



**POLYRAD®XT**

**Flexible Cable Solutions For Operational  
Integrity In Extreme Environments**



Polyrad® XT-125 Type P Marine Cables

- Power Cables
- Control Cables
- Signal Cables



**General Cable's extensive experience in the offshore industry translates into a clear understanding of the international standards and specifications that a global market demands.**

From drilling rigs and semi-submersibles to offshore platforms, General Cable offers a full line of Polyrad® XT-125 Marine IEEE-45 & IEEE-1580 Type P listed cables. As a leader, General Cable has played a significant role in the development of thermoset jackets with maximum flexibility and abrasion resistance to stand up to the severe stresses of installation and operation in hostile environments.

Our advanced technology and worldwide resources give us the ability to engineer and manufacture standard and custom cable solutions for long-term reliable performance in accordance with all relevant standards.

### **Polyrad® XT-125 Marine Cables**

Polyrad XT-125 Marine cables utilize a unique jacket system that is an extra-heavy-duty arctic-grade thermosetting Hypalon® cross-linked by irradiation to insure superior overall cable flexibility, as well as physical, chemical and environmental properties. The marine cable insulation features a tough flame-retardant thermosetting system cross-linked by irradiation permitting higher ampacity ratings and reduced physical size. As a result, this insulation system has superior heat resistance and abrasion performance.

Irradiation cross-linking offers singularly important advantages, including highly flexible cable; better electrical properties (no chemical catalyst required, no residues that corrode copper); cables and interstices kept free of water (water is not used in radiation cure process); plus a wide range of insulation thickness options. The end result is a marine cable with superior heat, flame, moisture, oil, chemical, and abrasion resistance with very low smoke and low temperature properties and outstanding mechanical toughness simply not attainable with conventional insulation/jacket systems.

The Polyrad XT-125 Marine product line of cables have undergone extensive qualification testing to verify complete conformance to IEEE-45 Type P requirements. The testing on power, control, and signal cables were conducted at a Nationally Recognized Testing Laboratory over a period of several days and were witnessed by representatives from Det Norske Veritas (DNV), Lloyd's Register of Shipping (LRS) and the American Bureau of Shipping (ABS). These marine cables have been rated from -65°C to +125°C by various agencies.

### **Marine Fiber Optic Shipboard Cables**

Fiber Optic cables have gained rapid acceptance in recent years for the offshore industry because of the escalating demand for security and information integrity. From industrial-grade process control and outside plant fiber optic cables, to commercial-grade marine fiber optic shipboard cables to blown optical fiber systems, General Cable can meet the most stringent demands. Offshore, our ultra-rugged Low-Smoke, Zero-Halogen (LSZH) irradiated designs are suitable for data transmission and communication applications.

### **Hybrid Cables**

General Cable has extensive engineering expertise in the design and manufacture of hybrid cables. Any power, control, fiber optic and coaxial cables can be combined to meet a special purpose requirement. General Cable is one of only a few companies that can supply multiple industries with custom cabling solutions by combining materials and manufacturing processes.

# **Polyrad® XT**

# TABLE OF CONTENTS

## SECTION

### **1      Polyrad® XT-125 Type P Marine Cable**

- **Single Conductor Power Cables**
- **Variable Frequency Drive (VFD) Power Cables**
- **Multi-Conductor Power Cables**
- **Multi-Conductor Control Cables**
- **Paired Signal Individually Shielded Cables**
- **Paired Signal Individual / Overall Shielded Cables**
- **Triad Signal Individual / Overall Shielded Cables**

### **2      Ampacity Charts**

- **95°C Ampacities**
- **100°C Ampacities**
- **110°C Ampacities**

### **3      Conductor Chart**

- **Standard Conductor Chart**

### **4      Color Code Chart**

- **Standard Color Code Chart**

### **5      Specifications**

- **BR-781 Specification- Single Conductor**
- **BR-782 Specification- Multi-Conductor**

### **6      Approvals**

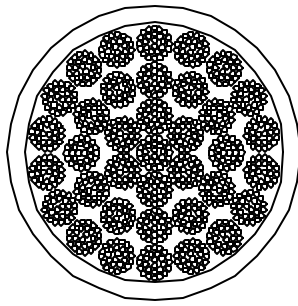
- **American Bureau of Shipping (ABS)**
- **Det Norske Veritas (DNV)**
- **Intertek Testing Services (ETL)**
- **Lloyd's Register of Shipping (LR)**
- **Transport Canada Marine Safety (TCMS -formerly Canadian Coast Guard)**
- **Underwriters Laboratories Inc. (UL)**
- **United States Coast Guard (USCG)**



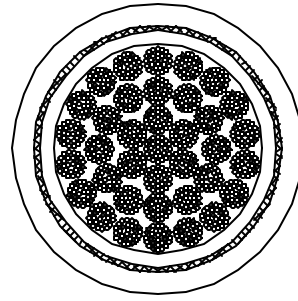


## Polyrad® XT-125 Single Conductor Power, Unarmored or Armored & Sheathed

2kV / 2kV(HD), Type P



Unarmored



Armored &amp; Sheathed

### Product Construction:

#### Conductor:

- 8 AWG thru 1111 kcmil soft annealed tinned copper flexible strand per ASTM B-3

#### Insulation:

- Polyrad XT-125 Black Irradiated Cross-Linked Polyolefin (XLPO)
- Polyrad XT-125 Heavy-Duty (HD) Black Irradiated Cross-Linked Polyolefin (XLPO) for 4/0 AWG and larger

#### Unarmored Construction:

- Insulated conductor

#### Armored & Sheathed Construction:

- Conductor: Insulated
- A armor: Bronze Braid 88% minimum coverage
- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

#### Print: (Including but not limited to)

- GCC POLYRAD XT-125 (UL) MARINE SHIPBOARD E85994 BR781 110C 1/C XXAWG 2000V or (CSA) SPEC 245/1309 FT4 -40C IEC 1KV 60332.3A IEEE 45 TYPE P OR (ETL) 109229, YEAR OF MFG SEQUENTIAL FOOTAGE MARK

#### Options:

- Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
- Aluminum or tinned copper braid armor

#### Applications:

- Engineered and manufactured for hostile environments of offshore platforms, ships, mobile oil rigs, land rigs and onshore drilling
- Suitable for use in Class I Division 1 and Zone 1 environments (Certain regulatory bodies may require Armored & Sheathed)

#### Features:

- Flexible stranding to facilitate cable installation and termination
- Temperature rated 125°C for long life, higher ampacities and protection from thermal overloads
- Excellent electrical properties; stable in water
- Extra heavy-duty arctic-grade Irradiated Cross-Linked Hypalon® jacket to insure overall maximum flexibility and oil & chemical resistance
- Meets cold bend test at -55°C
- Meets cold impact test at -40°C
- Low levels of toxicity, smoke emissions, corrosive outgassing and lead

#### Compliances:

- API-RP14F
- CSA C22.2 No. 245 FT4 -40°C
- ICEA S-95-658 (Formerly ICEA S-19-81 & S-66-524)
- IEC 332-3
- IEEE 45 Type P
- IEEE 1580 Type P
- IEEE 383
- IEEE 1202
- UL 1277
- UL 1309
- UL Listed 110°C Marine Shipboard Cable
- VW-1 and IEC 92-3 vertical flame tests

#### Regulatory Approvals and Certifications:

- American Bureau of Shipping (ABS)
- Canadian Standards Association (CSA)
- Det Norske Veritas (DNV)
- ETL Listing per IEEE 45 Type P
- Lloyd's Register of Shipping (LRS)
- Transport Canada Marine Safety (TCMS-formerly Canadian Coast Guard)
- Underwriters Laboratories (UL)
- United States Coast Guard (USCG)
- Various Shipyard and Oil Rig Manufacturers

**Polyrad® XT-125 Single Conductor Power, Unarmored or Armored & Sheathed**  
 2kV / 2kV(HD), Type P

**8 AWG Thru 1111 kcmil Conductors Unarmored XP Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
281190	1	8	0.257	6.53	80	119	70	72	77
295370	1	6	0.277	7.04	113	168	92	96	103
357270	1	5	0.355	9.02	160	238	104	106	117
281060	1	4	0.375	9.52	192	286	123	128	137
357280	1	3	0.400	10.16	212	315	140	146	156
281070	1	2	0.435	11.05	243	362	162	169	181
300550	1	1	0.518	13.16	370	551	180	194	208
281080	1	1/0	0.567	14.40	452	673	217	227	243
281090	1	2/0	0.605	15.37	595	885	251	262	281
280610	1	3/0	0.692	17.58	690	1027	289	300	321
281110	1	4/0	0.825	20.95	852	1268	337	351	376
357290	1	262	0.870	22.10	962	1432	392	407	426
644010	1	313	0.940	23.88	1125	1674	439	455	491
361470	1	373	1.005	25.53	1354	2015	507	526	563
644030	1	444	1.085	27.56	1693	2519	567	588	630
644050	1	535	1.185	30.10	1994	2967	638	662	709
644070	1	646	1.295	32.89	2303	3427	693	715	766
644090	1	777	1.390	35.31	2870	4271	750	830	889
274380	1	1111	1.580	40.13	3964	5899	972	1003	1073

**8 AWG Thru 1111 kcmil Conductors Armored & Sheathed T-75125 Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
357310	1	8	0.437	11.10	162	241	70	72	77
357320	1	6	0.457	11.61	212	316	92	96	103
357330	1	5	0.535	13.59	270	402	104	106	117
357340	1	4	0.555	14.10	304	452	123	128	137
357350	1	3	0.580	14.73	344	512	140	146	156
357360	1	2	0.615	15.62	384	571	162	169	181
357370	1	1	0.698	17.73	521	775	180	194	208
300140	1	1/0	0.747	18.97	600	893	217	227	243
357380	1	2/0	0.785	19.94	688	1024	251	262	281
326600	1	3/0	0.912	23.16	918	1366	289	300	321
281120	1	4/0	1.045	26.54	1195	1778	337	351	376
357390	1	262	1.090	27.69	1290	1920	392	407	426
357400	1	313	1.175	29.84	1488	2214	439	455	491
357410	1	373	1.240	31.50	1710	2545	507	526	563
281130	1	444	1.320	33.53	2115	3148	567	588	630
279330	1	535	1.460	37.08	2565	3817	638	662	709
279340	1	646	1.570	39.88	2950	4390	693	715	766
279350	1	777	1.685	42.80	3497	5204	750	830	889
359080	1	1111	1.925	48.90	9651	6921	972	1003	1073

**Note:**

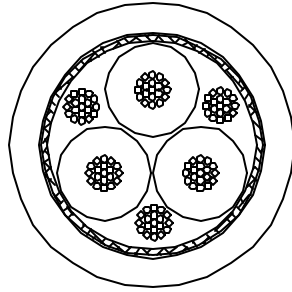
- 2kV – 3/0 AWG and smaller constructions with Regular-Duty insulation thickness
- 2kV(HD) – 4/0 AWG and larger constructions with Heavy-Duty insulation thickness

**Options:**

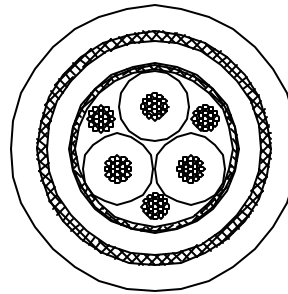
- Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
- Aluminum or tinned copper braid armor



## Polyrad® XT-125 Variable Frequency Drive (VFD) Power, Unarmored or Armored & Sheathed 2V, Type P



Unarmored



Armored &amp; Sheathed

### Product Construction:

#### Conductor:

- 1/0 AWG thru 373 kcmil soft annealed tinned copper flexible strand per ASTM B-33

#### Insulation:

- Polyrad XT-125 Irradiated Cross-Linked Polyolefin (XLPO)
- Color code: per ICEA Method 4

#### Grounds:

- Individual conductors are cabled with 3 uninsulated tinned copper Class I stranded ground wires in direct contact with the overall shield

#### Shield:

- Overall tinned copper braid shield with aluminum/polymer tape providing 100% shield coverage

#### Unarmored Construction:

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

#### Armored & Sheathed Construction:

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580
- Armor: Bronze Braid 88% minimum coverage
- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

#### Print: (Including but not limited to)

- GCC POLYRAD XT-125 (UL) MARINE SHIPBOARD E85994 BR782 110C 3/C XXAWG SHIELDED + GRNDS 2000V/IEC 1KV 60332.3A IEEE 45 TYPE P or (ETL) 109229 YEAR OF MFG SEQUENTIAL FOOTAGE MARK

#### Options:

- Armored Construction: Bronze Braid Armor – 88% minimum coverage over sheath; add .060" to Unarmored diameter for Armored diameter
- Aluminum or tinned copper braid armor

#### Applications:

- Engineered and manufactured for hostile environments of offshore platforms, ships, mobile oil rigs, land rigs and onshore drilling
- Suitable for use in Class I Division 1 and Zone 1 environments (Certain regulatory bodies may require Armored & Sheathed)

#### Features:

- Excellent shielding from high frequency noise where power signals interfere with data and control signals
- Electromagnetic interference (EMI) is minimized with a very low transfer impedance extending the life of the motor
- Cable grounds ensure balance, reducing the potential of motor bearing damage
- Flexible stranding to facilitate cable installation and termination
- Temperature rated 125°C for long life, higher ampacities and protection from thermal overloads
- Excellent electrical properties; stable in water
- Extra heavy-duty arctic-grade Irradiated Cross-Linked Reinforced Hypalon® jacket to insure overall maximum flexibility and oil & chemical resistance
- Meets cold bend test at -55°C
- Meets cold impact test at -40°C
- Low levels of toxicity, smoke emissions, corrosive outgassing and lead

#### Compliances:

- API-RP14F
- CSA C22.2 No. 245 FT4 -40°C
- ICEA S-95-658 (Formerly ICEA S-19-81 & S-66-524)
- IEC 332-3 Cat. A
- IEEE 45 Type P
- IEEE 1580 Type P
- IEEE 383
- IEEE 1202
- UL 1309
- UL Listed 110°C Marine Shipboard Cable
- VW-1 and IEC 92-3 vertical flame tests

