



# Industry Application Report

*January 2021*



# Unmanned Surface Vehicle (USV).

Unmanned Surface Vehicle (USVs), sometimes referred to as ASVs (Autonomous Surface Vehicles), are boats that function autonomously on the water without a human crew on board. USVs have a range of applications spanning from oceanography for sea-based research, to military applications for defence purposes.

Regardless of the application, protection from the harsh sea environment is key for the complex on-board electronics. USVs used for monitoring and surveillance over water surfaces have incorporated a variety of Bulgin Buccaneer products, including the 400 Series and SMB Antenna for the critical power and data requirements.

- ⬡ Potential Markets: Military / Marine
- ⬡ The Bulgin 400 Series SMB Antenna is water and dustproof to IP68 when mated with a compatible connector and offers a built-in half wavelength omnidirectional sealed antenna with a choice of frequency bands depending on part code



# Products Related To This Industry:



## PX0407 / 408 / 409

### 400 Series SMB

SMB Antennas. Water and dustproof to IP68 when mated with compatible connector. Secure screw thread locking. Built-in half wavelength omnidirectional sealed antenna 90 degree bend (part codes suffixed /90). Straight (no part code suffix). SMB 50 Ohm interface. Choice of frequency bands depending on part code. Mate with PX0414 Panel Mount SMB Connector.



## PX0415/1

### 400 Series SMB

Rewireable SMB Connector. Water and dustproof to IP68 when mated with compatible connector. Frequency range 0-4GHz. Supplied with 50 Ohm impedance SMB plug. For RG-174 cable. 14319 hand crimp tool available separately. Pre-wired connector also available (PX0416). Mate with Panel connector PX0414.



## PX0410

### 400 Series Buccaneer

Flex Cable Connector. Water and dustproof to IP68 when mated with compatible connector. Pin or Socket. 2, 3, 4, 6, 8, 10 or 12 Pole. Crimp or Solder Contacts available (supplied separately). Choice of cable acceptance 3mm-7mm depending on part code. Mate with Flex In-Line or Panel Mount Connectors PX0401, PX0411, PX0412, PX0413.



## PXS400

### 400 Series Buccaneer

Smart Connector with EEPROM PXS400. 400 Series Smart Overmould Prewired Connectors. 1 - wire EEPROM chip. Water and dustproof to IP67 when mated with compatible connector. Pin or Socket. 4, 6, 8, 10 & 12 Pole. Choice of Sealing Caps available separately to maintain IP rating of unmated connectors.



# Energy Distribution Unit.

Energy Distribution Units or Power Distribution Units (PDU) are electronic devices that brings multiple power outlets together in order to redistribute power from one location. Such a device can be utilised across a range of applications from office computer set-ups, data centres, campsites and harbours to overcome logistical issues related to power and cabling management.

The Bulgin Illuminated vandal switches were incorporated into the main input controls on a power unit installed in locations such as campsites and harbours. The stainless steel switch construction was ideal for frequent high traffic usage and the exposure it faced all year round.

- ⬡ Potential Markets: Marine / Electric Fuelling Stations
- ⬡ Manufactured from Stainless Steel, Bulgin's extensive range of vandal resistant security switches are designed with a high resistance to wear and tear, corrosion and harsh use in potentially hostile environments such as access control applications



# Products Related To This Industry:



## 8300 Series

### Vandal Resistant Switch

Vandal Resistant IP66 Panel Sealed Stainless Steel Push Button Switches. ENEC, UL, CSA approved. Approvals & ratings can vary with function - see technical data for details. Single Pole & Double Pole versions in same body size.



## MPI001 Series

### Vandal Resistant Switch

22mm diameter bezel. 19.2mm Panel Cutout  
Single pole. Push to make tactile (momentary action).  
Choice of Termination depending on part code:  
/28 - 2.8mm Tab. /TE or /TERM - Screw Terminal.  
/RP - Solder Tag. /FL - 300mm Flying Leads; white  
- switch, red - LED +, black - LED.



