

**Amphenol LTW™**  
Unrivaled InterConnects for Harsh Environments



# MARINE BROCHURE

2022



## About Us

Since 1993, Amphenol LTW Technology “ALTW” lives and breathes to create, innovate, design and produce “*unrivaled interconnects for harsh environments*”. With over 300 worldwide patents, not only does ALTW offer the broadest and widest range of rugged interconnects in the industry but also customization with the mission of “Customer Satisfaction First”. Undoubtedly, ALTW is the leader in rugged interconnects, highly recognized for its uncompromising quality, short lead time, fast and tailored service and its very competitive pricing.

Regardless of the challenging environments that your products will be subject to; there is a very good chance that you will find what you are looking for with ALTW.

**24+**

Product Series

**80,000+**

Part Numbers  
(>70% customized parts)

**30+**

Market  
Applications

**75+**

Distribution  
Channels

## Contact Us

- ✓ Headquartered & Factory: New Taipei City, Taiwan
- ✓ APAC Factory: Kunshan, Jiangsu Province, China PRC
- ✓ NA Factory: Nogales, Mexico
- ✓ EU Factory: Hungary (2023, Q4)

## Our Capabilities

ALTW's strategy is to have as much vertically integrated manufacturing in-house capabilities as possible in order to ensure quality assurance, short lead time and highly competitive pricing. These are for example:

- Testing laboratories certified TAF and UL WDTP
- CNC lathe machined parts and contacts / pins
- Tooling / mold design and manufacturing
- Horizontal and vertical injection manufacturing
- Semi and full automated connector and cable assembly lines
- Cable assembly
- Total electronic turnkey solutions

## Online Resource



### Your benefits

- ✓ Worldwide access 24/7
- ✓ Product configurator
- ✓ Real time order tracking
- ✓ Online assistance (live chat)
- ✓ Instant drawing release
- ✓ Instant quotation
- ✓ Order online
- ✓ Catalogue
- ✓ Search by vendor
- ✓ Search by drawing / picture



# Marine Solutions

Amphenol LTW is one of the leading solution providers in marine electronics and electrical system interconnects. Its 30 years of experience has proven to understand and solve the needs of various segments in the marine industry; catering to a wide range of applications in communication, navigation, MFD, sonar, security system, NMEA 2000 cabling, lighting, outboard and trolling motors, energy storage, BMS and sensors. It has more than 30,000 standard product offerings specifically designed for harsh marine environments, ruggedized to minimize downtimes and to eliminate unwanted costs of repairs and maintenance. ALTW has a dedicated team of engineers that can work closely with its client to fully understand the application, especially those that require custom-made products that correspond to a specific application.