#### Regulatory Approvals and Certifications:

- American Bureau of Shipping (ABS)
- Canadian Standards Association (CSA)
- Det Norske Veritas (DNV)
- ETL Listing per IEEE 45 Type P
- Lloyd's Register of Shipping (LRS)
- Transport Canada Marine Safety (TCMS-formerly Canadian Coast Guard)
- Underwriters Laboratories (UL)
- United States Coast Guard (USCG)
- Various Shipyard and Oil Rig Manufacturers



**Polyrad® XT-125 Variable Frequency Drive (VFD) Power, Unarmored or Armored & Sheathed  
2V, Type P**
**1/0 AWG Thru 373 kcmil Conductors - Unarmored VFD Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
359630	3	1/0	1.615	41.02	2235	3326	157	164	176
359640	3	2/0	1.685	42.80	2415	3594	180	188	201
359650	3	3/0	1.805	45.85	3235	4814	209	218	233
359660	3	4/0	1.925	48.90	3495	5201	242	252	270
359670	3	262	2.070	52.58	4385	6525	283	294	310
359680	3	313	2.235	56.77	5000	7441	309	321	345
354980	3	373	2.420	61.47	6055	9010	361	375	406

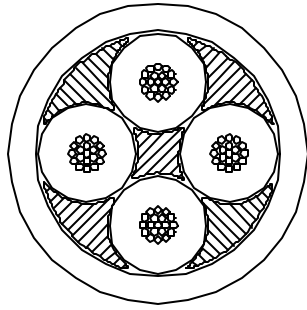
**1/0 AWG Thru 373 kcmil Conductors - Armored and Sheathed VFD Series**

359690	3	1/0	1.965	49.91	2700	4018	157	164	176
359700	3	2/0	2.035	51.69	2930	4360	180	188	201
359710	3	3/0	2.150	54.61	3780	5625	209	218	233
353040	3	4/0	2.210	56.13	4330	6443	242	252	270
359720	3	262	2.420	61.47	4995	7433	283	294	310
359730	3	313	2.585	65.66	5650	8408	309	321	345
359740	3	373	2.770	70.36	6785	10097	361	375	406

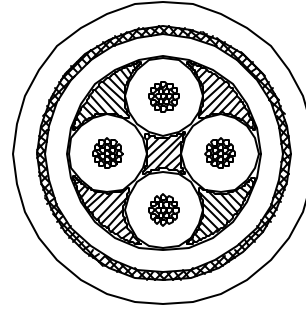
## Options:

1. Armored Construction: Bronze Braid Armor – 88% minimum coverage over triad; add .060" to Unarmored diameter for Armored diameter
2. Aluminum or tinned copper braid armor

# **Polyrad® XT-125 Multi-Conductor Power, Unarmored or Armored & Sheathed** 600V, Type P



**Unarmored**



**Armored & Sheathed**

## **Product Construction:**

### **Conductor:**

- 8 AWG thru 777 kcmil soft annealed tinned copper flexible strand per ASTM B-33

### **Insulation:**

- Polyrad XT-125 Irradiated Cross-Linked Polyolefin (XLPO)
- Color code: per IEEE 45-1998 Table 8-31 and IEEE 1580-2001 Table 22, solid colors with tracer where necessary

### **Cable Core:**

- Individual conductors are cabled with flame-retardant polypropylene fillers (as necessary) and covered with a non-hygroscopic binder tape.

### **Unarmored Construction:**

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

### **Armored & Sheathed Construction:**

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580
- Armor: Bronze Braid 88% minimum coverage
- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

### **Print:** (Including but not limited to)

- GCC POLYRAD XT-125 (UL) MARINE SHIPBOARD E85994 BR782 110C XX/C XXAWG 600V or (CSA) SPEC 245/1309 FT4 -40C IEC 1KV 60332.3A IEEE 45 Type P or (ETL) 109229, YEAR OF MFG SEQUENTIAL FOOTAGE MARK  
NOTE: (UL) TYPE TC OPEN WIRING WHERE APPLICABLE

### **Options:**

- Armored Construction: Bronze Braid Armor – 88% minimum coverage over sheath; add .060" to Unarmored diameter for Armored diameter
- Aluminum or tinned copper braid armor

### **Applications:**

- Engineered and manufactured for hostile environments of offshore platforms, ships, mobile oil rigs, land rigs and onshore drilling
- Suitable for use in Class I Division 1 and Zone 1 environments (Certain regulatory bodies may require Armored & Sheathed)

### **Features:**

- Flexible stranding to facilitate cable installation and termination
- Temperature rated 125°C for long life, higher ampacities and protection from thermal overloads
- Excellent electrical properties; stable in water
- Extra heavy-duty arctic-grade Irradiated Cross-Linked Hypalon® jacket to insure overall maximum flexibility and oil & chemical resistance
- Meets cold bend test at -55°C
- Meets cold impact test at -40°C
- Low levels of toxicity, smoke emissions, corrosive outgassing and lead

### **Compliances:**

- API-RP14F
- CSA C22.2 No. 245 FT4 -40°C
- ICEA S-95-658 (Formerly ICEA S-19-81 & S-66-524)
- IEC 332-3
- IEEE 45 Type P
- IEEE 1580 Type P
- IEEE 383
- IEEE 1202
- UL 1277
- UL 1309
- UL Listed 110°C Marine Shipboard Cable
- VW-1 and IEC 92-3 vertical flame tests

### **Regulatory Approvals and Certifications:**

- American Bureau of Shipping (ABS)
- Canadian Standards Association (CSA)
- Det Norske Veritas (DNV)
- ETL Listing per IEEE 45 Type P
- Lloyd's Register of Shipping (LRS)
- Transport Canada Marine Safety (TCMS – formerly Canadian Coast Guard)
- Underwriters Laboratories (UL)
- United States Coast Guard (USCG)
- Various Shipyard and Oil Rig Manufacturers

**Polyrad®XT-125 Multi-Conductor Power, Unarmored or Armored & Sheathed**  
 600V, Type P – 2 Conductor

**8 AWG Thru 777 kcmil Conductors Unarmored T-7874 Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
651810	2	8	0.594	15.09	240	357	62	64	69
667730	2	6	0.672	17.07	362	539	82	85	91
356320	2	5	0.790	20.07	455	677	96	101	109
652820	2	4	0.830	21.08	540	804	105	110	118
684820	2	3	0.935	23.75	625	930	126	132	141
661710	2	2	1.005	25.53	675	1004	143	149	160
356330	2	1	1.171	29.74	1045	1555	162	174	186
672720	2	1/0	1.269	32.23	1240	1845	191	199	213
356400	2	2/0	1.345	34.16	1545	2299	232	242	259
286410	2	3/0	1.559	39.60	1845	2746	255	265	284
661720	2	4/0	1.685	42.80	2330	3468	295	307	329
356340	2	262	1.795	45.59	2640	3929	345	358	378
356350	2	313	1.935	49.15	3156	4697	378	391	420
356360	2	444	2.280	57.91	3656	5440	486	504	556
356370	2	535	2.580	65.53	4503	6701	546	566	625
356380	2	646	2.874	73.00	5673	8442	603	625	649
356390	2	777	3.044	77.32	6681	9942	674	699	784

**8 AWG Thru 313 kcmil Armored and Sheathed T-75126 Series**

356960	2	8	0.774	19.66	457	680	62	64	69
326140	2	6	0.892	22.66	650	967	82	85	91
356970	2	5	1.010	25.65	789	1174	96	101	109
321820	2	4	1.050	26.67	889	1323	105	110	118
356980	2	3	1.155	29.34	1015	1511	126	132	141
326150	2	2	1.225	31.11	1091	1624	143	149	160
356990	2	1	1.391	35.33	1525	2270	162	174	186
357000	2	1/0	1.489	37.82	1758	2616	191	199	213
357010	2	2/0	1.565	39.75	2093	3115	232	242	259
286660	2	3/0	1.839	46.71	2615	3892	255	265	284
357020	2	4/0	1.945	49.40	3149	4686	295	307	329
357030	2	262	2.075	52.70	3519	5237	345	358	378
357040	2	313	2.215	56.26	4100	6102	378	391	420

## Options:

1. Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
2. Aluminum or tinned copper braid armor

**Polyrad® XT-125 Multi-Conductor Power, Unarmored or Armored & Sheathed**  
 600V, Type P – 3 Conductor

**8 AWG Thru 646 kcmil Conductors - Unarmored T-7874 Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
X648700	3	8	0.641	16.28	305	454	50	52	56
274820	3	6	0.725	18.42	433	644	67	70	75
652830	3	5	0.893	22.68	642	955	78	82	88
348670	3	4	0.936	23.77	730	1086	87	92	99
356410	3	3	0.990	25.15	840	1250	103	108	116
652840	3	2	1.066	27.07	935	1391	116	122	131
652970	3	1	1.245	31.62	1424	2119	137	143	153
659380	3	1/0	1.351	34.31	1682	2503	157	164	176
648660	3	2/0	1.473	37.41	2027	3017	180	188	201
652860	3	3/0	1.681	42.69	2670	3973	209	218	233
652870	3	4/0	1.825	46.36	3210	4777	242	252	270
293900	3	262	1.966	49.93	3660	5447	283	294	310
661740	3	313	2.117	53.77	4347	6469	309	321	345
652910	3	373	2.257	57.33	5010	7456	361	375	406
660410	3	444	2.460	62.48	6025	8966	396	411	454
656050	3	535	2.681	68.10	7195	10708	448	465	511
352510	3	646	2.914	74.01	8450	12575	492	510	525

**8 AWG Thru 535 kcmil Conductors Armored and Sheathed T-75126 Series**

279240	3	8	0.861	21.87	581	865	50	52	56
279260	3	6	0.945	24.01	742	1104	67	70	75
357050	3	5	1.128	28.65	1037	1543	78	82	88
287700	3	4	1.171	29.74	1142	1670	87	92	99
357060	3	3	1.225	31.11	1247	1856	103	108	116
281220	3	2	1.301	33.04	1400	2083	116	122	131
293880	3	1	1.480	37.59	1961	2918	137	143	153
281230	3	1/0	1.646	41.80	2387	3552	157	164	176
318840	3	2/0	1.768	44.90	2791	4154	180	188	201
286670	3	3/0	2.006	50.95	3611	5229	209	218	233
326160	3	4/0	2.180	55.38	4310	6414	242	252	270
293910	3	262	2.321	58.94	4838	7200	283	294	310
286680	3	313	2.472	62.78	5610	8349	309	321	345
316610	3	373	2.612	66.35	6351	9452	361	375	406
357070	3	444	2.815	71.50	7480	11132	396	411	454
357080	3	535	3.036	77.11	8773	13056	448	465	511

## Options:

1. Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
2. Aluminum or tinned copper braid armor

**Polyrad®XT-125 Multi-Conductor Power, Unarmored or Armored & Sheathed**  
 600V, Type P – 4 Conductor

**8 AWG Thru 535 kcmil Unarmored T-7874 Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
658510	4	8	0.699	17.76	385	573	40	42	45
646070	4	6	0.793	20.14	555	826	54	56	60
652920	4	5	0.975	24.77	795	1183	62	66	70
648680	4	4	1.024	26.00	910	1354	70	74	79
667720	4	3	1.084	27.53	1075	1600	82	86	93
646080	4	2	1.168	29.67	1205	1793	93	98	105
652770	4	1	1.368	34.75	1830	2723	110	114	122
646090	4	1/0	1.486	37.75	2140	3185	126	131	141
646100	4	2/0	1.638	41.60	2565	3816	144	150	161
664920	4	3/0	1.877	47.69	3360	5000	167	174	186
274810	4	4/0	2.005	50.93	4020	5982	194	202	216
646110	4	262	2.162	54.91	4720	7024	226	235	248
356420	4	313	2.331	59.20	5520	8215	247	257	276
356430	4	373	2.487	63.17	6570	9777	289	300	325
296160	4	444	2.710	68.83	7975	11868	317	329	363
533510	4	535	2.951	74.96	9710	14450	358	372	409

**8 AWG Thru 373 kcmil Conductors Armored and Sheathed T-75126 Series**

279250	4	8	0.919	23.35	684	1018	40	42	45
279270	4	6	1.013	25.73	890	1325	54	56	60
357090	4	5	1.210	30.74	1223	1820	62	66	70
291730	4	4	1.259	31.97	1358	2021	70	74	79
357100	4	3	1.319	33.50	1547	2302	82	86	93
302610	4	2	1.403	35.64	1711	2546	93	98	105
302620	4	1	1.663	42.24	2543	3784	110	114	122
355660	4	1/0	1.781	45.24	2910	4331	126	131	141
302630	4	2/0	1.963	49.86	3484	5185	144	150	161
302640	4	3/0	2.202	55.94	4403	6553	167	174	186
296180	4	4/0	2.360	59.95	5220	7768	194	202	216
357110	4	262	2.457	62.40	5816	8655	226	235	248
357120	4	313	2.626	66.69	6697	9966	247	257	276
357130	4	373	2.842	72.19	8040	11965	289	300	325

## Options:

1. Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
2. Aluminum or tinned copper braid armor

**Polyrad® XT-125 Multi-Conductor Power, Unarmored or Armored & Sheathed**  
 600V, Type P – 5 Conductor

**8 AWG Thru 313 kcmil Conductors Unarmored T-7874 Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
672740	5	8	0.766	19.47	475	707	40	42	45
356440	5	6	0.912	23.16	770	1146	54	56	60
356450	5	5	1.071	27.20	935	1391	62	66	70
665900	5	4	1.125	28.57	1095	1630	70	74	79
356460	5	3	1.193	30.29	1290	1920	82	86	93
348300	5	2	1.287	32.69	1520	2262	93	98	105
356470	5	1	1.511	38.38	2350	3497	110	114	122
356480	5	1/0	1.703	43.27	2770	4122	126	131	141
356490	5	2/0	1.806	45.87	3320	4941	144	150	161
356500	5	3/0	2.071	52.60	4375	6511	167	174	186
356510	5	4/0	2.214	56.24	5010	7456	194	202	216
356520	5	262	2.404	61.06	5534	8235	226	235	248
356530	5	313	2.572	65.33	6456	9607	247	257	276