## MPB Series

### Vandal Resistant Switch

Brass Chrome Plated Low Profile Vandal Resistant Push Button Switches. Choice of switch operations, diameters & IP ratings depending on part code. Solder Tag except for MPB037 (Screw Terminal). Where an IP rating is shown, switch is front panel sealed to IP rating given, microswitch is not sealed.



## MP0050 Series

### Vandal Resistant Switch

Stainless Steel Large Diameter Vandal Resistant Push Button Switches. Front panel sealed to IP66 (microswitch is not sealed). 32mm diameter. Solder Tag. Choice of Low Profile (MP0050) or Protruding Profile (MP0050/2).



# Robot Pool Cleaning.

Automated cleaning robots for commercial and domestic swimming pools have become a popular choice for pool maintenance to drastically reduce human interaction. Robotic pool cleaners come in different shapes and sizes, but the key function across them largely remains the same through being comprised of a filter and a pump system that collects sediment.

The robotic pool cleaners can be fully submerged in water but still require an electrical power feed - which introduces clear potential electrical issues. To overcome such unwanted issues many pool cleaners have made use of the great sealed properties offered by the Bulgin 900 Series Buccaneer connector range.

- ⬡ Potential Markets: Hotels / Aquariums
- ⬡ Sealed up to IP68 and IP69K, the Bulgin 900 Series features a secure screw thread lock to ensure robust high voltage connections. Suited to applications requiring dust and waterproof connections for single or three phase power distribution



# Products Related To This Industry:



## PX0911 / PXA911

### 900 Series Buccaneer

Flex Cable Connectors. Water and dustproof to IP68 when mated with compatible connector. Positive fast-acting locking ring - can be turned with a gloved hand. Plug or Socket. 2, 3, 4, 5, 7, 10 Pole with leading Earth on 3, 4, 5, 7 Pole versions, trailing Neutral on 5 Pole version. Screw Terminals.



## PX0921 / PXA921

### 900 Series Buccaneer

Flex In-Line Cable Connectors. Water and dustproof to IP68 when mated with compatible connector. Positive fast-acting locking ring - can be turned with a gloved hand. Plug or Socket. 2, 3, 4, 5, 7, 10 Pole with leading Earth on 3, 4, 5, 7 Pole versions, trailing Neutral on 5 Pole version. Screw Terminals.



## PX0931

### 900 Series Buccaneer

Panel Mount Connector. Water and dustproof to IP68 when mated with compatible connector. Positive fast-acting locking ring - can be turned with a gloved hand. Plug or Socket. 2, 3, 4, 5, 7, 10 Pole with leading Earth on 3, 4, 5, 7 Pole versions, trailing Neutral on 5 Pole version. Single hole fitting, anti-rotation key.



## PX0941

### 900 Series Buccaneer

Flange Mount Connector. Water and dustproof to IP68 when mated with compatible connector. Positive fast-acting locking ring - can be turned with a gloved hand. Plug or Socket. 2, 3, 4, 5, 7, 10 Pole with leading Earth on 3, 4, 5, 7 Pole versions, trailing Neutral on 5 Pole version. Supplied with high grade sealing gasket.



# Snowmobile Controls.

Snowmobiles have been utilised as a motorised version of a conventional sled in order to traverse snow and ice covered environments where trails or roads are not present. The use of snowmobiles has also extended beyond being used purely for travel, as snowmobiles are also used within a wide range of sporting events.

Such cold and hostile environments pose a host of challenges for electrical equipment - to which the IP67 rated Arcoelectric Toggle Switch has been incorporated into the control panels on a range of snowmobile instruments and equipment that face such extreme weather environments.