Find more

# Marine Applications

## Trolling Motor / Fish Finder

Power, X-Lok, Ceres

## Thermal Imaging

X-Lok, RJ45, M Series, FLOS, USB

## Controller / Switch Box

Power, X-Lok, Ceres, M Series

## Energy Storage / Battery Management

Power, X-Lok, Ceres, M Series

## Electric Outboard Motor

Power, X-Lok, Ceres

## Smart Lighting

X-Lok, RJ45, IPCS

## Underwater Lighting

X-Lok, Ceres, IPCS

## Mate Underwater DeepTronica®



MRE



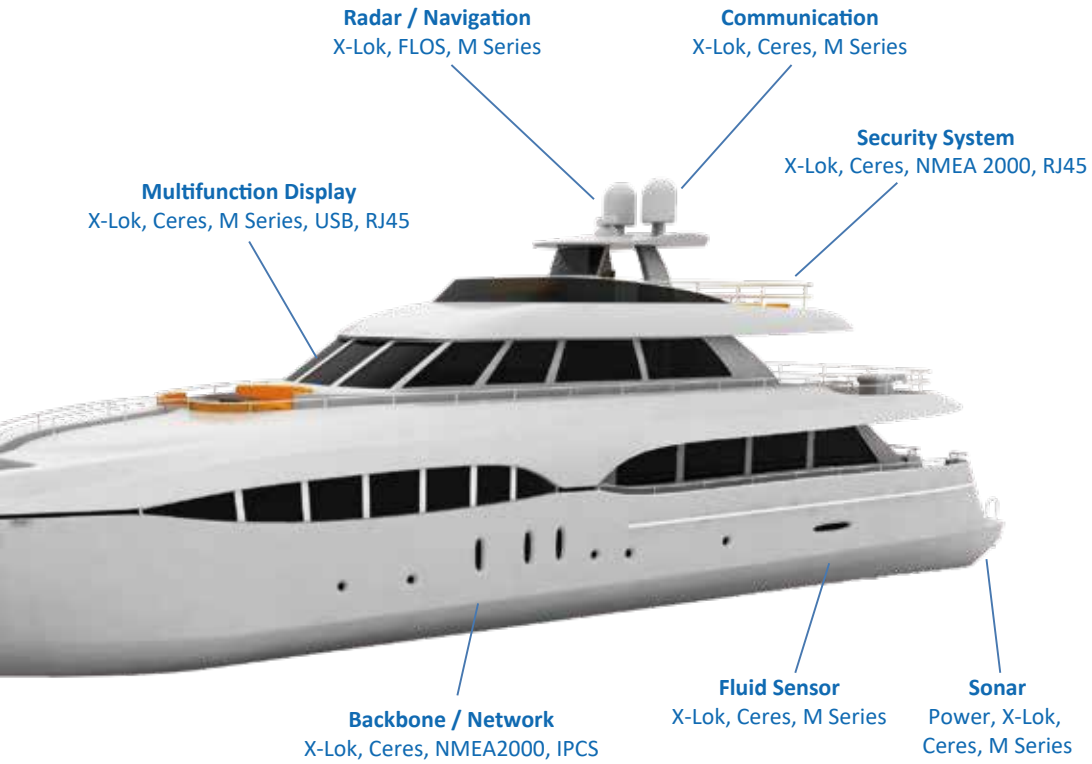
Diving



Drilling Systems



Buoys



**ROVs**



**Submarine**

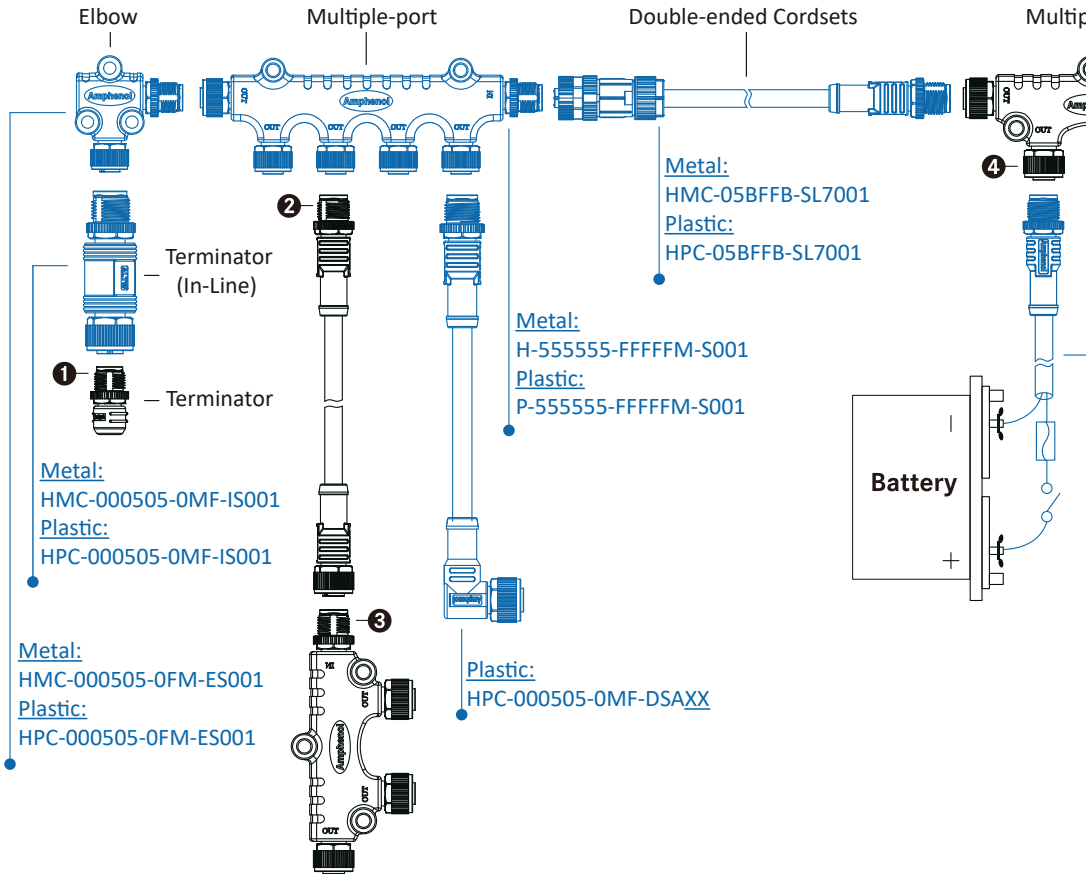


**ROTV**



**Submarine Cabling**

# NMEA 2000 Network System



## NMEA 2000 Starter Kit



Basic Package