**8 AWG Thru 313 kcmil Conductors Armored and Sheathed T-75126**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
357140	5	8	0.986	25.05	800	1191	40	42	45
357150	5	6	1.132	28.75	1151	1713	54	56	60
357160	5	5	1.306	33.17	1402	2086	62	66	70
357170	5	4	1.360	34.54	1584	2357	70	74	79
357180	5	3	1.428	36.26	1806	2688	82	86	93
357190	5	2	1.522	38.66	2074	3087	93	98	105
357200	5	1	1.806	45.87	3132	4661	110	114	122
357210	5	1/0	1.998	50.76	3645	5424	126	131	141
357220	5	2/0	2.101	53.37	4244	6316	144	150	161
357230	5	3/0	2.396	60.86	5519	8213	167	174	186
357240	5	4/0	2.539	64.49	6228	9269	194	202	216
357250	5	262	2.758	70.05	6415	9546	226	235	248
357260	5	313	2.926	74.32	7399	11,010	247	257	276

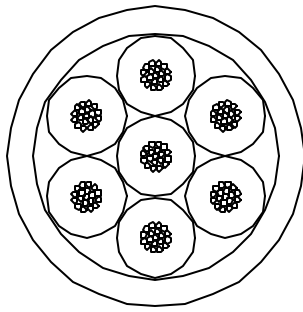
## Options:

1. Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
2. Aluminum or tinned copper braid armor

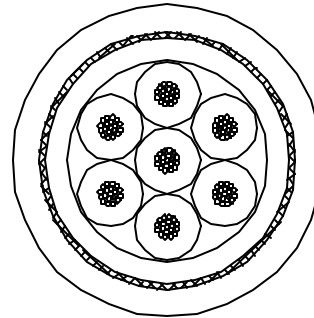




## Polyrad® XT-125 Multi-Conductor Control, Unarmored or Armored & Sheathed 600V, Type P



Unarmored



Armored &amp; Sheathed

### Product Construction:

#### Conductor:

- 18 AWG thru 10 AWG soft annealed tinned copper flexible strand per ASTM B-33

#### Insulation:

- Polyrad XT-125 Irradiated Cross-Linked Polyolefin (XLPO)
- Color code: per IEEE 45-1998 Table 8-31 and IEEE 1580-2001 Table 22, solid colors with tracer where necessary

#### Cable Core:

- Individual conductors are cabled with flame-retardant polypropylene fillers (as necessary) and covered with a non-hygroscopic binder tape

#### Unarmored Construction:

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

#### Armored and Sheathed Construction:

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580
- Armor: Bronze Braid 88% minimum coverage
- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

#### Print: (Including but not limited to)

- GCC POLYRAD XT-125 (UL) MARINE SHIPBOARD E85994 BR782 110C XX/C XXAWG 600V OR (CSA) SPEC 245/1309 FT4 -40C IEC 1KV 60332.3A IEEE 45 TYPE P OR (ETL) 109229, YEAR OF MFG SEQUENTIAL FOOTAGE MARK NOTE: (UL) TYPE TC OPEN WIRING WHERE APPLICABLE

#### Options:

- Shielded: overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
- Armored Construction: Bronze Braid Armor – 88% minimum coverage over sheath; add .060" to Unarmored diameter for Armored diameter
- Aluminum or tinned copper braid armor

#### Applications:

- Engineered and manufactured for hostile environments of offshore platforms, ships, mobile oil rigs, land rigs and onshore drilling
- Suitable for use in Class I Division 1 and Zone 1 environments (Certain regulatory bodies may require Armored & Sheathed)

#### Features:

- Pigment colored insulated conductors
- Flexible stranding to facilitate cable installation and termination
- Temperature rated 125°C for long life, higher ampacities and protection from thermal overloads
- Excellent electrical properties; stable in water
- Extra heavy-duty arctic-grade Irradiated Cross-Linked Hypalon® jacket to insure overall maximum flexibility and oil & chemical resistance
- Meets cold bend test at -55°C
- Meets cold impact test at -40°C
- Low levels of toxicity, smoke emissions, corrosive outgassing and lead

#### Compliances:

- API-RP14F
- CSA C22.2 No. 245 FT4 -40°C
- ICEA S-95-658 (Formerly ICEA S-19-81 & S-66-524)
- IEC 332-3
- IEEE 45 Type P
- IEEE 1580 Type P
- IEEE 383
- IEEE 1202
- UL 1277
- UL 1309
- UL Listed 110°C Marine Shipboard Cable
- VW-1 and IEC 92-3 vertical flame tests

#### Regulatory Approvals and Certifications:

- American Bureau of Shipping (ABS)
- Canadian Standards Association (CSA)
- Det Norske Veritas (DNV)
- ETL Listing per IEEE 45 Type P
- Lloyd's Register of Shipping (LRS)
- Transport Canada Marine Safety (TCMS-formerly Canadian Coast Guard)
- Underwriters Laboratories (UL)
- United States Coast Guard (USCG)
- Various Shipyard and Oil Rig Manufacturers

**Polyrad®XT-125 Multi-Conductor Control, Unarmored or Armored & Sheathed**  
 600V, Type P – 18 AWG

**18 AWG Conductors Unarmored T-7874 Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
661640	2	18	0.355	9.02	65	97	13	14	15
659140	3	18	0.373	9.46	80	119	11	12	13
659150	4	18	0.400	10.16	97	144	9	10	11
356120	5	18	0.432	10.97	115	171	9	10	11
309890	6	18	0.465	11.81	133	198	9	10	11
661650	7	18	0.465	11.81	146	217	7	8	9
356130	8	18	0.500	12.70	164	244	7	8	9
356140	10	18	0.575	14.60	203	302	5	6	7
309920	12	18	0.593	15.05	232	345	5	6	7
661670	16	18	0.652	16.56	293	436	5	6	7
306030	20	18	0.719	18.27	357	531	5	6	7
356150	24	18	0.792	20.12	410	610	4	5	6
356160	30	18	0.875	22.22	494	735	4	5	6
356170	37	18	0.945	24.00	646	961	4	5	6
356180	44	18	1.055	26.80	765	1138	3	4	5
356190	60	18	1.165	29.59	998	1485	3	4	5
356200	91	18	1.385	35.18	1458	2170	3	4	5

**18 AWG Conductors Armored & Sheathed T-75126 Series**

356540	2	18	0.535	13.59	203	302	13	14	15
321710	3	18	0.553	14.04	223	332	11	12	13
356550	4	18	0.585	14.86	253	377	9	10	11
356560	5	18	0.605	15.37	273	406	9	10	11
356570	6	18	0.645	16.38	307	457	9	10	11
356580	7	18	0.645	16.38	320	476	7	8	9
356590	8	18	0.680	17.27	367	546	7	8	9
356600	10	18	0.755	19.18	414	616	5	6	7
356610	12	18	0.765	19.43	441	656	5	6	7
356620	16	18	0.872	22.15	574	854	5	6	7
306040	20	18	0.939	23.85	664	988	5	6	7
356630	24	18	1.015	25.78	703	1046	4	5	6
356640	30	18	1.095	27.81	805	1198	4	5	6
356650	37	18	1.165	29.59	1040	1548	4	5	6
356660	44	18	1.275	32.38	1201	1787	3	4	5
356670	60	18	1.385	35.18	1476	2197	3	4	5
356680	91	18	1.605	40.77	2020	3006	3	4	5

## Options:

1. Shielded: overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
2. Armored Construction: Bronze Braid Armor – 88% minimum coverage over sheath; add .060" to Unarmored diameter for Armored diameter
3. Aluminum or tinned copper braid armor

**Polyrad® XT-125 Multi-Conductor Control, Unarmored or Armored & Sheathed**  
 600V, Type P – 16 AWG

**16 AWG CONDUCTOR UNARMORED T-7874 SERIES**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
664780	2	16	0.367	9.32	69	103	18	19	20
659170	3	16	0.386	9.79	86	128	15	16	17
659180	4	16	0.415	10.53	105	156	12	13	14
656090	5	16	0.448	11.38	125	186	12	13	14
673180	6	16	0.483	12.27	145	216	12	13	14
656060	7	16	0.483	12.27	159	237	10	11	12
661620	8	16	0.519	13.18	179	266	10	11	12
656070	10	16	0.599	15.21	222	330	7	8	9
673150	12	16	0.618	15.69	254	378	7	8	9
326090	16	16	0.647	16.42	288	429	7	8	9
656080	20	16	0.751	19.07	393	585	7	8	9
281050	24	16	0.831	21.11	467	695	6	7	8
356210	30	16	0.924	23.47	473	704	6	7	8
272130	37	16	0.987	25.07	712	1060	5	6	7
303320	44	16	1.104	28.04	846	1259	5	6	7
659400	60	16	1.220	30.99	1155	1719	5	6	7
307860	91	16	1.485	37.72	1659	2469	4	5	6

**16 AWG CONDUCTOR ARMORED & SHEATHED T-75126 SERIES**

356690	2	16	0.547	13.89	211	314	18	19	20
287750	3	16	0.566	14.37	234	348	15	16	17
326110	4	16	0.595	15.10	263	391	12	13	14
356700	5	16	0.628	15.96	293	436	12	13	14
313850	6	16	0.663	16.84	325	484	12	13	14
356710	7	16	0.663	16.84	339	504	10	11	12
287740	8	16	0.699	17.75	372	554	10	11	12
356720	10	16	0.779	19.79	441	656	7	8	9
326080	12	16	0.798	20.26	479	713	7	8	9
356730	16	16	0.867	22.01	566	842	7	8	9
315790	20	16	0.971	24.66	712	1060	7	8	9
281140	24	16	1.051	26.70	816	1214	6	7	8
356740	30	16	1.071	27.20	995	1481	6	7	8
356750	37	16	1.207	30.66	1121	1668	5	6	7
303330	44	16	1.315	33.40	1286	1914	5	6	7
281150	60	16	1.440	36.58	1603	2385	5	6	7
307870	91	16	1.765	44.83	2394	3563	4	5	6

## Options:

1. Shielded: overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
2. Armored Construction: Bronze Braid Armor – 88% minimum coverage over sheath; add .060" to Unarmored diameter for Armored diameter
3. Aluminum or tinned copper braid armor

**Polyrad® XT-125 Multi-Conductor Control, Unarmored or Armored & Sheathed**  
 600V, Type P – 14 AWG

**14 AWG CONDUCTOR UNARMORED T-7874 SERIES**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
648720	2	14	0.395	10.03	85	127	30	31	33
648730	3	14	0.415	10.54	107	159	24	25	27
646020	4	14	0.455	11.56	136	202	19	20	22
651320	5	14	0.490	12.45	161	240	19	20	22
673170	6	14	0.530	13.46	181	269	19	20	22
659390	7	14	0.530	13.46	208	310	17	18	19
672700	8	14	0.575	14.60	237	353	17	18	19
646910	10	14	0.660	16.76	290	432	12	13	14
672460	12	14	0.690	17.53	340	506	12	13	14
315780	14	14	0.670	17.02	352	524	12	13	14
673110	16	14	0.790	20.07	449	668	12	13	14
646920	20	14	0.825	20.95	530	789	12	13	14
672470	24	14	0.957	24.76	669	996	10	11	12
661690	30	14	1.040	26.42	814	1211	10	11	12
652780	37	14	1.105	28.07	964	1435	9	10	11
356220	44	14	1.255	31.88	1163	1731	8	9	10
663200	60	14	1.390	35.31	1529	2275	8	9	10
356230	91	14	1.740	44.20	2377	3537	7	8	9

**14 AWG CONDUCTOR ARMORED & SHEATHED T-75126 SERIES**

326120	2	14	0.575	14.60	235	350	30	31	33
279320	3	14	0.595	15.11	265	394	24	25	27
279310	4	14	0.635	16.13	306	455	19	20	22
281180	5	14	0.670	17.02	343	510	19	20	22
302600	6	14	0.710	18.03	383	570	19	20	22
281170	7	14	0.710	18.03	403	600	17	18	19
356760	8	14	0.755	19.18	448	667	17	18	19
279170	10	14	0.880	22.35	574	854	12	13	14
352480	12	14	0.910	23.11	635	945	12	13	14
315770	14	14	0.940	23.88	689	1025	12	13	14
356770	16	14	0.960	24.38	779	1159	12	13	14
279180	20	14	1.045	26.54	877	1305	12	13	14
315820	24	14	1.195	30.35	1074	1558	10	11	12
356780	30	14	1.260	32.00	1244	1851	10	11	12
279190	37	14	1.325	33.65	1419	2112	9	10	11
356790	44	14	1.475	37.46	1676	2494	8	9	10
356800	60	14	1.670	42.42	2221	3305	8	9	10
356810	91	14	2.020	51.31	3231	4808	7	8	9

## Options:

1. Shielded: overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
2. Armored Construction: Bronze Braid Armor – 88% minimum coverage over sheath; add .060" to Unarmored diameter for Armored diameter
3. Aluminum or tinned copper braid armor

**Polyrad® XT-125 Multi-Conductor Control, Unarmored or Armored & Sheathed**  
 600V, Type P – 12 AWG

**12 AWG CONDUCTOR UNARMORED T-7874 SERIES**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
652800	2	12	0.435	11.05	110	164	38	40	43
646030	3	12	0.460	11.68	143	213	30	31	33
646700	4	12	0.495	12.57	178	265	24	25	26
672730	5	12	0.550	13.97	220	327	24	25	26
356240	6	12	0.585	14.86	252	375	24	25	26
648710	7	12	0.585	14.86	281	418	21	22	23
356250	8	12	0.635	16.13	321	478	21	22	23
646890	10	12	0.735	18.67	397	591	15	16	17
356260	16	12	0.845	21.46	532	791	15	16	17
646040	20	12	0.985	25.02	777	1156	15	16	17
355640	24	12	1.090	27.69	792	1179	13	14	15
356270	30	12	1.150	29.21	986	1468	13	14	15
664710	37	12	1.240	31.50	1346	2003	12	13	14
356280	44	12	1.395	35.43	1395	2076	10	11	12
356290	60	12	1.570	39.88	2155	3207	10	11	12
356300	91	12	1.975	50.17	2828	4209	8	9	10

