

IP68 Outdoor Fiber Optic Cables NEMA 4X Waterproof Panels

Fiber optic networks in harsh environments require specialized equipment and design considerations to ensure reliable and effective performance. Outdoor environments can include exposure to extreme temperatures, humidity, dust, water, and other environmental factors that can damage or disrupt fiber optic cables and equipment.

To meet these challenges, OptoSpan's fiber optic networks solution for harsh environment includes ruggedized fiber optic cables (IP-68 Series), industrial connectors (IP-68 Bayonet), and NFDSP Series NEMA 4X rated fiber distribution panels.



NFDSP Series NEMA 4X Outdoor Panels

OptoSpan's NFDSP Series (NEMA 4X Fiber Distribution Panel) Distribution Panels provide NEMA 4X level of protection against intrusion of water, dust, and other contaminants.

NFDSP Series NEMA 4X
Waterproof Panels

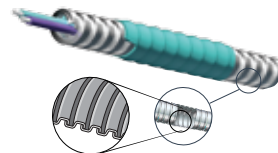
Splicing,
Termination
Distribution



IP68 Series Fiber Optic Cables

OptoSpan's IP68-Series armored, and non-armored outdoor waterproof fiber optic cables are designed to deliver robust network connections even in the harshest environments. These cables are revolutionizing outdoor installations with their unique lockable bayonet MPO and LC connector design that provides IP68 rated Water immersion and dust protection.

SteelFlex-IP68
Armored Fiber



Innovative
OptoLock
Mechanism

SteelMax-IP68
Armored Fiber



Improved
Pulling
Strength

SteelPatch-IP68
Armored Fiber



Flexible &
Lightweight

TPU-IP68
Waterproof Fiber

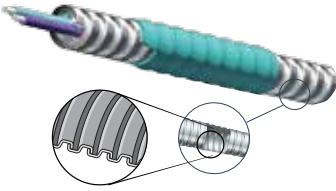





Chemical
and Oil
Resistance

APPLICATIONS

- Telecoms
- Data Centers
- Outdoor Video Services
- Railways
- Industrial Machinery
- Aerial (Short Span)
- Antennas and Cell Towers
- Transportation
- Flexible Armored
- Underground Conduit
- Warehouses
- Oil and Gas

Outdoor Waterproof Fiber Optic Cables

<ul style="list-style-type: none"> • SteelFlex-IP68 Armored Heavy Crush Loads 	<ul style="list-style-type: none"> • SteelMax-IP68 Armored High Tensile Strength 	<ul style="list-style-type: none"> • SteelPatch-IP68 Armored Medium Crush Loads 	<ul style="list-style-type: none"> • TPU-IP68 Non-Armored General Outdoors
			
This IP68-rated harsh environment cable is based on OptoSpan's SteelFlex Armored design, has a robust OptoLock mechanism for outdoor use with or without conduit, and is rodent-proof.	This incredibly durable waterproof cable has two additional steel wires for the tensile strength necessary for extended lengths of outdoor use, in addition to IP68 and UV ratings.	This waterproof cable, based on OptoSpan's SteelPatch Armored design with IP68 and UV ratings is flexible, and lightweight.	This IP68 rated waterproof cable for outdoor use is made of Thermoplastic Polyurethane (TPU) for high tear strength, chemical & oil resistance, and superior abrasion resistance.

OPTICAL CONNECTORS

IP-68 Bayonet Lockable



Secure Connection between IP68 Series Fiber Cables and NFDP Outdoor Waterproof Panels



Standard Fiber Connectors



Available with Standard Fiber Optic Connectors on one or both sides.



IP68 ADAPTERS / GLANDS

IP-68 Bulkhead Adapters



Secure Connection between IP68 Series Fiber Cables and NFDP Outdoor Waterproof Panels



IP-68 Inline Adapters



Security Connects two OptoSpan IP68 Series Fiber Optic Cables



IP-68 Cable Glands



Strain Relief for OptoSpan IP-68 Series Cables entering NFDP Series Panels.



GENERAL CHARACTERISTICS

SteelFlex-IP68	SteelMax-IP68	SteelPatch-IP68	TPU-IP68
Cable Mechanism			
OptoLock Mechanism (Steel)	Fiber Within Steel Jacket + Dual Strength Wires	Fiber Within Steel Jacket	Abrasion Resistant Non-metallic TPU Jacket
Recommended Use			
Intra-building – Military Grade, Rodent Proof	Suitable for Inter-building distances over 100m and use with or without conduit	Intra-building distances under 100m requiring flexibility	Non-metallic Outdoor
IP Ratings			
Outdoor IP68 Rating - 100% waterproof	Outdoor IP68 Rating - 100% waterproof	Outdoor IP68 Rating - 100% waterproof	Outdoor IP68 Rating - 100% waterproof
Maximum Continuous Length			
300 meters	500 meters	2000 meter	2000 meter
Stress Relief Glands			
Pre-installed Cable Glands	Pre-installed Cable Glands	Pre-installed Cable Glands	Pre-installed Cable Glands
Field Installable Cable Gland Kits for NFPD Panels	Field Installable Cable Gland Kits for NFPD Panels	Field Installable Cable Gland Kits for NFPD Panels	Field Installable Cable Gland Kits for NFPD Panels
Connector Options			
IP68 Locking Bayonet LC or MPO (Default)	IP68 Locking Bayonet LC or MPO (Default)	IP68 Locking Bayonet LC or MPO (Default)	IP68 Locking Bayonet LC or MPO (Default)
Standard LC and MPO	Standard LC and MPO/MTP	Standard LC and MPO/MTP	Standard LC and MPO/MTP
Low Loss MPO	Low Loss LC and Low Loss MTP	Low Loss LC and Low Loss MTP	Low Loss LC and Low Loss MTP