Plastic

Basic Package

Metal

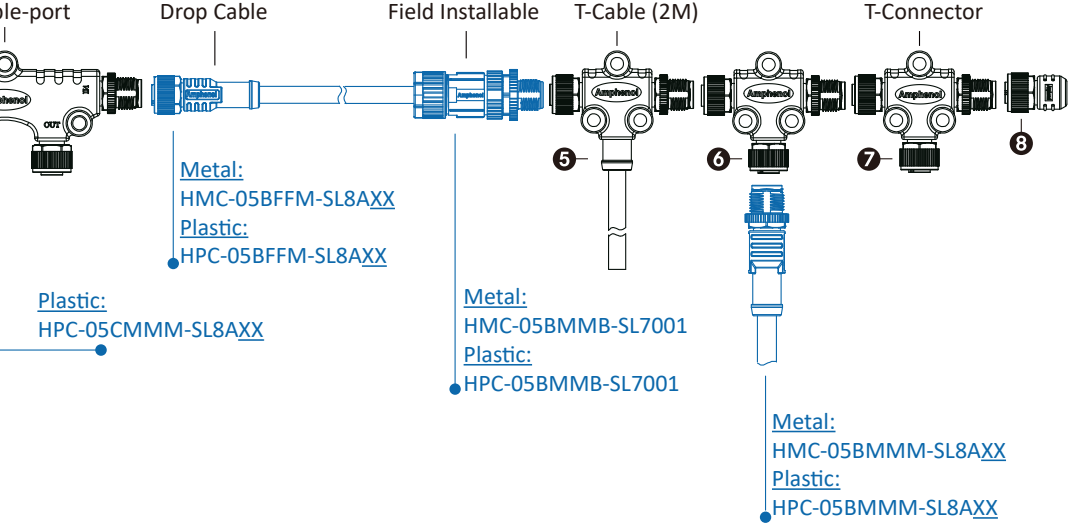
Pro Package

Plastic

Pro Package

Metal





NMEA 2000  
 Certified



UL94V-0

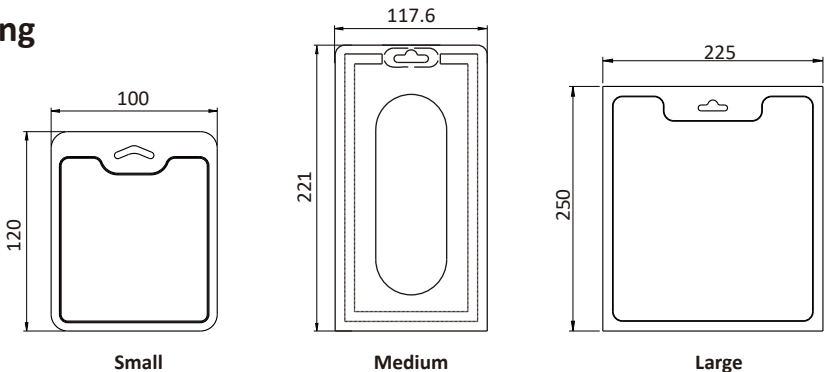


RoHS



IPX7 / IPX8  
 IPX9K

## Blister Packing



(Unit: mm)

# Product Focus

## NMEA 2000



Sub-Series	Pin #	Nominal Current	Voltage (AC/DC)	Mating Style
Lite (Micro) (M12*1.0) (M16*1.5) (PG9)	5	4A	60V	Push pull Screw thread
Heavy (Mini) (7/8"-16 UN)	4-5	8A	600V	Screw thread

Certification: NMEA 2000

- ✓ IP67 mated, IP68 / IP69K mated or unmated
- ✓ High signal reliability
- ✓ 60/600V AC/DC voltage rating
- ✓ UL94V-0 / UL94HB flammability rating
- ✓ Designed to meet NMEA 2000 protocols and standards