**12 AWG CONDUCTOR ARMORED & SHEATHED T-75126 SERIES**

281160	2	12	0.615	15.62	274	408	38	40	43
279200	3	12	0.640	16.26	316	470	30	31	33
279210	4	12	0.675	17.14	362	539	24	25	26
356820	5	12	0.730	18.54	422	628	24	25	26
356830	6	12	0.765	19.43	466	694	24	25	26
355760	7	12	0.765	19.43	495	737	21	22	23
356840	8	12	0.815	20.70	552	821	21	22	23
287710	10	12	0.955	24.26	709	1055	15	16	17
356850	16	12	1.005	26.80	1163	1731	15	16	17
281210	20	12	1.205	30.61	1185	1764	15	16	17
356860	24	12	1.270	32.27	1431	2129	13	14	15
356870	30	12	1.330	33.78	1632	2429	13	14	15
287730	37	12	1.460	37.08	1853	2758	12	13	14
356880	44	12	1.575	40.01	2066	3074	10	11	12
356890	60	12	1.850	46.99	2929	4359	10	11	12
356900	91	12	2.155	54.74	3562	5301	8	9	10

## Options:

1. Shielded: overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
2. Armored Construction: Bronze Braid Armor – 88% minimum coverage over sheath; add .060" to Unarmored diameter for Armored diameter
3. Aluminum or tinned copper braid armor

**Polyrad® XT-125 Multi-Conductor Control, Unarmored or Armored & Sheathed**  
 600V, Type P – 10 AWG

**10 AWG CONDUCTOR UNARMORED T-7874 SERIES**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
652810	2	10	0.495	12.57	154	229	47	49	52
646050	3	10	0.520	13.21	203	302	39	41	44
646060	4	10	0.570	14.48	260	387	31	33	35
648740	5	10	0.630	16.00	320	476	31	33	35
356310	6	10	0.675	17.14	371	552	31	33	35
352760	7	10	0.675	17.14	418	622	27	29	31
326350	8	10	0.730	18.54	474	705	27	29	31
677940	10	10	0.915	23.24	642	955	19	21	22
677850	12	10	0.945	24.00	743	1106	19	21	22

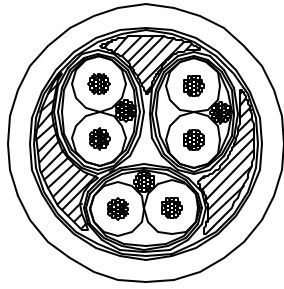
**10 AWG CONDUCTOR ARMORED & SHEATHED T-75126 SERIES**

326130	2	10	0.675	17.14	338	503	47	49	52
279220	3	10	0.700	17.78	369	549	39	41	44
279230	4	10	0.750	19.05	469	698	31	33	35
356910	5	10	0.810	20.57	550	819	31	33	35
356920	6	10	0.855	21.72	616	917	31	33	35
316620	7	10	0.855	21.72	662	985	27	29	31
356930	8	10	0.910	23.11	737	1097	27	29	31
356940	10	10	1.135	28.83	1024	1524	19	21	22
356950	12	10	1.165	29.59	1137	1692	19	21	22

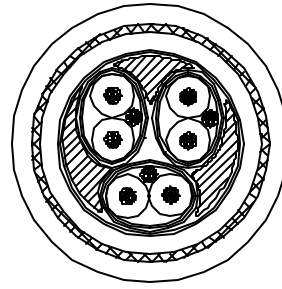
## Options:

1. Shielded: overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
2. Armored Construction: Bronze Braid Armor – 88% minimum coverage over sheath; add .060" to Unarmored diameter for Armored diameter
3. Aluminum or tinned copper braid armor

# **Polyrad® XT-125 Paired Signal, Individually Shielded, Unarmored or Armored & Sheathed 600V, Type P**



Unarmored



Armored &amp; Sheathed

## Product Construction:

### Conductor:

- 20 AWG thru 14 AWG soft annealed tinned copper flexible strand per ASTM B-33

### Insulation:

- Polyrad XT-125 Irradiated Cross-Linked Polyolefin (XLPO)
- Color code: Pairs — black and white with each conductor printed alpha-numerically for easy identification

### Cable Core:

- Individual conductors are twisted into pairs and cabled with flame-retardant polypropylene fillers (as necessary) and covered with a non-hygroscopic binder tape

### Individually Shielded Pairs:

- Aluminum/polymer tape and tinned copper drain wire spirally applied over each pair with a pressure sensitive polymer tape for shield isolation

### Unarmored Construction:

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

### Armored & Sheathed Construction:

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580
- Armor: Bronze Braid 88% minimum coverage
- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

### Print: (Including but not limited to)

GCC POLYRAD XT-125 (UL) MARINE SHIPBOARD E85994 BR782 110C XX/PR XXAWG 600V OR (CSA) SPEC 245/1309 FT4 -40C IEC 1KV 60332.3A IEEE 45 TYPE P OR (ETL) 109229, YEAR OF MFG SEQUENTIAL FOOTAGE MARK

### Options:

- Overall Shield: Overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
- Armored Construction: Bronze Braid Armor — 88% minimum coverage over Pairs; add .060" to Unarmored diameter for Armored diameter
- Aluminum or tinned copper braid armor

### Applications:

- Engineered and manufactured for hostile environments of offshore platforms, ships, mobile oil rigs, land rigs and onshore drilling

### Features:

- Pigment colored insulated conductors
- Flexible stranding to facilitate cable installation and termination
- Temperature rated 125°C for long life, higher ampacities and protection from thermal overloads
- Excellent electrical properties; stable in water
- Extra heavy-duty arctic-grade Irradiated Cross-Linked Hypalon® jacket to insure overall maximum flexibility and oil & chemical resistance
- Meets cold bend test at -55°C
- Meets cold impact test at -40°C
- Low levels of toxicity, smoke emissions, corrosive outgassing and lead

### Compliances:

- API-RP14F
- CSA C22.2 No. 245 FT4 -40°C
- ICEA S-95-658 (Formerly ICEA S-19-81 & S-66-524)
- IEC 332-3
- IEEE 45 Type P
- IEEE 1580 Type P
- IEEE 383
- IEEE 1202
- UL 1277
- UL 1309
- UL Listed 110°C Marine Shipboard Cable
- VW-1 and IEC 92-3 vertical flame tests

### Regulatory Approvals and Certifications:

- American Bureau of Shipping (ABS)
- Canadian Coast Guard (CCG)
- Canadian Standards Association (CSA)
- Det Norske Veritas (DNV)
- ETL Listing per IEEE 45 Type P
- Lloyd's Register of Shipping (LRS)
- Transport Canada Marine Safety (TCMS – formerly Canadian Coast Guard)
- Underwriters Laboratories (UL)
- United States Coast Guard (USCG)
- Various Shipyard and Oil Rig Manufacturers



**Polyrad®XT-125 Paired Signal, Individually Shielded, Unarmored  
600V, Type P**
**20 AWG THRU 14 AWG CONDUCTORS UNARMORED T-7579 SERIES**

Catalog Number	# of Pairs	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
667750	1	20	0.337	8.56	58	86	9	10	11
309940	2	20	0.512	12.99	109	162	6	7	8
661630	3	20	0.540	13.72	137	204	6	7	8
309950	4	20	0.590	14.98	168	250	5	6	7
359120	5	20	0.655	16.64	200	298	4	5	6
359130	6	20	0.700	17.84	228	339	4	5	6
306730	7	20	0.702	17.84	257	382	4	5	6
359140	8	20	0.772	19.61	286	426	4	5	6
359150	10	20	0.933	23.70	399	594	4	5	6
359160	12	20	1.005	25.53	421	626	3	4	5
359170	16	20	1.113	28.27	588	875	3	4	5
359180	20	20	1.235	31.37	707	1052	3	4	5
359190	24	20	1.370	34.80	837	1246	2	3	4
276150	1	18	0.357	9.07	72	107	13	14	15
673190	2	18	0.548	13.91	136	202	9	10	11
664770	3	18	0.581	14.76	174	259	9	10	11
656110	4	18	0.633	16.08	217	323	8	9	10
359200	5	18	0.694	17.62	261	388	5	6	7
680030	6	18	0.756	19.21	307	457	5	6	7
359210	7	18	0.756	19.21	339	504	5	6	7
309910	8	18	0.821	20.86	386	574	5	6	7
656120	10	18	1.005	25.53	520	774	5	6	7
684680	12	18	1.039	26.38	595	885	5	6	7
309790	16	18	1.140	28.96	745	1109	4	5	6
355830	20	18	1.270	32.26	916	1363	4	5	6
359220	24	18	1.420	36.07	1099	1636	3	4	5
664750	1	16	0.360	9.14	75	112	18	19	20
667810	2	16	0.560	14.22	144	214	12	13	14
689680	3	16	0.595	15.11	187	278	12	13	14
689690	4	16	0.645	16.38	232	345	10	11	12
295880	5	16	0.715	18.16	285	424	7	8	9
664720	6	16	0.775	19.68	331	493	7	8	9
304650	7	16	0.816	20.73	399	594	7	8	9
669020	8	16	0.885	22.48	454	676	7	8	9
667820	10	16	1.030	26.16	560	833	7	8	9
282990	12	16	1.065	27.05	645	960	6	7	8
308330	16	16	1.195	30.35	839	1249	6	7	8
359230	20	16	1.330	33.78	1030	1533	6	7	8
302990	24	16	1.395	35.43	1122	1670	5	6	7
304630	1	14	0.395	10.03	95	141	30	31	33
661700	2	14	0.620	15.75	187	278	19	20	21
304640	3	14	0.645	16.38	237	353	19	20	21
309900	4	14	0.730	18.54	316	470	17	18	19
303660	5	14	0.805	20.45	386	574	12	13	14
359240	6	14	0.895	22.73	468	696	12	13	14
303890	7	14	0.895	22.73	520	774	12	13	14
359250	8	14	0.985	25.02	593	882	12	13	14
315120	10	14	1.155	29.34	739	1100	12	13	14
303900	12	14	1.205	30.61	883	1314	11	12	13
359260	16	14	1.255	31.88	1030	1533	9	10	11
359270	20	14	1.325	33.65	1178	1753	9	10	11
359280	24	14	1.380	35.05	1326	1973	8	9	10

## Options:

1. Overall Shield: overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
2. Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
3. Aluminum or tinned copper braid armor

**Polyrad®XT-125 Paired Signal, Individually Shielded, Armored & Sheathed**  
**600V, Type P**
**20 AWG Thru 14 AWG Conductors Armored & Sheathed T-75127 Series**

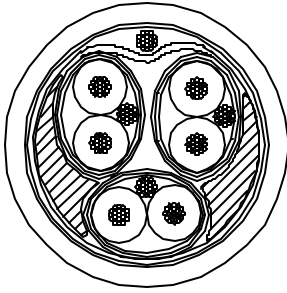
Catalog Number	# of Pairs	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
359290	1	20	0.517	13.13	190	283	9	10	11
359300	2	20	0.692	17.57	299	445	6	7	8
359310	3	20	0.720	18.29	336	500	6	7	8
359320	4	20	0.770	19.55	384	571	5	6	7
359330	5	20	0.880	22.35	497	740	4	5	6
359340	6	20	0.922	23.42	534	795	4	5	6
359350	7	20	0.922	23.42	557	829	4	5	6
359360	8	20	0.997	25.32	615	915	4	5	6
359370	10	20	1.153	29.29	788	1173	4	5	6
359380	12	20	1.230	31.24	831	1237	3	4	5
359390	16	20	1.340	34.04	1037	1543	3	4	5
359400	20	20	1.460	37.08	1205	1793	3	4	5
359410	24	20	1.600	40.64	1381	2054	2	3	4
315750	1	18	0.537	13.64	210	313	13	14	15
315810	2	18	0.728	18.48	338	503	9	10	11
359420	3	18	0.761	19.33	387	576	9	10	11
315840	4	18	0.853	21.67	490	729	8	9	10
359430	5	18	0.914	23.21	558	830	5	6	7
359440	6	18	0.976	24.80	627	933	5	6	7
359450	7	18	0.976	24.80	660	982	5	6	7
359460	8	18	1.041	26.44	731	1088	5	6	7
359470	10	18	1.225	31.12	937	1394	5	6	7
359480	12	18	1.259	31.97	1024	1524	5	6	7
359490	16	18	1.360	34.54	1214	1807	4	5	6
359500	20	18	1.490	37.85	1435	2136	4	5	6
359510	24	18	1.640	41.66	1676	2494	3	4	5
279280	1	16	0.540	13.72	214	318	18	19	20
279290	2	16	0.740	18.80	350	521	12	13	14
315830	3	16	0.775	19.68	405	603	12	13	14
279300	4	16	0.865	21.97	510	759	10	11	12
295870	5	16	0.935	23.75	590	878	7	8	9
315760	6	16	0.995	25.27	659	981	7	8	9
359520	7	16	1.036	26.31	743	1106	7	8	9
283490	8	16	1.105	28.07	824	1226	7	8	9
310760	10	16	1.250	31.75	986	1467	7	8	9
284120	12	16	1.285	32.64	1084	1613	6	7	8
308440	16	16	1.415	35.94	1329	1978	6	7	8
355780	20	16	1.550	39.37	1572	2339	6	7	8
313610	24	16	1.755	44.58	1949	2901	5	6	7
352490	1	14	0.575	14.60	245	365	30	31	33
359530	2	14	0.800	20.32	413	615	19	20	21
359540	3	14	0.865	21.97	515	766	19	20	21
359550	4	14	0.950	24.13	627	933	17	18	19
303670	5	14	1.025	26.03	725	1079	12	13	14
359560	6	14	1.115	28.32	842	1253	12	13	14
359570	7	14	1.115	28.32	894	1330	12	13	14
359580	8	14	1.210	30.73	995	1481	12	13	14
359590	10	14	1.380	35.05	1202	1789	12	13	14
359600	12	14	1.425	36.19	1376	2048	11	12	13
359610	16	14	1.480	37.59	1530	2277	9	10	11
359620	20	14	1.545	39.24	1718	2557	9	10	11
355950	24	14	1.945	49.40	2228	3315	8	9	10