SPECIFICATIONS

SteelFlex-IP68	SteelMax-IP68	SteelPatch-IP68	TPU-IP68
Outer Diameter			
4.8mm	8mm	7mm	5.5mm
Fiber Count			
2-24	2-48	2-48	2-144
Fiber Type			
OS2 (Single mode), OM4 (Multimode)	OS2 (Single mode), OM4 (Multimode)	OS2 (Single mode), OM4 (Multimode)	OS2 (Single mode), OM4 (Multimode)
Jacket Material			
Low Smoke Zero Halogen (LSZH)	Polyethylene (PE)	(Polyvinyl Chloride) PVC	Thermoplastic Polyurethane (TPU)

Operating Temperature

-40°C~+85°C	-40°C~+70°C	-40°C~+70°C	-30°C~+80°C
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Min. Bending Radius (mm)

40mm	160mm	140mm	100mm
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Crush Resistance (N/100)

5000	3000	2200	1000
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Mating Durability (IP68 Connector)

500	500	500	500
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Environment

Indoor / Outdoor	Outdoor	Indoor / Outdoor	Outdoor
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FEATURES

SteelFlex-IP68	SteelMax-IP68	SteelPatch-IP68	TPU-IP68
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Water & Dust Protection

IP68 waterproof (w/ Bayonet)	IP68 waterproof (w/ Bayonet)	IP68 waterproof (w/ Bayonet)	IP68 waterproof (w/ Bayonet)
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Conduit Requirement

No Conduit Required	No Conduit Required	Application Dependent	Application Dependent
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Ruggedness

Highest	Very High	High	Medium
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Flexibility

Highest	Medium	High	Very High
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Pulling Strength

High	Highest	Very High	Medium
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Repeated Bending Performance

Highest	Medium	High	Highest
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Lateral Pressure Resistance

Highest	Very High	High	Medium
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Chemical/Oil Resistance

Highest	Highest	Medium	Highest
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UV Rated (Direct Sunlight)

No	Yes	Yes	Yes
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Impact Resistance

High	Medium	Medium	Low
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Rodent Protection

Rodent-Proof	Rodent-Resistant	Rodent-Resistant	Low
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OptoSpan's Select NFDP (NEMA 4X Fiber Distribution Panel) Series Distribution Panels provide NEMA 4X level of protection against intrusion of water, dust, and other contaminants. NEMA 4X rating is specifically designed for harsh or outdoor environment applications where the fiber optic distribution panels need to be weatherproof and corrosion resistant.

Key Features and Benefits:

NEMA 4X and IP68 Rating	Waterproof and corrosion resistant - ready for outdoor installations
Splice and Termination Enclosure	Cable termination or splicing flexibility in a single panel
Modular Design for up to 24 Cassettes, Adapter Panels or Splice Trays	Provides a flexible, modular solution for a variety of pre-terminated cables in a compact form factor
Compatible with full line of OptoSpan HD Series Cassettes and Adapter Panels	Option to select modules from the OptoSpan HD Series, including 24 MTP-LC cassettes, 24 pass-through LC, SC, ST, or FC adapter panels, or 12 Splice Trays
Compatible with OptoSpan IP68 rated Cable Glands	Provides a means for cable ingress/egress and stress relief while preserving the NEMA 4X rating
Flexible Mounting Options	Wall or Pole Mounted (with Optional pole mount kit)
Tight Seal with Gaskets	Prevent water, dust, and other contaminants from entering
Turn-key Pre Installed Option	Panels can be delivered pre-installed with MTP-LC cassettes, adapter panels, pigtails, or cable glands to save time and resources in the field.
Made in USA	Made in the USA from the finest components to ensure years of dependable use



NFDP Series Panel Comparison:

OptoSpan NFDP Series Panel Specifications and Max Capacity									Outdoor Fiber Cable Compatibility with NFDP Series Panels			
Model	# Slots	Max. Fibers	# HD Series Cassettes	# HD Series Adapter Panels	# Splice Trays	# Entry Ports	Entry Port Size	Cable Glands for Entry Ports	SteelFlex-IP68	SteelMax-IP68	SteelPatch-IP68	TPU-IP68
	Incl.	Incl.	Opt.	Opt.	Opt.	Incl.	Incl.	Opt.	Opt.	Opt.	Opt.	Opt.
NFDP-12	1	24	1	1	2	4	7/8"	✓	✓	✓	✓	✓
NFDP-48	8	96	6	8	4	4	1 5/8"	✓	✓	✓	✓	✓
NFDP-72	12	144	12	12	6	4	1 5/8"	✓	✓	✓	✓	✓
NFDP-144	24	288	22	24	12	7	1 5/8"	✓	✓	✓	✓	✓

Compatible OptoSpan Cables and Accessories				
Outdoor IP68 Series Waterproof Cables	MTP/MPO Trunks & Harnesses	12F – 144F Breakout Cables	High Density Series MTP-LC Cassettes	High Density Series MPO, LC, SC, ST, FC Adapter Panels