## Ceres



- ✓ IP67 mated or unmated
- ✓ Metal or plastic
- ✓ Mating style: 2 or 3 points lock bayonet, screw thread, push lock
- ✓ Assembly style: solder, screw-in, PCB 180°, PCB 90°, crimp
- ✓ Power, data / signal, hybrid
- ✓ Flammability UL 94V-0
- ✓ UV resistant

Sub-Series	Pin #	Nominal Current	Voltage (AC/DC)	Mating Style
Mini (7/16"-28 UNS)	2-6	2A-5A	250V	2 points lock Screw thread
Standard (5/8"-27 UNS)	2-12	2A-10A	250-600V	2 points lock 3 points lock Screw thread
Middle (13/16"-28 UNS)	2-18	2A-20A		2 points lock Screw thread
Large (1"-20 UNEF)	2-22	2A-20A		2 points lock Screw thread
Macro (13/16"-20 UNS)	31	5A	200V	2 points lock
PLD (1/2"-28 UNEF)	2-4		250V	Push lock
MAB (Ø 17.5mm)	4	10A		2 points lock
GBD (Ø 21.0mm)	8	10A+5A		3 points lock

Certification: UL1977



## X-Lok Push Lock (Blind Mate)



- ✓ IP68 mated or unmated
- ✓ Spring loaded push lock design
- ✓ Intuitive mating with audible feedback
- ✓ Power AC/DC, data, signal, hybrid
- ✓ Saving on-site installation time & costs
- ✓ Exponentially increase installation outputs
- ✓ Eliminating workmanship errors

Sub-Series	Pin #	Nominal Current	Voltage (AC/DC)
Mini (9/16"-24 UNS) (PG9)	2-33	0.5A-16A	30-630V
Standard (5/8"-27 UNS)	2-8	5A-10A	300-600V
Middle (13/16"-28 UNS)	2-12	5A-20A	
Large (1"-20 UNEF)	2-100	0.5A-50A	60V (0.5A) 300-600V
Macro (1 3/16"-20 UNS)	4-31	5A-80A	300-600V

Certifications: UL1977, UL2238, UL50e



## M Series



- ✓ IP67 / IP68 mated or unmated, IP69K mated
- ✓ Designed for industrial process measurement and control
- ✓ Compact design for harsh environment
- ✓ Size: IEC Standard M5 / M8 / M10.5 / M12 / M23 , and available in receptacle, overmolded cable, field installable and accessory
- ✓ Plastic, metal, shielded variety
- ✓ Comprehensive range of accessories

Sub-Series	Pin #	Nominal Current	Voltage (AC/DC)	Mating Style
M5 (M7*0.75)	3-6	1A	60V	Screw thread
Guided M8 / LED (M8*0.5) (M8*1.0) (M10*0.75)	2-6	1.5A-3A 3A+1.5A	30-60V	Screw thread Snap-In
M8 / LED (M8*0.5) (M8*1.0) (M10*0.75)	3-13	0.5A-3A		
M10.5 (M11*0.5)	2-5	2A	30V	Screw thread
M12 (A) / LED (M12*1.0) (M16*1.5) (PG9)	3-28	4A	30-250V	Screw thread Push pull
M12 (B) / LED (M12*1.0) (M16*1.5) (PG9)	5		60V	
M12 (D) / LED (M12*1.0) (M16*1.5) (PG9)	4		250V	
M12 (I) / LED (M16*1.5) (PG9)	5		60V	
M12 (K) / LED (M15*1.0) (M16*1.5) (PG9)	3-5	12A, 16A	630V	
M12 (L) / LED (M15*1.0)	2-5	16A	63V	
M12 (M) / LED (M12*1.0) (M16*1.5) (PG9)	3-6	8A	630V	
M12 (S) / LED (M16*1.5) (PG9)	3-4	12A		
M12 (T) / LED (M16*1.5) (PG9)	2-4		63V	
M12 (X) (M12*1.0) (M16*1.5) (PG9)	8	0.5A	30-60V	
M12 (Y) (M12*1.0) (M16*1.5) (PG9)		0.5A, 6A	60V	
M23 (M25*1.5)	6	28A	600V	Screw thread

Certifications: UL1863, UL1977, UL2337, UL2238 (2237), IEC 61076-2-105, IEC 61076-2-104, IEC 61076-2-101, IEC 61076-2-111, IEC 61076-2-109



# Product Focus

## DeepTronica® - Mate Underwater



Sub-Series (Abyss/Hadalpelagic)	Pin #	Nominal Current	Voltage (AC/DC)	Mating Style
Mini (7/16"-20 UNF) (5/8"-18 UNF) (3/4"-16 UNF)	1-25	10A	600V	Push-pull
Micro (7/16"-20 UNF) (1/2"-20 UNF)	1-21	5A-10A	300V	

Amphenol LTW is adding **under water connectors (up to 7000m depth)** to its connectivity portfolio. DeepTronica® series offers 3 series: **Xiento-2M Series** (under 200m) and **Abyss Series** (6000m) and **Hadalpelagic Series** (7000m) with Circular, Metal, Low Profile, Ethernet four types and contact density up to 25.