## Options:

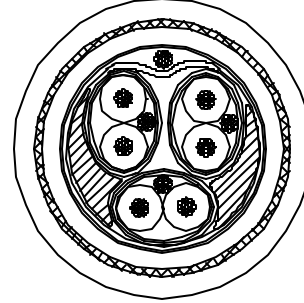
1. Overall Shield: overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core
2. Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
3. Aluminum or tinned copper braid armor



# Polyrad® XT-125 Paired Signal, Individual/Overall Shielded, Unarmored or Armored & Sheathed 600V, Type P



Unarmored



Armored &amp; Sheathed

## Product Construction:

### Conductor:

- 20 AWG thru 14 AWG soft annealed tinned copper flexible strand per ASTM B-33

### Insulation:

- Polyrad XT-125 Irradiated Cross-Linked Polyolefin (XLPO)
- Color code: Pairs — black and white with each conductor printed alpha-numerically for easy identification

### Cable Core:

- Individual conductors are twisted into pairs and cabled with flame-retardant polypropylene fillers (as necessary) and covered with a non-hygroscopic binder tape

### Individual Shielded Pairs:

- Aluminum/polymer tape and tinned copper drain wire spirally applied over each pair with a pressure sensitive polymer tape for shield isolation

### Overall Shield:

- Overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core

### Unarmored Construction:

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

### Armored & Sheathed Construction:

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580
- Armor: Bronze Braid 88% minimum coverage
- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

### Print: (Including but not limited to)

- GCC POLYRAD XT-125 (UL) MARINE SHIPBOARD E85994 BR782 110C XX/PR XXAWG 600V OR (CSA) SPEC 245/1309 FT4 -40C IEC 1KV 60332.3A IEEE 45 TYPE P OR (ETL) 109229, YEAR OF MFG SEQUENTIAL FOOTAGE MARK

### Options:

- Armored Construction: Bronze Braid Armor — 88% minimum coverage over Pairs; add .060" to Unarmored diameter for Armored diameter
- Aluminum or tinned copper braid armor

### Applications:

- Engineered and manufactured for hostile environments of offshore platforms, ships, mobile oil rigs, land rigs and onshore drilling

### Features:

- Pigment colored insulated conductors
- Flexible stranding to facilitate cable installation and termination
- Temperature rated 125°C for long life, higher ampacities and protection from thermal overloads
- Excellent electrical properties; stable in water
- Extra heavy-duty arctic-grade Irradiated Cross-Linked Hypalon® jacket to insure overall maximum flexibility and oil & chemical resistance
- Meets cold bend test at -55°C
- Meets cold impact test at -40°C Low levels of toxicity, smoke emissions, corrosive outgassing and lead

### Compliances:

- API-RP14F
- CSA C22.2 No. 245 FT4 -40°C
- ICEA S-95-658 (Formerly ICEA S-19-81 & S-66-524)
- IEC 332-3
- IEEE 45 Type P
- IEEE 1580 Type P
- IEEE 383
- IEEE 1202
- UL 1277
- UL 1309
- UL Listed 110°C Marine Shipboard Cable
- VW-1 and IEC 92-3 vertical flame tests

### Regulatory Approvals and Certifications:

- American Bureau of Shipping (ABS)
- Canadian Coast Guard (CCG)
- Canadian Standards Association (CSA)
- Det Norske Veritas (DNV)
- ETL Listing per IEEE 45 Type P
- Lloyd's Register of Shipping (LRS)
- Transport Canada Marine Safety (TCMS – formerly Canadian Coast Guard)
- Underwriters Laboratories (UL)
- United States Coast Guard (USCG)
- Various Shipyard and Oil Rig Manufacturers

**Polyrad® XT-125 Paired Signal, Individual/Overall Shielded, Unarmored  
600V, Type P**
**20 AWG Thru 14 AWG Conductors Unarmored T-75198 Series**

Catalog Number	# of Cores	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
357420	1	20	0.342	8.69	63	94	9	10	11
357430	2	20	0.517	13.13	114	170	6	7	8
357440	3	20	0.545	13.84	142	211	6	7	8
357450	4	20	0.595	15.11	173	257	5	6	7
357460	5	20	0.660	16.70	220	327	4	5	6
357470	6	20	0.707	17.96	241	359	4	5	6
357480	7	20	0.707	17.96	262	390	4	5	6
357490	8	20	0.755	19.18	283	421	4	5	6
357500	10	20	0.938	23.83	325	484	4	5	6
357510	12	20	0.960	24.38	364	542	3	4	5
357520	16	20	1.065	27.05	507	754	3	4	5
357530	20	20	1.180	29.97	614	914	3	4	5
357540	24	20	1.310	33.27	714	1063	2	3	4
357550	1	18	0.362	9.19	77	115	13	14	15
357560	2	18	0.553	14.05	141	210	9	10	11
357570	3	18	0.586	14.88	179	266	9	10	11
357580	4	18	0.638	16.21	222	330	8	9	10
357590	5	18	0.699	17.75	266	396	5	6	7
357600	6	18	0.761	19.33	312	464	5	6	7
357610	7	18	0.761	19.33	344	512	5	6	7
357620	8	18	0.826	20.98	391	582	5	6	7
357630	10	18	1.010	25.65	525	781	5	6	7
357640	12	18	1.044	26.52	600	893	5	6	7
357650	16	18	1.145	29.08	750	1116	4	5	6
357660	20	18	1.275	32.39	921	1371	4	5	6
357670	24	18	1.425	36.20	1104	1643	3	4	5
357680	1	16	0.365	9.27	80	119	18	19	20
357690	2	16	0.565	9.27	149	222	12	13	14
357700	3	16	0.600	15.24	192	286	12	13	14
357710	4	16	0.650	16.51	237	353	10	11	12
357720	5	16	0.720	18.29	290	432	7	8	9
357730	6	16	0.780	19.81	336	500	7	8	9
357740	7	16	0.821	20.85	404	601	7	8	9
357750	8	16	0.890	22.61	459	683	7	8	9
357760	10	16	1.035	26.29	565	841	7	8	9
357770	12	16	1.070	27.18	650	967	6	7	8
357780	16	16	1.200	30.48	844	1256	6	7	8
357790	20	16	1.335	33.91	1035	1540	6	7	8
357800	24	16	1.480	37.59	1224	1822	5	6	7
357810	1	14	0.400	10.16	100	149	30	31	33
357820	2	14	0.625	15.88	192	286	19	20	21
357830	3	14	0.650	16.51	242	360	19	20	21
357840	4	14	0.735	18.67	321	478	17	18	19
357850	5	14	0.810	20.57	391	582	12	13	14
357860	6	14	0.900	22.86	473	704	12	13	14
357870	7	14	0.900	22.86	525	781	12	13	14
357880	8	14	0.985	25.02	582	866	12	13	14
357890	10	14	1.155	29.34	696	1036	12	13	14
357900	12	14	1.210	30.73	888	1322	11	12	13
357910	16	14	1.345	34.16	1035	1540	9	10	11
357920	20	14	1.505	38.23	1183	1761	9	10	11
357930	24	14	1.655	42.04	1331	1981	8	9	10

## Options:

1. Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
2. Aluminum or tinned copper braid armor

**Polyrad®XT-125 Paired Signal, Individual/Overall Shielded, Armored & Sheathed  
600V, Type P**
**20 AWG Thru 14 AWG Conductors Armored & Sheathed T-75199 Series**

Catalog Number	# of Pairs	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	100°C	110°C	95°C	100°C	110°C
357940	1	20	0.522	13.26	195	290	9	10	11
357950	2	20	0.697	17.70	304	452	6	7	8
357960	3	20	0.725	18.42	341	507	6	7	8
357970	4	20	0.775	19.69	389	579	5	6	7
357980	5	20	0.840	21.34	450	670	4	5	6
357990	6	20	0.927	23.55	476	708	4	5	6
358000	7	20	0.927	23.55	498	741	4	5	6
358010	8	20	0.975	24.77	567	844	4	5	6
358020	10	20	1.158	29.41	645	960	4	5	6
358030	12	20	1.180	29.97	714	1063	3	4	5
358040	16	20	1.285	32.64	837	1246	3	4	5
358050	20	20	1.400	35.56	954	1420	3	4	5
358060	24	20	1.530	38.86	1065	1585	2	3	4
358070	1	18	0.542	13.77	215	320	13	14	15
358080	2	18	0.733	18.62	343	510	9	10	11
358090	3	18	0.766	19.46	392	583	9	10	11
358100	4	18	0.858	21.79	495	737	8	9	10
358110	5	18	0.919	23.34	563	838	5	6	7
358120	6	18	0.981	24.92	632	941	5	6	7
358130	7	18	0.981	24.92	665	990	5	6	7
358140	8	18	1.046	26.57	736	1095	5	6	7
358150	10	18	1.230	31.24	942	1402	5	6	7
358160	12	18	1.264	32.11	1029	1531	5	6	7
358170	16	18	1.365	34.67	1219	1814	4	5	6
358180	20	18	1.495	37.97	1440	2143	4	5	6
358190	24	18	1.645	41.78	1681	2502	3	4	5
358200	1	16	0.545	13.84	219	326	18	19	20
358210	2	16	0.745	18.92	355	528	12	13	14
358220	3	16	0.780	19.81	410	610	12	13	14
358230	4	16	0.870	22.10	515	766	10	11	12
358240	5	16	0.940	23.88	595	885	7	8	9
358250	6	16	1.000	25.40	662	985	7	8	9
358260	7	16	1.041	26.44	748	1113	7	8	9
358270	8	16	1.110	28.19	829	1234	7	8	9
358280	10	16	1.255	31.88	991	1475	7	8	9
358290	12	16	1.290	32.77	1089	1621	6	7	8
358300	16	16	1.420	36.07	1334	1985	6	7	8
358310	20	16	1.555	39.50	1577	2347	6	7	8
358320	24	16	1.760	44.70	1694	2521	5	6	7
358330	1	14	0.580	14.73	285	424	30	31	33
358340	2	14	0.845	21.46	447	665	19	20	21
358350	3	14	0.870	22.10	501	746	19	20	21
358360	4	14	0.955	24.26	596	887	17	18	19
358370	5	14	1.030	26.16	675	1005	12	13	14
358380	6	14	1.120	28.45	789	1174	12	13	14
358390	7	14	1.205	28.45	841	1251	12	13	14
358400	8	14	1.205	30.61	907	1350	12	13	14
358410	10	14	1.375	34.93	1074	1598	12	13	14
358420	12	14	1.430	36.32	1283	1909	11	12	13
358430	16	14	1.560	39.32	1465	2180	9	10	11
358440	20	14	1.725	43.82	1648	2452	9	10	11
358450	24	14	1.875	47.63	1831	2725	8	9	10

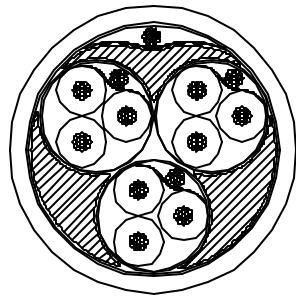
## Options:

1. Armored Construction: Bronze Braid Armor – 88% minimum coverage over conductor; add .060" to Unarmored diameter for Armored diameter
2. Aluminum or tinned copper braid armor

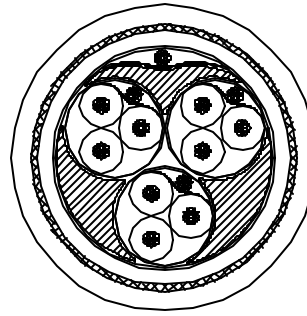




# **Polyrad® XT-125 Triad Signal, Individual/Overall Shielded, Unarmored or Armored & Sheathed 600V, Type P**



Unarmored



Armored &amp; Sheathed

## **Product Construction:**

### **Conductor:**

- 18 AWG and 16 AWG soft annealed tinned copper flexible strand per ASTM B-33

### **Insulation:**

- Polyrad XT-125 Irradiated Cross-Linked Polyolefin (XLPO)
- Color code: Triads —black, white and red with each conductor printed alpha-numerically for easy identification

### **Cable Core:**

- Individual conductors are twisted into triads and cabled with flame-retardant polypropylene fillers (as necessary) and covered with a non-hygroscopic binder tape

### **Individual Shielded Triads:**

- Aluminum/polymer tape and tinned copper drain wire spirally applied over each triad with a pressure sensitive polymer tape for shield isolation

### **Overall Shield:**

- Overall aluminum/polymer tape with tinned copper drain wire or a tinned copper braid over the cable core

### **Unarmored Construction:**

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

### **Armored & Sheathed Construction:**

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580
- Armor: Bronze Braid 88% minimum coverage

### **Armored & Sheathed Construction: (cont.)**

- Sheath: Black Irradiated Cross-Linked Hypalon® Chlorosulfonated Polyethylene (CSPE) per IEEE 45 and IEEE 1580

### **Print: (Including but not limited to)**

- GCC POLYRAD XT-125 (UL) MARINE SHIPBOARD E85994 BR782 110C XX/TRI XXAWG 600V OR (CSA) SPEC 245/1309 FT4 -40C IEC 1KV 60332.3A IEEE 45 TYPE P OR (ETL) 109229, YEAR OF MFG SEQUENTIAL FOOTAGE MARK

### **Options:**

- Armored Construction: Bronze Braid Armor - 88% minimum coverage over Triad; add .060" to Unarmored diameter for Armored diameter
- Aluminum or tinned copper braid armor

