black	121 Ohms (1/4 W)	10-30VDC
TR-NM	Mini Termination Resistor (Male)	Gray	120 Ohms (1/2 W)	300VDC
TR-NF	Mini Termination Resistor (Female)	Gray	120 Ohms (1/2 W)	300VDC

Item Number	Type	Max Amp	Resistance/Conductor	Volts	Length Sold
		Cable			
Call for Current Pricing					
CG1	Micro	6 Amps	18.1 Ohms/ 1000ft	Gray	per Meter
CG1-100	Micro	6 Amps	18.1 Ohms/ 1000ft	Gray	2x50m
DB1	Mid	14 Amps	4.1 Ohms/1000ft	Blue	per Meter
DB1-100	Mid	14 Amps	4.1 Ohms/1000ft	Blue	2x50m
NG1	Mini	14 Amps	3.4 Ohms/1000ft	Gray	per Meter
NG1-100	Mini	14 Amps	3.4 Ohms/1000ft	Gray	2x50m
NB1	Mini	16 Amps	3.4 Ohms/1000ft	Blue	per Meter
NB1-100	Mini	16 Amps	3.4 Ohms/1000ft	Blue	2x50m

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