These dry and wet mate connectors solve the common issues met in shallow water applications such as poor sealing and corroded contacts due to low pressure cycles.

## Power



- ✓ IP67 / IP68 / IP69K mated
- ✓ Nominal current up to 80A
- ✓ Operating voltage up to 600V
- ✓ UL / cUL / TUV certified



Sub-Series	Pin #	Nominal Current	Voltage (AC/DC)	Mating Style
PWE PWF PWG (M3*0.5)	2-7	8A-16A	277V	Screw thread
PWC PWCU (13/16"-28 UNS)	3-12	20A 20A+2A		2 points lock 3 points lock
PWH (1 1/4"-12 UNF) (M25*1.0)	3, 5	25A	600V (AC) 1000V (DC)	3 points lock Screw thread
PWL (M3*0.5)	3	30A	300V	3 points lock
PWM PWMU (1"-20 UNEF)	2-6	50A 50A+2A	600V	
PWN PWNU (1"-20 UNEF)	2-6	70A 70A+2A		
PWP PWPD (1 7/16"-18UNEF)	2-7	80A 80A+5A		
PWX (61*61mm)	4-14	30A-80A	300-600V	

Certifications: UL1977, UL2238, UL6703A, TUV

## RBL Push Lock with Latch



Sub-Series	Pin #	Nominal Current	Voltage (AC/DC)
Middle Size (13/16"-28 UNS)	2-9	5A-10A	300V
Large Size (1"-20 UNS)	2-18	5A-20A	

Certification: UL1977

- ✓ IP67 mated, IP68 mated or unmated
- ✓ Push lock with latch & fool-proof design
- ✓ Intuitive mating with audible feedback
- ✓ Power, data / signal, hybrid
- ✓ Flammability UL 94V-0
- ✓ UL / CE certified



## Cable Joiner & Cable Gland

Cable Joiner



Cable Joiner				
Sub-Series	Pin #	Nominal Current	Voltage (AC/DC)	Mating Style
M20	None, 4	10A	-	Screw thread
M32		15A-30A	-	Push lock with latch
FICX I Tube (11)	2-5	16A-30A	450V (Non UL) 600V (UL)	Screw thread
FICX I Tube (12)		8A-20A		
FICX XI Tube (13)				
FICX T Tube (T2)		10A-20A		

Certifications: UL6703A, CSA, UL2238, UL50e

Cable Gland



Cable Gland	Cable O.D. (mm)	Nut Thread	Mating Style
Screw Thread Type	1.5 ~ 32.0	M8 ~ M40 PG7 ~ PG29 1"-20 UNF 13/16"-28 UN	Screw thread
Square Flange Type	5.0 ~ 9.3	6"-32 UNC	

# Product Focus

## HS-Lok



Sub-Series	Pin #	Nominal Current	Voltage (AC/DC)	Mating Style
Q8 (M8*1.0)	2-6	2A-5A	100V (DC) 300V 300V (AC) + 100V	Push-pull

Certifications: UL2238, UL50e

- ✓ IP68 mated or unmated
- ✓ Metal / plastic version
- ✓ Push pull quick mating mechanism
- ✓ Blind mating with audible feedback
- ✓ Power, data / signal, hybrid
- ✓ Flammability UL 94V-0 & UV resistant
- ✓ UL certified

## DVI, HDMI, D-Sub

Series	Pin #	Nominal Current	Voltage	Mating Style
DVI	19-29	1.5A	40V (AC)	Screw thread
D-Sub Standard (#4-40 UNC)	9-50	4A	60V (AC/DC)	Screw thread Automated latch
D-Sub High Density (#4-40 UNC)	15-78	8A	600V (AC/DC)	
HDMI Circular (1"-20 UNEF)	19	0.5A	30V (AC)	Screw thread
HDMI Rectangular (M2.5*0.45)				Push lock with latch