### **Applications:**

- Engineered and manufactured for hostile environments of offshore platforms, ships, mobile oil rigs, land rigs and onshore drilling

### **Features:**

- Pigment colored insulated conductors
- Flexible stranding to facilitate cable installation and termination
- Temperature rated 125°C for long life, higher ampacities and protection from thermal overloads
- Excellent electrical properties; stable in water

### **Features: (continued)**

- Extra heavy-duty arctic-grade Irradiated Cross-Linked Hypalon® jacket to insure overall maximum flexibility and oil & chemical resistance
- Meets cold bend test at -55°C
- Meets cold impact test at -40°C
- Low levels of toxicity, smoke emissions, corrosive outgassing and lead

### **Compliances:**

- API-RP14F
- CSA C22.2 No. 245 FT4 -40°C
- ICEA S-95-658 (Formerly ICEA S-19-81 & S-66-524)
- IEC 332-3
- IEEE 45 Type P
- IEEE 1580 Type P
- IEEE 383
- IEEE 1202
- UL 1277
- UL 1309
- UL Listed 110°C Marine Shipboard Cable
- VW-1 and IEC 92-3 vertical flame tests

### **Regulatory Approvals and Certifications:**

- American Bureau of Shipping (ABS)
- Canadian Coast Guard (CCG)
- Canadian Standards Association (CSA)
- Det Norske Veritas (DNV)
- ETL Listing per IEEE 45 Type P
- Lloyd's Register of Shipping (LRS)
- Transport Canada Marine Safety (TCMS – formerly Canadian Coast Guard)
- Underwriters Laboratories (UL)
- United States Coast Guard (USCG)
- Various Shipyard and Oil Rig Manufacturers

**Polyrad® XT-125 Triad Signal, Individual/Overall Shielded, Unarmored or Armored & Sheathed 600V, Type P**
**18 AWG AND 16 AWG CONDUCTORS UNARMORED T-75200 SERIES**

Catalog Number	# of Triads	AWG Size	Overall Diameter		Net Weight		Ampacities 45°C Ambient-Single Banked		
			Inches	mm	lbs/1000'	Kg/km	95°C	100°C	110°C
358460	1	18	0.380	9.65	91	135	11	12	13
358470	2	18	0.610	15.31	175	260	8	9	10
358480	3	18	0.648	16.46	226	336	7	8	9
358490	4	18	0.707	17.96	282	420	5	6	7
358500	5	18	0.776	19.71	341	507	5	6	7
358510	6	18	0.848	21.54	400	595	5	6	7
358520	7	18	0.848	21.54	445	662	4	5	6
358530	8	18	0.935	23.75	490	729	4	5	6
358540	12	18	1.130	28.70	547	814	4	5	6
358550	16	18	1.255	31.88	891	1326	3	4	5
358560	1	16	0.395	10.03	102	152	15	16	17
358570	2	16	0.639	16.23	197	293	12	13	14
358580	3	16	0.679	17.25	258	384	11	12	13
358590	4	16	0.742	18.85	324	482	8	9	10
358600	5	16	0.815	20.70	392	583	8	9	10
358610	6	16	1.000	25.40	558	830	8	9	10
358620	7	16	1.000	25.40	611	909	7	8	9
358630	8	16	1.078	27.38	690	1027	7	8	9
358640	12	16	1.292	32.82	978	1455	6	7	8
358650	16	16	1.428	36.27	1241	1847	5	6	7

**18 AWG AND 16 AWG CONDUCTORS ARMORED & SHEATHED T-75201 SERIES**

358660	1	18	0.560	14.22	235	350	11	12	13
358670	2	18	0.790	20.07	396	589	8	9	10
358680	3	18	0.828	21.03	460	685	7	8	9
358690	4	18	0.927	23.55	582	786	5	6	7
358700	5	18	0.996	25.30	667	993	5	6	7
358710	6	18	1.068	27.13	754	1122	5	6	7
358720	7	18	1.068	27.13	799	1189	4	5	6
358730	8	18	1.155	29.34	826	1229	4	5	6
358740	12	18	1.350	34.29	1187	1766	4	5	6
358750	16	18	1.475	37.47	1294	1926	3	4	5
358760	1	16	0.575	14.61	251	374	15	16	17
358770	2	16	0.819	20.80	428	637	12	13	14
358780	3	16	0.859	21.82	502	747	11	12	13
358790	4	16	0.962	24.43	637	948	8	9	10
358800	5	16	1.035	26.29	734	1092	8	9	10
358810	6	16	1.220	30.99	971	1445	8	9	10
358820	7	16	1.220	30.99	1024	1524	7	8	9
358830	8	16	1.298	32.97	1133	1686	7	8	9
358840	12	16	1.512	37.95	1503	2237	6	7	8
358850	16	16	1.648	41.86	1819	2707	5	6	7

## Options:

1. Armored Construction: Bronze Braid Armor – 88% minimum coverage over triad; add .060" to Unarmored diameter for Armored diameter
2. Aluminum or tinned copper braid armor







**Polyrad<sup>®</sup> XT-125 Type P Marine  
Shipboard Cable Ampacities  
For  
95°C, 100°C, 110°C**

## Polyrad® Type P Ampacities

### Type P, Polyrad® XT – 125 Marine UL Listed Marine Shipboard Cable 45°C Ambient – Single Banked 95°C Ampacities

AWG/ kcmil	mm <sup>2</sup>	CIRCULAR MILS	1/C	2/C	3/C
20	0.6	1022	11	9	8
18	1.0	1624	15	13	11
16	1.2	2583	22	18	15
14	2.1	4110	35	30	24
12	3.3	6530	44	38	30
10	5.3	10400	56	47	39
8	8.4	16500	70	62	50
6	13.3	26300	92	82	67
5	16.8	33100	104	96	78
4	21.1	41700	123	105	87
3	26.7	52600	140	126	103
2	33.6	66400	162	143	116
1	42.4	83700	180	162	137
1/0	53.5	106000	217	191	157
2/0	67.4	133000	251	232	180
3/0	85.0	168000	289	255	209
4/0	107.2	212000	337	295	242
262	133.1	262000	392	345	283
313	158.7	313100	439	378	309
373	189.4	373700	507	440	361
444	225.2	444400	567	486	396
535	271.3	535300	638	546	448
646	327.6	646400	693	603	492
777	394.2	777700	750	674	552
1111	563.1	1111000	972	814	668

#### Notes:

(1) The above current-carrying capacities are for marine installations with cables arranged in a single bank per hanger and are 85% of the ICEA calculated values (See Note 2). Double banking of distribution-type cables should be avoided. For those instances where cable must be double banked, the current-carrying capacities in the above table should be multiplied by 0.8.

(2) The ICEA calculated current capacities of these cables are based on cables installed in free air, i.e., at least one cable diameter spacing between adjacent cables. See AIEE Publication No. S-135-1962/ICEA, Publication No. P-46-426, 1962 Edition.

(3) If ambient temperatures differ from 45°C the values shown above should be multiplied by the following factors:

40°C - 1.04      50°C - .95      60°C - .85      70°C - .74

(4) When the number of conductors in a cable exceed 3, the maximum current-carrying capacity of each conductor is to be reduced according to the following table:

<u>Number of Conductors</u>	<u>% of 3 Conductor Ampacity Values</u>
4 through 6	80
7 through 9	70
10 through 20	50
21 through 30	45
31 through 40	40
41 through 60	35
61 & Up	30

## Polyrad® Type P Ampacities

### Type P, Polyrad® XT – 125 Marine UL Listed Marine Shipboard Cable 45°C Ambient – Single Banked 100°C Ampacities

AWG/ kcmil	mm <sup>2</sup>	CIRCULAR MILS	1/C	2/C	3/C
20	0.6	1022	12	10	9
18	1.0	1624	16	14	12
16	1.2	2583	23	19	16
14	2.1	4110	37	31	25
12	3.3	6530	45	40	31
10	5.3	10400	58	49	41
8	8.4	16500	72	64	52
6	13.3	26300	96	85	70
5	16.8	33100	109	101	82
4	21.1	41700	128	110	92
3	26.7	52600	146	132	108
2	33.6	66400	169	149	122
1	42.4	83700	194	174	143
1/0	53.5	106000	227	199	164
2/0	67.4	133000	262	242	188
3/0	85.0	168000	300	265	218
4/0	107.2	212000	351	307	252
262	133.1	262000	407	358	294
313	158.7	313100	455	391	321
373	189.4	373700	526	456	375
444	225.2	444400	588	504	411
535	271.3	535300	662	566	465
646	327.6	646400	715	625	510
777	394.2	777700	830	699	573
1111	563.1	1111000	1003	844	693

#### Notes:

(1) The above current-carrying capacities are for marine installations with cables arranged in a single bank per hanger and are 85% of the ICEA calculated values (See Note 2). Double banking of distribution-type cables should be avoided. For those instances where cable must be double banked, the current-carrying capacities in the above table should be multiplied by 0.8.

(2) The ICEA calculated current capacities of these cables are based on cables installed in free air, i.e., at least one cable diameter spacing between adjacent cables. See AIEE Publication No. S-135-1962/ICEA, Publication No. P-46-426, 1962 Edition.

(3) If ambient temperatures differ from 45°C the values shown above should be multiplied by the following factors:

40°C - 1.04      50°C - .95      60°C - .85      70°C - .74

(4) When the number of conductors in a cable exceed 3, the maximum current-carrying capacity of each conductor is to be reduced according to the following table:

#### Number of Conductors

4 through 6  
7 through 9  
10 through 20  
21 through 30  
31 through 40  
41 through 60  
61 & Up

#### % of 3 Conductor Ampacity Values

80  
70  
50  
45  
40  
35  
30



## Polyrad® Type P Ampacities

### Type P, Polyrad® XT – 125 Marine UL Listed Marine Shipboard Cable 45°C Ambient – Single Banked 110°C Ampacities

AWG/ kcmil	mm <sup>2</sup>	CIRCULAR MILS	1/C	2/C	3/C
20	0.6	1022	13	11	10
18	1.0	1624	17	15	13
16	1.2	2583	25	20	17
14	2.1	4110	40	33	27
12	3.3	6530	48	43	33
10	5.3	10400	62	52	44
8	8.4	16500	77	69	56
6	13.3	26300	103	91	75
5	16.8	33100	117	109	88
4	21.1	41700	137	118	99
3	26.7	52600	156	141	116
2	33.6	66400	181	160	131
1	42.4	83700	208	186	153
1/0	53.5	106000	243	213	176
2/0	67.4	133000	281	259	201
3/0	85.0	168000	321	284	233
4/0	107.2	212000	376	329	270
262	133.1	262000	426	378	310
313	158.7	313100	491	420	345
373	189.4	373700	563	497	406
444	225.2	444400	630	556	454
535	271.3	535300	709	625	511
646	327.6	646400	766	649	525
777	394.2	777700	889	784	640
1111	563.1	1111000	1006	—	—

#### Notes:

(1) The above current-carrying capacities are for marine installations with cables arranged in a single bank per hanger and are 85% of the ICEA calculated values (See Note 2). Double banking of distribution-type cables should be avoided. For those instances where cable must be double banked, the current-carrying capacities in the above table should be multiplied by 0.8.

(2) The ICEA calculated current capacities of these cables are based on cables installed in free air, i.e., at least one cable diameter spacing between adjacent cables. See AIEE Publication No. S-135-1962/ICEA, Publication No. P-46-426, 1962 Edition.

(3) If ambient temperatures differ from 45°C the values shown above should be multiplied by the following factors:

40°C - 1.04      50°C - .95      60°C - .85      70°C - .74

(5) When the number of conductors in a cable exceed 3, the maximum current-carrying capacity of each conductor is to be reduced according to the following table:

#### Number of Conductors

4 through 6  
7 through 9  
10 through 20  
21 through 30  
31 through 40  
41 through 60  
61 & Up

#### % of 3 Conductor Ampacity Values

80  
70  
50  
45  
40  
35  
30





# Marine Cables

# Standard Conductor Chart

Approximate Area (CMIL)	Appro x. Size AWG	No. & Size Each Wire in Strand	Type of Stranding	Diameter (In.)	Capacitance (Pico Farads/Ft.)	A.C. Resistance @ 20°C (Ohms/M')	A.C. Impedance @ 60 Cycles (Ohms/M')	Inductance (MICRO H/M') x10 <sup>-5</sup>	Weight (Pounds/M')
1900	18	19/30	CONC	.0475	23.9	5.46	6.22	10.88	6
2601	16	19/.0117	CONC	.054	24.6	3.99	4.82	10.61	8
3831	14	19/27	CONC	.071	31.6	2.71	3.05	9.549	12
6088	12	19/25	CONC	.090	37.5	1.70	1.92	9.019	20
10910	10	27/24	BUNCH	.120	47.6	.95	1.10	8.223	34
14950	8	37/24	CONC	.140	33.8	.69	.70	9.284	51
24640	6	61/24	CONC	.181	41.3	.42	.57	8.754	83
36760	5	91/24	ROPE	.242	52.2	.28	.33	8.223	119
42420	4	105/24	ROPE	.262	55.7	.24	.28	7.958	138
50500	3	125/24	ROPE	.285	59.7	.21	.23	7.692	167
60600	2	150/24	ROPE	.307	63.4	.17	.20	7.692	190
90900	1	225/24	ROPE	.380	66.2	.11	.14	7.692	302
111100	1/0	275/24	ROPE	.437	74.9	.09	.11	7.427	366
131300	2/0	325/24	ROPE	.458	77.4	.08	.10	7.427	420
181800	3/0	450/24	ROPE	.549	90.2	.06	.07	7.162	594
222200	4/0	550/24	ROPE	.611	66.6	.05	.06	7.692	721
262600		650/24	ROPE	.652	70.3	.04	.05	7.427	871
313100		775/25	ROPE	.720	76.4	.03	.05	7.427	1049
373700		925/24	ROPE	.795	83.0	.03	.04	7.162	1256
444400		1100/24	ROPE	.855	88.3	.02	.04	7.162	1506
535300		1325/24	ROPE	.925	84.5	.02	.04	7.162	1729
646400		1600/24	ROPE	1.035	92.9	.02	.03	7.162	2123
777700		1925/24	ROPE	1.120	99.4	.01	.03	6.897	2591
1111000		2750/24	ROPE	1.328	115.0	.01	.03	6.897	3400

NOTE: At the option of the purchaser, the manufacturer's standard type of stranding will be acceptable providing the conductor diameter does not exceed the values shown. The total number of wires shall be as specified, plus or minus one percent, except 150 / #24 which may vary by minus two percent, providing that the conductor diameter does not exceed the values shown.