⬡ Potential Markets: Specialist Vehicles / Agriculture

⬡ Well known for their quality and reliability, Bulgin's Toggle Switches are cost effective solutions to many existing applications. These switches offer features at an attractive price point often well below that of the existing competition



# Products Related To This Industry:



## 3900 Series Toggle Switches



ENEC, UL, CSA approved (approvals & ratings vary with function & switch body type - see technical data for details). Choice of: Single Pole (3900 Series), Double Pole (3950 Series) Standard or Sealed body (panel seal to IP67)  
Actuator: 10mm, 17.5mm, 38.1mm Metal Toggle or 17.5mm Flatted Nylon Toggle.



## 1700 / 1750 Series Toggle Switches



Range of Toggle Switches with Nylon actuators. ENEC, UL, CSA approved (approvals & ratings vary with function & switch body type - see technical data for details). Single Pole (1700 Series), Double Pole (1750 Series).  
Actuator: 13.8mm Nylon Toggle, 16.4mm Flatted Nylon Toggle.



## Accessories Toggle Switches



Covers (with internal nylon/metal nuts) & Seals:  
A1080MOAAA Actuator Cover for use with 3900 Series & compatible 1700/1750 Series switches. A0539MOAAA Neck Seal (actuator remains visible) for use with 3900 Series & 1700/1750 Series switches. A0331MOAAA Actuator Cover for use with compatible 1700/1750 Series.



## 5500 Series Rocker Switches



Range of Single Pole Rocker Switches. Standard (5500 Series) & Illuminated (5503, 5508 Series) versions. ENEC, UL, CSA approved. Approvals & ratings can vary with function - see technical data for details. Choice of Single or Twin units. Termination: 6.3 x 0.8 QC, 4.8 x 0.8 QC, Solder Lug. Body/bezel styles.

# Domestic Water Diagnostics.

The testing of household water sources is now widely carried out to determine the quality of water as well as running tests on the plumbing systems installed. Such tests require connections that can perform quick data returns for the sensor technology at hand.

An innovative solution to monitor water and plumbing within homes through valve and sensor technology has key information being accessed through the central hub via a Bulgin Mini USB Buccaneer.

- ⬡ Potential Markets: Commercial / Utilities
- ⬡ Water and dustproof to IP68 when mated with compatible connector
- ⬡ Pre-Wired Fully Overmoulded USB V2.0 Cable



# Products Related To This Industry:



## PX0457 / PX0458

### 400 Series Mini USB

Rear Panel Mount Mini USB Type AB Socket. Water and dustproof to IP68 when mated with compatible connector. Choice of Terminations depending on part code: PX0457 leaded, terminating in a 6 way header. PX0458 direct PCB Mount. PX0484 Sealing Cap available separately. Mate with PX0441, PX0442, PX0444 Cables.



## PX0443 / PX0459

### 400 Series Mini USB

Front Panel Mount Leaded Mini USB Type B Socket. Water and dustproof to IP68 when mated. PX0443 has a 108mm lead terminating in a 5 way crimp connector for use with PC header (available separately). PX0459 is identical to PX0443 but with exposed braid for use with PX0464 screening can (available separately). Mate with PX0441, PX0442 Cables.



## PX0456

### 400 Series Mini USB

Front Panel Mount Leaded Mini USB Type B Socket. Water and dustproof to IP68 when mated with compatible connector. 108mm lead terminating in a 6 way crimp connector for use with PCB header (available separately, part code 14563, 14564). PX0480 Sealing Cap available separately. Mate with PX0441, PX0442, PX0444 Cables.



## PX0441 / 442 / 444

### 400 Series Mini USB

Pre-Wired Fully Overmoulded USB V2.0 Cable. Water and dustproof to IP68 when mated with compatible connector. Choice of: Standard USB Type A plug to Sealed Mini USB Type B plug (part codes prefixed PX0441). Mini USB Type A plug to Sealed Mini USB Type B plug (part codes prefixed PX0442). Mini USB Type B plug to Sealed Mini USB Type A plug (part codes prefixed PX0444).





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