HDMI



D-Sub



DVI

## RJ



- ✓ IP67 mated or unmated
- ✓ Transmission speed up to 10Gbps
- ✓ Support PoE
- ✓ EMI shielding
- ✓ Flammability UL 94V-0

Sub-Series	Pin #	Nominal Current	Voltage (DC)	Mating Style
Middle (13/16"-28 UNS)	8	Max. 1.5A	44-57V	3 points lock Screw thread
Large / I-Adaptor (1"-20 UNEF)				2 points lock 3 points lock Screw thread
ODVA (M27*1.5)				2 points lock
Self-Closing Cover				-

Certifications: TIA/EIA-568, IEC 60603-7



## USB

Mini & Micro



Type A & B



Type C



Sub-Series	Nominal Current	Voltage (AC/DC)	Mating Style
Mini USB Type B (5/8"-27 UNS)	1.5A	30V	Screw thread
Type A (13/16"-28 UNS) (1"-20 UNEF)	USB 2.0: 1.5A USB 3.2 Gen1: 1A		2 points lock Screw thread
Type B (13/16"-28 UNS) (1"-20 UNEF)	1.5A		
Micro USB Swift (8.3*3.8 mm)	1 & 5 Pin: 1.8A 2, 3 & 4 Pin: 1A	30V (AC) 5V (DC)	-
Micro USB Swift-MU (8.3*3.8 mm)			Snap-In
Type C Swift-LP (13/16"-28 UNS)	Up to 5A	30V (DC)	-
Type C Swift-LA (13/16"-28 UNS)	Up to 3A		Snap-In
Type C Swift-GG (13/16"-28 UNS)	Up to 5A		Screw thread
Type C Swift-XL (13/16"-28 UNS)	Up to 3A		Push lock

Certification: USB

# Solutions



## Power:

**ALTW Products:**  
Circular, USB Series



## Data:

**ALTW Products:**  
Sensor Series



## Trolling Motor and Electric Outboard Motor

The high power demand in conjunction with signal lines to be fitted in tight spaces of Trolling and Outboard motors prompted ALTW to develop products that not only meet the form-factor requirements but also withstand the environmental and on-operation factors; available in stand-alone and hybrid cores - carries both power and signal. It also comes in various coupling configurations - bayonet lock, screw, push-pull, and push-lock. Lastly, it can be fully customized for application-specific purposes.

### Solutions:

- Standard metric connectors, inter-mates with omnipresent CAN, NMEA 2K, and ethernet connectors
- 150A max. current for Power at 150V; comes in hybrid configuration as 2(power lines) + 8 (signal lines)
- Circular and rectangular connector interface
- Fully-customizable





ALTW Products:



Ceres



M Series



NMEA 2000



USB



RJ45

## **Control Panel / Multifunctional Display**

The numerous types of signals to be fed in MFD and control panel opt ALTW to provide multiple solutions in its products that are specifically designed for this application; offers various core coding and color variances to prevent erroneous mating of end-user, and different degrees of construction and form-factor to meet the harsh-environment demand.

Solutions:

- Standard metric connectors, inter-mates with standard CAN, NMEA 2K, and ethernet connectors
- Up to 16A in M12 core for power application and up to 10Gbps for signal options
- Core and color coding available
- Interface and form-factor customization to fully matches end application

# Solutions



ALTW Products:



Ceres



Power

ALTW Products:



M Series



RJ45



## Sonar & Thermal Imaging and Navigation

To ensure the integrity of the signal transmitted, ALTW product offerings are rigorously tested to ensure that they could withstand direct exposure to harsh and dynamic environments; its materials are duly selected so that they could endure perpetual motion, vibration and are built to hold on to heavy mechanical loads.

Solutions:

- Standard metric connectors, inter-mates with omnipresent CAN, NMEA 2K, and ethernet connectors
- Up to 10Gbps for signal options
- Metallic and plastic shell options
- Interface and form-factor customization to fully matches end application



ALTW Products:



X-Lok



IPCS



RJ45

## Underwater Lighting

The combination of power and control lines in one cable to optimize the space occupancy as the cable is routed in conduit or trays inspired ALTW to build various connector offerings in Lighting interconnects. All connector options are capable of conveying signals in different protocols - DALI, DMX, etc. - by pairing them with the right cable.

Solutions:

- Standard connectors and proprietary products that are capable of transmitting lighting control protocols - DALI, DMX, etc.
- Quick-connect, screw and push-pull
- Metallic and plastic shell options
- Fully customize option available.



Find more  
success stories



## Contact Us

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