- Sizes 4/0 AWG and larger are based on 2000 Volt HD rated cables
- Micro H/M' x10<sup>-5</sup> X .3048 = Micro H / KM x10<sup>-5</sup>
- Ohms/M' X .304 = Ohms/Km





IEEE 45 –1998 Table 8-31 / IEEE 1580 Table 22								
Conductor Number	Base Color	Tracer Color	Tracer Color		Conductor Number	Base Color	Tracer Color	Tracer Color
1	Black				47	Green	Orange	Red
2	White				48	Orange	Red	Blue
3	Red				49	Blue	Red	Orange
4	Green				50	Black	Orange	Red
5	Orange				51	White	Black	Orange
6	Blue				52	Red	Orange	Black
7	White	Black			53	Green	Red	Blue
8	Red	Black			54	Orange	Black	Blue
9	Green	Black			55	Blue	Black	Orange
10	Orange	Black			56	Black	Orange	Green
11	Blue	Black			57	White	Orange	Green
12	Black	White			58	Red	Orange	Green
13	Red	White			59	Green	Black	Blue
14	Green	White			60	Orange	Green	Blue
15	Blue	White			61	Blue	Green	Orange
16	Black	Red			62	Black	Red	Blue
17	White	Red			63	White	Orange	Blue
18	Orange	Red			64	Red	Black	Blue
19	Blue	Red			65	Green	Orange	Blue
20	Red	Green			66	Orange	White	Red
21	Orange	Green			67	Blue	White	Red
22	Black	White	Red		68	Black	Green	Blue
23	White	Black	Red		69	White	Green	Blue
24	Red	Black	White		70	Red	Green	Blue
25	Green	Black	White		71	Green	White	Red
26	Orange	Black	White		72	Orange	Red	Black
27	Blue	Black	White		73	Blue	Red	Black
28	Black	Red	Green		74	Black	Orange	Blue
29	White	Red	Green		75	Red	Orange	Blue
30	Red	Black	Green		76	Green	Red	Black
31	Green	Black	Orange		77	Orange	White	Green
32	Orange	Black	Green		78	Blue	White	Green
33	Blue	White	Orange		79	Red	White	Orange
34	Black	White	Orange		80	Green	White	Orange
35	White	Red	Orange		81	Blue	Black	Green
36	Orange	White	Blue		82	Orange	White	
37	White	Red	Blue		83	Green	Red	
38	Black	White	Green		84	Black	Green	
39	White	Black	Green		85	White	Green	
40	Red	White	Green		86	Blue	Green	
41	Green	White	Blue		87	Black	Orange	
42	Orange	Red	Green		88	White	Orange	
43	Blue	Red	Green		89	Red	Orange	
44	Black	White	Blue		90	Green	Orange	
45	White	Black	Blue		91	Blue	Orange	
46	Red	White	Blue					

Note #1 – Pair Color Code: black and white with each conductor printed alpha-numerically for easy identification

Note #2 – Triad Color Code: black, white and red with each conductor printed alpha-numerically for easy identification









**Specification No. BR-781**  
**Oil Rig-Shipboard-Apparatus**  
**Shipboard Wire & Cable**

**Polyrad<sup>®</sup> XT-125 Marine Type P**  
**Irradiated Cross-linked Polyolefin**  
**Single Conductor**

Revision 8  
Date: 4/26/02

# SPECIFICATION NO. BR-781

## General Cable Polyrad XT-125 Marine Single Conductor Wire & Cable Rated for 600/1000 Volts & 2000 Volts AC or DC for use on Oil Rigs-Shipboard-Apparatus

### TABLE OF CONTENTS

SECTION	SUBJECT	PAGE
I.	SCOPE .....	1
II.	APPLICABLE DOCUMENTS .....	1
III.	CONDUCTOR.....	2
	SEPARATOR.....	2
	INSULATION.....	2
	A. PHYSICAL PROPERTIES .....	2
	B. ELECTRICAL PROPERTIES .....	3
	C. QUALIFICATION TESTING.....	3
	1. TENSION SET .....	3
	2. OZONE RESISTANCE .....	3
	3. FLAMMABILITY REQUIREMENTS .....	3
	4. CORROSION TESTS .....	3
	a) Copper Mirror .....	3
	b) Acid Gas Detection .....	3
	5. OIL RESISTANCE .....	4
	6. SMOKE EMISSION .....	4
	7. ABRASION RESISTANCE.....	4
	8. CUT-THROUGH-PENETRATION .....	4
	9. CRUSH RESISTANCE .....	5
IV.	CABLE IDENTIFICATION.....	5
V.	REEL MARKINGS .....	5

# **General Cable Polyrad XT-125 Marine Irradiated Crosslinked Polyolefin Oil Rigs-Shipboard-Apparatus Wire & Cable**

## **I. Scope**

This specification covers single conductor wire and cable rated at 600/1000 volts or 2000 volts, AC or DC, insulated with General Cable's Polyrad XT-125 Type P Marine, a thermosetting irradiation crosslinked polyolefin insulation which is flame retardant, moisture and oil resistant, and mechanically tough. Armor of aluminum or bronze and an overall sheath in accordance with IEEE Standard 45 is available at the option of the purchaser.

## **II. Applicable Documents**

The wire and cable manufactured under this specification shall be tested and inspected in accordance with the latest issues of the following standards, as applicable or as modified herein:

ASTM B-33	Tinned Soft or Annealed Copper Wire.
ASTM D-149	Test for Dielectric Breakdown Voltage and Dielectric Strength of Electrical Insulation Materials at Commercial Power Frequencies.
CSA C22.2 N° 245/ UL 1309	Marine Shipboard Cable
IEEE Std 45-1998	IEEE Recommended Practice for Electrical Installation on Ship board.
IEEE Std 383-1974	Type Test of Class 1E Electrical Cable, Field Splices & Connectors for Nuclear Power Generating Stations.
IEEE Std 1202-1991	Standard for Flame Testing of Cables for use in Cable Tray in Industrial and Commercial Occupancies.
IEC-92-3	Electrical Installations in Ships, Part 3; Cables (Construction, Testing and Installation).
IEC 332-3 Cat A	Tests on Electric Cables Under Fire Conditions.
ICEA S-19-81	Rubber Insulated Wire & Cable.
ICEA S-66-524	Crosslinked-Thermosetting-Polyethylene Insulated Wire & Cable for the Transmission & Distribution of Electrical Energy.
UL 44	Standard for Rubber Insulated Wire & Cable.
UL (UBVZ)	Shipboard Cable, Marine.

### **III. Conductor**

Conductors shall be of soft annealed tinned copper per ASTM B-33 and shall conform to requirements as listed in the Dimensional Data section of the Type P data sheets.

#### **Separator**

A suitable separator may be used if deemed necessary by the manufacturer.

#### **Insulation**

The insulation shall be Polyrad XT-125 Type P Marine, an irradiated crosslinked polyolefin, with a minimum average thickness as listed in the Dimensional Data section of this specification. The insulated conductor shall meet the following requirements:

##### **A. Physical Properties**

###### **Unaged Requirement**

Tensile Strength, Min. PSI	2000 Min.
Elongation at rupture, Min. %	250 Min.

###### **Aged Requirements**

After air oven 7 days @ 158°C ± 2°C

Tensile Strength (% of original)	90 Min.
Elongation (% of original)	55 Min.

After air oven 7 days @ 121°C ± 2°C

Tensile Strength (% of original)	90 Min.
Elongation (% of original)	90 Min.

Oxygen Bomb 7 days @ 80°C @ 300 PSI

Tensile Strength (% of original)	90 Min.
Elongation (% of original)	90 Min.

Air Bomb 42 hours @ 127° 80 PSI

Tensile Strength (% of original)	90 Min.
Elongation (% of original)	90 Min.

Heat Distortion, 1 hour @ 200°C

Clause 4.3.6.1 CSA Std. C22.2 N1 0.3	20% Max.
--------------------------------------	----------

Cold Bend, 120 hours @ -55°C 6 KV - 5 Min.

Cold Bend, 2 inch mandrel @ -65°C (per MIL-W-22759)	Pass
--	------

**General Cable Polyrad XT-125 Marine  
Irradiated Crosslinked Polyolefin  
Oil Rigs-Shipboard-Apparatus  
Wire & Cable**

**B. Electrical Properties**

Dielectric Strength per ASTM D-149	> 700 V/Mil
Insulation Resistance	> 5000 Megohms/M?
Insulation Resistance K	> 20,000
Accelerated Water Absorption Gravimetric 7 days @ 70°C	5 MG/in <sup>2</sup>
Electrical SIC 24 hours @ 75°C	6.0
Increase in Capacitance	
1 - 14 Days	3.0
7 - 14 Days	1.5
Stability Factor after 14 Days	.5

**C. Qualification Testing**

**1. Tension Set**

Gauge marks are 4" apart.      10% Max.

**2. Ozone Resistance**

After 24 hours exposure to an ozone concentration of 0.03% by volume at 90°C ± 2°C, there shall be no insulation cracks.

**3. Flammability Requirements**

INSULATED CONDUCTORS SHALL PASS THE FLAME TEST DESCRIBED IN ICEA S-19-81 AND THE VW-1 VERTICAL FLAME TEST DESCRIBED IN UL SUBJECT 44. THE MAXIMUM AFTERBURN AFTER EACH FLAME APPLICATION SHALL BE NO GREATER THAN 3 SECONDS.

Insulated conductors shall also pass the flammability requirements described in IEEE Std. 45, IEEE 1202 and IEC 332-3 Category A.

**4. Corrosion Tests**

- a) Copper Mirror: (Ref. ASTM 2671) A 0.4 gram sample of insulation is placed in the bottom of a 2 inch x 12 inch test tube. A copper coated glass mirror shall be suspended 6 inches over the sample by a thin copper wire. The lower two inches of the test tube shall be heated to 175° C for 16 hours.

Requirement: Remove less than 5% of the copper film.

- b) Acid Gas Detection: A 1.0 mg sample shall be heated to combustion in a closed quartz tube. The resulting gases are drawn through a detector tube (MSA #91636) using a special air sampling pump manufactured by Mine Safety Apparatus Company. The amount of acid gas is determined by measuring the length of the color change in the detector tube.

Requirement: 220 PPM/MG typical.

#### 5. Oil Resistance

Hot Oil Swell Tests - Insulated wires are premeasured and immersed in a hot oil bath. After the required exposure time, they are removed and measured for the amount of swell.

Requirement:

A. IRM 902 012	100 hours @ 150°C Max.	Max. % Swell 40
B. Diesel Oil	100 hours @ 60°C Max.	Max. % Swell 60

**Note:** When tested in accordance with AAR589 (IRM 902 Oil at 121°C for 18 hours), the retention of tensile and elongation shall be:

Tensile - 70% Minimum                      Elongation - 90% Minimum

#### 6. Smoke Emission

The test shall be performed in an N.B.S. Smoke Chamber using #12 AWG wire insulated with 45 mils of Polyrad XT Marine. The procedures are per NFPA Standard 258 in the flaming (F) and non-flaming (N) modes.

		<u>Dm</u>	<u>T16</u>	<u>T.9DM</u>
(F) Flaming plus Radiant Furnace	485	1.20	7.15	
(N) Non-flaming Radiant Furnace	203	10.3	25.7	

Dm            =            Max. Specified Optical Density  
T16           =            Time to reach critical Ds (Specified Optical Density)  
T.9 Dm      =            Time to reach 90% of Dm

#### 7. Abrasion Resistance

Rotating Scrap abrader (Ref. MIL-C-915). A 24 inch specimen is draped over an 8 inch rotating drum with two (2) 90E vee edge abrading tools 180° apart.

Failure is detected by electrical contact between abrading tool and conductor. The cable is weighted with a 450 gram weight.

Requirement:                      2500 cycles minimum.

#### 8. Cut-Through Penetration

Specimen of insulated wire is reconditioned at 125°C for 1 hour. While at this temperature, a weighted (1000 gm) 90°C chisel cutting edge is applied perpendicular to the longitudinal axis of the specimen. Detection of cut-through is monitored with a 12 volt lamp circuit connected in series with plunger and conductor in the specimen.

Requirement:                      10 minutes minimum.

9. Crush Resistance

A wire sample is placed between two (2) parallel flat plates and compressed until electrical contact is detected across conductor to the plate.

Requirement: 7500 lbs. minimum

**IV. Identification**

The surface of the cable shall be printed with the following minimum information at intervals not greater than two feet.

