

SHORE POWER

Safely Connecting Ships to Shore



SHIP-TO-SHORE SOLUTIONS FOR MILITARY & COMMERCIAL APPLICATIONS

- **SAFETY**
- **QUALITY**
- **INNOVATION**
- **VALUE**
- **CUSTOMER SERVICE**

ESL
POWER SYSTEMS®
WWW.ESLPWR.COM

ESL Power Systems, Inc.

ESL has established itself as a world leader in the design and manufacturing of safety-interlocks, including ship-to-shore power connection solutions for military and commercial applications. With a continuous commitment to Safety, Innovation, Quality, Value, and Customer Service, ESL forges the way in ship-to-shore power technology.

Increases in worldwide intermodal trade and environmental pollution concerns have created a demand for ship-to-shore power solutions that comply with environmental restrictions in ports and harbors. As a Certified Small Business, ESL works with customers to design and implement custom engineered solutions that operate with the highest level of safety and reliability.



ESL builds ship-to-shore electrical power distribution equipment for military and commercial applications such as:

- **US NAVY VESSELS**
- **US COAST GUARD VESSELS**
- **CONTAINER SHIPS**
- **CRUISE SHIPS**
- **BARGES**
- **YACHTS**



Military Shore Power Applications

ESL's custom design capabilities provide the US Navy and US Coast Guard with shore power equipment built to military specifications and made to endure harsh marine environments.

FEATURES:

- Enclosure: 12GA 316 Stainless Steel, Type 4X
- Receptacles: 690A 600VAC Cam-style Listed (UFGS) 16145
- Access: 12GA 316 Stainless Steel Hinged & Padlockable Doors



8-Gang Mil-Spec Single Pole Shore Power Station
Cat. No. E8-500-480-221537



FEATURES:

- Enclosure: 3/8" HD Galvanized Steel; Type 4
- Receptacle: Safety-interlocked 500A 500VAC MIL-C-24368/2
- Access: Clamped & Padlockable Door with 400A Disconnect, Powder Coated
- Circuit Breaker: 3 Pole, 400A 480VAC; 65KAIC @ 480VAC, with Shunt Trip
- Portability: 3/8" HD Galvanized Steel Lifting Eyes

1-Gang Power Distribution Station
Cat. No. E1-R400-450-MIL-C-24368-221648

FEATURES:

- Enclosure: 3/8" 304 Stainless Steel, Powder Coated, Type 4X
- Receptacles: Safety-interlocked 500A 500VAC MIL-C-24368/2
- Access: 10 GA 304 Stainless Steel Hinged & Padlockable Rear Doors with Clamps
- Controls: Indicator Lights, Push Buttons, and Keyswitches
- Portability: Stainless Steel Lifting Eyes



12-Gang Shore Power Station
Cat. No. E12-R500-480-MIL-C-24368-220872

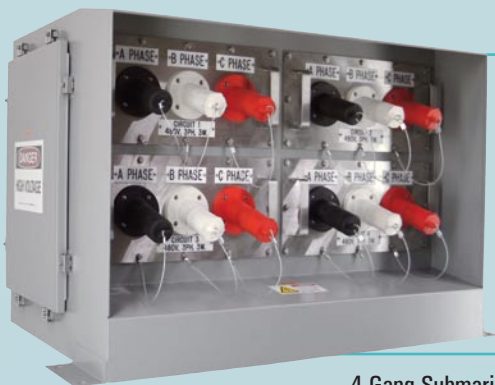
Military Shore Power Applications

FEATURES:

- Enclosure: 3/8" 316 Stainless Steel, Powder Coated; Type 4X
- Receptacles: Safety-interlocked 500A 500VAC MIL-C-24368/2; with LSSHOF-500, 500kcmil Cable, per MIL-C-24643/3; 4 ft Length per Phase, Factory-potted (*not shown*)
- Access: 3/8" Stainless Steel Plate, Powder Coated
- Controls: Indicator Lights, Push Buttons, and Keyswitches



2-Gang Shore Power Box
Cat. No. E2/1-R500-500-MIL-C-24368/2-222055



4-Gang Submarine Turtleback Box
Cat. No. E4-500-600-221761A

FEATURES:

- Enclosure: 12GA 304 Stainless Steel, Powder Coated, Type 4X
- Receptacles: 690A 600VAC Cam-style Listed (UFGS) 16145
- Access: 12 GA 304 Stainless Steel Hinged Side Doors

FEATURES:

- Enclosure: 3/8" 316 Stainless Steel, Type 3R
- Receptacles: Safety-interlocked 500A 500VAC MIL-C-24368/2
- Access: 3/8" 316 Stainless Steel Hinged Door
- Controls: Indicator Lights, Push Buttons, and Keyswitches
- Portability: 3/4" 316 Stainless Steel Lifting Eye



2-Gang Shore Power Mound
Cat. No. E2-R500-480-MIL-C-24368-221506

FEATURES:

- Enclosure: 12GA 304 Stainless Steel, Powder Coated
- Receptacles: Safety-interlocked 690A 600VAC Cam-style Receptacles Listed (UFGS) 16145 with Microswitch on both Line & Load Sides
- Circuit Breakers: (4) 3 Pole, 600A 600VAC, 100kAIC @ 480VAC Complete with Shunt Trip, Breaker Monitoring System, Mounted on Silver-plated Copper Busbar
- Base: A50 Steel I-Beam Base with Rhino-coating
- Cage: 304 Stainless Steel Cage with Lifting Eyes, Powder Coated
- Approval: NRTL Certified to UL 1640



4-Gang Submarine Hookup Station
Cat. No. E4-690-480-520001

Military Shore Power Applications



MIL-C-24368/2 Receptacle
with Factory-potted Cables

7-Gang Shore Power Mound
Cat. No. E7-500-480-221875

FEATURES:

- Enclosure: 3/8" 304 Stainless Steel, Powder Coated
- Receptacles: (7) 500A 500VAC MIL-C-24368/2
(1) 200A 480VAC, 3Ø Receptacle with Push Buttons and Indicator Lights for Operation;
(1) 20A 120VAC, Duplex GFCI;
(2) Fiber Optic, (2) Cable TV, and (6) Telephone Outlets
- Access: (2) 3/8" 304 Stainless Steel Hinged & Padlockable Access Doors
- Controls: Indicator Lights, Push Buttons, and Keyswitches
- Portability: 3/4" 316 Stainless Steel Lifting Eyes



Rear View



FEATURES:

- Cable: 500kcmil, Enhanced THOF-500 300 ft Length Extension Cable
- Plugs: (2) 500A 500VAC MIL-C-24368/1

Shore Power Cable Reel
Cat. No. EC-500-500-300-092002



MIL-C-24368/1 Male Plug

FEATURES:

- Enclosure: 12GA 304 Stainless Steel, Powder Coated
- Receptacles: (2) 500A 500VAC, MIL-C-24368/2
- Access: Removable 12GA 304 Stainless Steel Cover
- Portability: Lightweight 89 lbs with handles



Portable Shore Power Pass-through Extension Box
Cat. No. E2-500-500-520005

Commercial Shore Power Applications

ESL specializes in the design & manufacturing of “safety-interlocked” shore power solutions for commercial ports & yacht marinas. Additionally, ESL has UL and NRTL Certification capabilities.

FEATURES:

- Enclosure: 12GA 304 Stainless Steel, Type 4X, Powder Coated
- Receptacle: Safety-interlocked 200A 600VAC with 200A Trip Molded Case Circuit Breaker Rated 65 KAIC @ 480VAC
- Access: 12GA 304 Stainless Steel Hinged & Padlockable Access Door
- Approval: UL Listed Assembly



1-Gang Pedestal Mounted Station
Cat. No. E1-R200-480-200-65MEW-SP-221923



FEATURES:

- Enclosure: 12GA 304 Stainless Steel, Type 4X, Powder Coated
10GA 304 Stainless Steel Front Panel Reinforced
- Receptacle: Cavotec™ 380A 7.2kV Shore Power
- Access: 12GA 304 Stainless Steel Door with Clamps
- Additional: Earthing Switch, Fiber Optic Box, Kirk Key Interlock

2-Gang AMP™ Connection Station
Cat. No. E2-R380-7.2K-221969

FEATURES:

- Enclosure: 12GA 304 Stainless Steel, Type 4X, Powder Coated
10GA 304 Stainless Steel Front Panel Reinforced
- Receptacle: Cavotec™ 380A 7.2kV Shore Power
- Access: 12GA 304 Stainless Steel Door with Clamps
- Additional: Fiber Optic Box, Kirk Key Interlock



2-Gang AMP™ Connection Station
Cat. No. E2-R380-7.2K-222126



FEATURES:

- Enclosure: 12GA 304 Stainless Steel, Type 4X, Powder Coated
- Receptacles: (1) 60A 120VAC IEC Safety-interlocked Power Module
(1) 60A 240VAC IEC Safety-interlocked Power Module
(1) 60A 480VAC IEC Safety-interlocked Power Module
- Access: 12GA 304 Stainless Steel Hinged Door with Clamps

3-Gang Dual-voltage Dock Power Station
Cat. No. E3-R60-480/240/120-60-22/65LDY-SP-221491A

Low Profile Marine Grade Unit Substation

FEATURES:

- Enclosure: 12GA 304 Stainless Steel, Type 3R
- Transformer: Copper-wound, Double-dipped, Dry-type
- Additional: Breaker Protection on Primary Side & Secondary Side
Optional Safety-interlocked Power Modules or GFCI Receptacles



Low Profile Marine Grade Unit Substation

Single Phase Unit Substation

Catalog Number	kVA	Primary Volt.	Secondary Volt.	Primary Current	Secondary Current	Height	Width	Depth	Max. Available Distribution
LPXR1-25-480-240/120	25	480VAC	240/120VAC	52A	104A	31"	49"	27"	(24) 1" Breaker Spaces
LPXR1-37-480-240/120	37.5	480VAC	240/120VAC	78A	156A	31"	49"	27"	(24) 1" Breaker Spaces
LPXR1-50-480-240/120	50	480VAC	240/120VAC	104A	208A	31"	49"	27"	(24) 1" Breaker Spaces
LPXR1-75-480-240/120	75	480VAC	240/120VAC	156A	313A	38"	51"	27"	(30) 1" Breaker Spaces

Three Phase Unit Substation

Catalog Number	kVA	Primary Volt.	Secondary Volt.	Primary Current	Secondary Current	Height	Width	Depth	Max. Available Distribution
LPXR3-30-480-240/120	30	480VAC	208Y/120VAC	36A	83A	31"	49"	27"	(24) 1" Breaker Spaces
LPXR3-45-480-240/120	45	480VAC	208Y/120VAC	54A	125A	38"	51"	27"	(30) 1" Breaker Spaces
LPXR3-75-480-240/120	75	480VAC	208Y/120VAC	90A	208A	38"	51"	27"	(30) 1" Breaker Spaces
LPXR3-112-480-240/120	112.5	480VAC	208Y/120VAC	135A	312A	40"	59"	30"	(42) 1" Breaker Spaces

ALTERNATIVE MARITIME POWER™ (AMP™)

PORT OF LOS ANGELES - 6.6KV SHORE POWER PROJECT

In 2004, the world's first Alternative Maritime Power™ (AMP™) system was instituted at the Port of Los Angeles. In an effort to reduce smokestack emissions from container ships bunker-fired system, the Port of Los Angeles implemented AMP™ technology. This involved outfitting a wharf with sufficient electrical capacity to provide all the required power to sustain a container ship while in port.

ESL was a significant team member in the implementation of AMP™ through the custom design and manufacturing of (12) 400A Safety-interlocked Power Modules, as well as the assembly of a Power Flat Rack and Reel Flat Rack.

This ground breaking "cold-ironing" project provided the platform for further advancements in the implementation of shore power AMP™ technology.



Power Flat Rack (Barge-mounted):

- 15KV 600A 40KA Type HVL Switch
- 3000/4000 kVA Power Cast Transformer
- 6.6KV Delta Primary Voltage
440Y/254 Secondary Voltage
- (12) ESL 400A 480VAC Safety-interlocked Power Modules per Power Distribution Panel

Reel Flat Rack (Barge-mounted):

- Shore to Barge 5.5kV Reel with 100 ft of 4/0 Cable (Motor Driven)
- Barge to Ship 480VAC Reels with (3) 500kcmil Cables per Reel (Motor Driven)
- Shore to Barge 480VAC Spring Reel for the Reel Motors, Lighting Controls, Lights, and 120VAC Power
- (9) 400A Plugs for Connecting to the Power Flat Rack Distribution Panels



Alternative Maritime Power™ (AMP™) is a trademark of the Port of Los Angeles

ESL Power Systems, Inc.
2800 Palisades Drive • Corona, CA 92880-9427
Tel: (800) 922-4188 • (951) 739-7020 • Fax: (951) 739-7048
www.eslpwr.com • info@eslpwr.com

CERTIFIED SMALL BUSINESS

©2008 ESL Power Systems, Inc. All Rights Reserved.