“General Cable Polyrad XT-125 (UL) Marine Shipboard E85994 BR781 110C 1/C 3/0 XLPO 2000V/IEC 1000V IEEE 45-1998 Type P SP2KV-3/0”

**V. Reel Markings**

Each reel to be shipped shall be marked to include the following information in addition to any other information specified by the purchaser:

General Cable  
Polyrad XT-125 Type P Marine 600/1000 Volts or 2000 Volts  
Conductor Size & No. Of Conductors  
Footage on Reel  
Month/Year of Manufacture





**Specification No. BR-782**  
**Oil Rig-Shipboard-Apparatus**  
**Shipboard Wire & Cable**

**Polyrad<sup>®</sup> XT-125 Marine Type P**  
**Irradiated Cross-linked Polyolefin**  
**Multi-Conductor**

# SPECIFICATION NO. BR-782

## General Cable Polyrad XT-125 Type P Marine Multi-Conductor Wire & Cable Rated 600/1000 Volts AC or DC for Use on Oil Rigs-Shipboard-Apparatus

### TABLE OF CONTENTS

Section	Subject	Page
I.	SCOPE .....	1
II.	APPLICABLE DOCUMENTS.....	1
III.	CONDUCTOR.....	2
IV.	SEPARATOR .....	2
V.	INSULATION	
	A) PHYSICAL PROPERTIES.....	2
	B) ELECTRICAL PROPERTIES.....	3
	C) QUALIFICATION TESTING.....	3
	1. TENSION SET.....	3
	2. OZONE RESISTANCE .....	3
	3. FLAMMABILITY REQUIREMENTS.....	3
	4. CORROSION TEST .....	3
	a) Copper Mirror.....	3
	b) Acid Gas Detection .....	3
	5. OIL RESISTANCE .....	4
	6. SMOKE EMISSION.....	4
	7. ABRASION RESISTANCE.....	4
	8. CUT -THROUGH PENETRATION.....	4
	9. CRUSH RESISTANCE.....	4
VI.	CONDUCTOR IDENTIFICATION.....	4
VII.	CABLING.....	4
VIII.	OVERALL JACKET/OVERALL SHEATH.....	5
IX.	FINISHED CABLE TEST.....	6
X.	ARMOR .....	6
XI.	CABLE IDENTIFICATION.....	6
XII.	REEL MARKINGS .....	6

# **General Cable Polyrad XT-125 Type P Marine Multi-Conductor Wire & Cable Rated 600/1000 Volts AC or DC for Use on Oil Rigs-Shipboard-Apparatus**

## **I. Scope**

This specification covers cables manufactured in accordance with IEEE Std 45-1998. These Power and Distribution, Signal, and Control cables are rated at 600/1000 volts AC or DC. They are manufactured with General Cable's Polyrad XT-125 Type P Marine insulation, a thermosetting irradiated crosslinked Polyolefin and Arctic Grade Chlorosulfonated Polyethylene jacket which have been designed for use on oil rigs, shipboard and associated apparatus. An armor of aluminum or bronze and an overall sheath are also available at the option of the purchaser.

## **II. Applicable Documents**

The wire and cable manufactured under this specification shall be tested and inspected in accordance with the latest issues of the following standards, as applicable or as modified herein:

ASTM B-33	Tinned Soft or Annealed Copper Wire.
ASTM D-149	Test for Dielectric Breakdown and Dielectric Strength of Electrical Insulation Materials at Commercial Power Frequencies.
CSA C22.2 N° 245/ UL 1309	Marine Shipboard Cable
IEEE Std 45-1998	IEEE Recommended Practice for Electrical Installation on Shipboard.
IEEE Std 383-1974	Type Test of Class 1E Electrical Cable, Field Splices & Connectors for Nuclear Power Generating Stations.
IEEE Std 1202-1991	Standard for Flame Testing of Cables for use in Cable Tray in Industrial and Commercial Occupancies.
IEC-92-3	Electrical Installations in Ships, Part 3; Cables (Construction, Testing and Installation).
IEC 332-3 Category A	Tests on Electric Cables Under Fire Conditions.
ICEA S-19-81	Rubber Insulated Wire & Cable.
ICEA S-66-524	Crosslinked-Thermosetting-Polyethylene Insulated Wire & Cable for the Transmission & Distribution of Electrical Energy.
UL 44	Standard for Rubber Insulated Wire & Cable.
UL (UBVZ)	Shipboard Cable, Marine.

### **III. Conductor**

Conductors shall be of soft annealed tinned copper per ASTM B-33 and shall conform to requirements as listed in the Dimensional Data section of the Type P data sheets.

### **IV. Separator**

A suitable separator may be used if deemed necessary by the manufacturer.

### **V. Insulation**

The insulation shall be Polyrad XT-125 Type P Marine, an irradiated crosslinked polyolefin, with a minimum average thickness as listed in the Dimensional Data section of this specification. The insulated conductor shall meet the following requirements:

#### **A. Physical Properties**

##### **Unaged Requirement**

Tensile Strength, Min. PSI	2000 Min.
Elongation at rupture, Min. %	250 Min.

##### **Aged Requirements**

After air oven 7 days @ 158°

C ± 2°C

Tensile Strength (% of original)	90 Min.
Elongation (% of original)	55 Min.

After air oven 7 days @ 121°C ± 2°C

Tensile Strength (% of original)	90 Min.
Elongation (% of original)	90 Min.

Oxygen Bomb 7 days @ 80°C @ 300 PSI

Tensile Strength (% of original)	90 Min.
Elongation (% of original)	90 Min.

Air Bomb 42 hours @ 127° 80 PSI

Tensile Strength (% of original)	90 Min.
Elongation (% of original)	90 Min.

Heat Distortion, 1 hour @ 200°C

Clause 4.3.6.1 CSA Std. C22.2 N1 0.3	20% Max.
--------------------------------------	----------

Cold Bend, 120 hours @ -55°C

6 KV - 5 Min.

Cold Bend, 2 inch mandrel @ -65°C  
(per para. 4.7.5.13 of MIL-W-22759)

Pass

**General Cable Polyrad XT-125 Type P Marine  
Multi-Conductor Wire & Cable  
Rated 600/1000 Volts AC or DC  
for Use on Oil Rigs-Shipboard-Apparatus**

**B. Electrical Properties**

Dielectric Strength per ASTM D-149	> 700 V/Mil
Insulation Resistance	> 5000 Megohms/M=
Insulation Resistance K	20,000
Accelerated Water Absorption Gravimetric 7 days @ 70°C	5 MG/in <sup>2</sup>
Electrical SIC 24 hours @ 75°C	6.0
Increase in Capacitance	
1 - 14 Days	4.0
7 - 14 Days	1.5
Stability Factor after 14 Days	.5

**C. Qualification Testing**

**1. Tension Set**

Gauge marks are 4" apart. 10% Maximum

**2. Ozone Resistance**

After 24 hours exposure to an ozone concentration of 0.03% by volume at 90°C ± 2°C, there shall be no insulation cracks.

**3. Flammability Requirements**

Insulated conductors shall pass the flame test described in ICEA S-19-81 and the VW -1 vertical flame test described in UL Subject 44. The maximum afterburn after each flame application shall be no greater than 3 seconds.

All multi-conductor cables insulated with Polyrad XT-125 Type P Marine insulation and jacketed with thermosetting Chlorosulfonated Polyethylene shall meet the requirements of IEEE Standard 45, IEEE Standard 1202 and IEC 332-2 Category A for flame tests.

**4. Corrosion Tests**

- a) Copper Mirror: (Ref. ASTM 2671) A 0.4 gram sample of insulation is placed in the bottom of a 2 inch x 12 inch test tube. A copper coated glass mirror shall be suspended 6 inches over the sample by a thin copper wire. The lower two inches of the test tube shall be heated to 175°C for 16 hours.

Requirement: Remove less than 5% of the copper film.

- b) Acid Gas Detection: A 1.0 mg sample shall be heated to combustion in a closed quartz tube. The resulting gases are drawn through a detector tube (MSA #91636) using a special air sampling pump manufactured by Mine Safety Apparatus Company. The amount of acid gas is determined by measuring the length of the color change in the detector tube.

Requirement: 220 PPM/MG typical.

5. Oil Resistance

Hot Oil Swell Tests - Insulated wires are premeasured and immersed in a hot oil bath. After the required exposure time, they are removed and measured for the amount of swell.

Requirement:

- |                |                   |                 |
|----------------|-------------------|-----------------|
| A. IRM 902 Oil | 100 hours @ 150°C | Max. % Swell 60 |
| B. Diesel Oil  | 100 hours @ 60°C  | Max. % Swell 60 |

**Note:** When tested in accordance with AAR589 (ASTM #2 Oil at 121°C for 18 hours), the retention of tensile and elongation shall be: Tensile - 70% Minimum Elongation - 90% Minimum

6. Smoke Emission

The tests shall be performed in an N.B.S. Smoke Chamber using #12 AWG wire insulated with 45 mils of Polyrad XT Marine. The procedures are per NFPA Standard 258 in the flaming (F) and non-flaming (N) modes.

	<u>Dm</u>	<u>T16</u>	<u>T.9DM</u>
(F) Flaming plus Radiant Furnace	485	1.20	7.15
(N) Non-flaming Radiant Furnace	203	10.3	25.7

Dm = Max. Specified Optical Density  
T16 = Time to reach critical Ds (Specified Optical Density)  
T.9 Dm = Time to reach 90% of Dm

7. Abrasion Resistance

Rotating Scrap abrader (Ref. MIL-C-915). A 24 inch specimen is draped over an 8 inch rotating drum with two (2) 90° vee edge abrading tools 180E apart. Failure is detected by electrical contact between abrading tool and conductor. The cable is weighted with a 450 gram weight.

Requirement: 2500 cycle minimum.

8. Cut-Through Penetration

Specimen of insulated wire is reconditioned at 125°C for 1 hour. While at this temperature, a weighted (1000 gm) 90°C chisel cutting edge is applied perpendicular to the longitudinal axis of the specimen. Detection of cut-through is monitored with a 12 volt lamp circuit connected in series with plunger and conductor in the specimen.

Requirement: 10 minutes minimum.

9. Crush Resistance

A wire sample is placed between two (2) parallel flat plates and compressed until electrical contact is detected across conductor to the plate.

Requirement: 7500 lbs. minimum

**VI. Conductor Identification**

Conductor identification shall be obtained by Method 1 of ICEA S-19-81, solid colors with tracer stripes when necessary.

**VII. Cabling**

Individual conductors shall be cabled together with a lay of 8 to 16 times the overall diameter of the cable layer. When required, non-hygroscopic cable binder tape or cable fillers shall be used to maintain a concentric cross-section.

# **VIII. Overall Jacket/Overall Sheath**

The overall jacket, and when required the overall sheath, will be black thermosetting Chlorosulfonated Polyethylene meeting the following requirements when tested in accordance with IEEE Standard 45.

## **Shipboard Cable**

<b>Jacket &amp; Overall Sheath Physical Properties</b>	<b>Requirements Per IEEE 45-1998 Table 8-9</b>	<b>General Cable Type CP Jacket</b>
Material (Arctic Grade Hypalon)	Thermosetting Chlorosulfonated Polyethylene	Thermosetting Chlorosulfonated Polyethylene
Physical Requirements Unaged: Tensile Strength, min. psi Elongation at rupture, min. percent Set, max. percent  Aging Requirements After air oven at °C Hours Tensile Strength percent of unaged, min. Elongation at rupture, percent of unaged, min.	1800 300 30  100 ± 1 168 85 65	2200 350 12  100 ± 1 168 100 90
After oil immersion at °C Hours Tensile Strength percent of unaged, min. Elongation at rupture, percent of unaged, min.	121 ± 1 18 60 60	121 ± 1 18 90 90
Cold Bend, no cracks, °C (Note 1)	≥ 40	≥ 55
Cold Impact, °C (Note 1)	≥ 40	≥ 40
Mechanical water absorption, mg/in <sup>2</sup>	100	87
Weatherometer Test (Note 2)	Pass	Pass
Tear – pounds per inch thickness, min. (Note 3)	35	35
ICEA Test Procedure reference	S-19-81	S-19-81

- NOTE: (1) For test procedures refer to CSA Standard C22.2, No. 38, Clause 6.4.7. The insulation system used for this test shall be representative of the final product. Cable intended for arctic or severe cold application should be capable of passing both cold bend at ≥ 40°C and cold impact at ≥ 40°C.
- (2) For test procedures refer to ANSI/UL 62 or ANSI/ASTM G23-69, Type D
- (3) For test procedures refer to ASTM D470

**IX. Finished Cable Test**

Each completed cable length shall be tested without immersion in water and successfully withstand a 5 minute AC potential in accordance with Table 3-2 of ICEA S-66-524.

In addition to the voltage withstand test described above, randomly selected samples shall be tested in accordance with Part 6, ICEA S-66-524 and meet the requirements as stated in this specification.

**X. Armor**

When specified, shall be in accordance with IEEE Standard 45.

**XI. Cable Identification**

The surface of the cable shall be printed with the following minimum information at intervals not greater than two feet.

General Cable Polyrad XT-125 (UL) Marine shipboard E85994 BR782 110C 40/C 16AWG XLPO/HYP 600V/IEC 1000V  
IEEE 45-1998 Type P C16PCP-40 ETL 109229, year of manufacture, plus sequential footage.

**XII. Reel Markings**

Each reel to be shipped shall be marked to include the following information in addition to any other information specified by the purchaser:

General Cable  
Polyrad XT-125 Type P Marine 600/1000 Volts  
Conductor Size & No. Of Conductors  
Footage on Reel  
Month/Year of Manufacture







## **Polyrad<sup>®</sup> XT-125 Marine Shipboard Cable**

### **Approvals / Certifications**

#### **American Bureau of Shipping (ABS)**

- Certificate Number: 97-NY1483-X

#### **Det Norske Veritas (DNV)**

- Certificate Numbers: E-5370, E-5371, E-5372, E-5373, E-5374, E-5375, E-5376, E-5377

#### **Intertek Testing Services (ETL)**

- Reference Report Number: J97007096-001

#### **Lloyd's Register of Shipping (LR)**

- Certificate Numbers: 98/00058, 98/00059, 98/00060, 98/00061

#### **Transport Canada Marine Safety (TCMS –formerly Canadian Coast Guard)**

- Certificate Number: AMS 8703-2

#### **Underwriters Laboratories Inc. (UL)**

- Project Number: 01ME08208 (E85994)

#### **United States Coast Guard (USCG)**





**GeneralCable**

4 Tesseneer Drive  
Highland Heights, KY 41076  
U.S.A.

Telephone 800-243-8020

Fax 859-572-9166

International Telephone 1-859-572-8000

International Fax 1-859-572-8058

[www.generalcable.com](http://www.generalcable.com)

FORM NO. INS-0068-0902