CERTIFICATE NUMBER	18-PR1753709-PDA
EFFECTIVE DATE	30-Aug-2018
EXPIRATION DATE	29-Aug-2023
ABS TECHNICAL OFFICE	Hellenic - Piraeus Eng Department

CERTIFICATE OF

Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

UNTEL KABLOLARI SANAYI VE TICARET ANONIM SIRKETI

located at

Makine OSB, 6.Cad. No: 4 41455, Dilovasi, Kocaeli, Turkey

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product Cable, IEEE Type P Shipboard

Model Type P

This Product Design Assessment (PDA) Certificate remains valid until 29-Aug-2023 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau of Shipping

I Koumbardis

Ion G. Koumbarelis, Senior Managing Principal Engineer

UNTEL KABLOLARI SANAYI VE TICARET ANONIM SIRKETI
MAKINE OSB, 6.CAD. NO: 4 41455
DILOVASI-GEBZE
KOCAELI
Turkey
Telephone: + 90 262 722 93 30
Fax: + 90 262 722 94 92
Email: info@untel.com.tr
Web: www.untel.com.tr

Tier: 3 - Type Approved, unit certification not required

Product: **Cable, IEEE Type P Shipboard**
Model: **Type P**
Intended Service:
Marine and offshore applications – for use as power distribution cables and signal cables onboard marine vessels and fixed or floating facilities.
Not intended for use as propulsion cables.

Description:
Power distribution cables: Single and multi-conductor flame retardant cables, of sizes ranging from 18 AWG to 1111 kcmil, employing cross-linked polyolefin insulation (type X110 according to UL 1309, meeting the requirements of IEEE Std. 1580 for type P), with or without thermoset chlorinated polyethylene (CPE) jacket, with or without bronze or tinned copper braided armor and with or without an overall CPE sheath.

Signal cables: Multi-conductor shielded pair flame retardant cables, of sizes ranging from 18 AWG to 14 AWG, employing cross-linked polyolefin insulation (type X110 according to UL 1309, meeting the requirements of IEEE Std. 1580 for type P), with thermoset chlorinated polyethylene (CPE) jacket, with or without bronze or tinned copper braided armor and with or without an optional overall CPE sheath. Each pair is twisted with a tinned drain wire and polyester-backed aluminum foil tape to 100% coverage.

For details of each cable type, please refer to the Attachment available in the ABS Type Approval Database.

Rating:
- Voltage: 0.6/1 kV (power and signal cables) or 2 kV (power cables)
- Maximum Conductor Temperature: 100 °C (according to IEEE Std. 1580) or 110 °C (according to UL 1309)

Service Restriction:
1.Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
2.These cables are not intended to be used as propulsion cables.

Comments:
1.The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2.The high voltage (2 kV) cables are to be readily identifiable by suitable marking.
3.The high voltage (2 kV) cables are to be tested after installation in accordance with the applicable ABS Rules.

Notes/Drawing/Documentation:
1. UL Certificate of Compliance No. 20180104-E480250 issued on 04 January 2018. UL Report Reference E480250-20180107
2. UL Certificate of Compliance No. 20180104-E480250 issued on 04 January 2018. UL Report Reference E480250-20180112
3. UL Certificate of Compliance No. 20180104-E480250 issued on 04 January 2018. UL Report Reference E480250-20180113

Terms of Validity:
This Product Design Assessment (PDA) Certificate 18-PR1753709-PDA, dated 30/Aug/2018 remains valid until 29/Aug/2023 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

UNTEL KABLOLARI SANAYI VE TICARET ANONIM SIRKETI
MAKINE OSB, 6.CAD. NO: 4 41455
DILOVASI-GEBZE
KOCAELI
Turkey
Telephone: + 90 262 722 93 30
Fax: + 90 262 722 94 92
Email: info@untel.com.tr
Web: www.untel.com.tr

Tier: 3 - Type Approved, unit certification not required

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:
Part 1 - 2018 Edition of ABS Rules for Conditions of Classification 1-1-4/7.7, 1-1-A3 and 1-1-A4, which cover the following:
·2018 Edition of ABS Rules for Building and Classing Steel Vessels 4-8-3/9.1, 4-8-3/9.5, 4-8-3/9.9, 4-8-3/9.11, 4-8-3/9.17, 4-8-5/3.7.6(a)
·2018 Edition of ABS Rules for Building and Classing Steel Vessels Under 90 Meters (295 Feet) in Length 4-6-4/13.1.1, 4-6-4/13.1.2(a), 4-6-4/13.1.4, 4-6-4/13.1.5, 4-6-5/1.11.4(a)
·2018 Edition of ABS Rules for Building and Classing Offshore Support Vessels 4-8-3/9.1, 4-8-3/9.5, 4-8-3/9.9, 4-8-3/9.11, 4-8-3/9.17, 4-8-5/3.7.6(a)

Part 1 – 2018 Edition of ABS Rules for Conditions of Classification - Offshore Units and Structures 1-1-4/9.7, 1-1-A2 and 1-1-A3, which covers the following:
·2018 Edition of ABS Rules for Building and Classing Mobile Offshore Drilling Units 4-3-4/7.1.1, 4-3-4/7.1.2(a), 4-3-4/7.1.4, 4-3-4/7.1.5, 4-3-5/1.11

National:
IEEE 45-2002, IEEE 1580-2010, UL 1309 (third edition 2017)

International:
NA

Government:
NA

EUMED:
NA

OTHERS:
NA

PDA Certificate No.:	**18-PR1753709-PDA**
Issuance Date:	30 August 2018
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Makine Osb, 6.CAD. NO: 4 41455
Dilovasi-Gebze
Kocaeli - TURKEY

Attachment to the PDA Certificate No. 18-PR1753709-PDA

Electric Cable Details:

- Description
- Technical Specification
- Voltage
- Conductors
- Conductor sizes
- Conductor material
- Separator tape
- Insulation
- Shielding
- Jacket
- Armor
- Sheath

Contents

Power Distribution Cables.....2
Signal Cables.....4

Power Distribution Cables

No	Description	Technical Specification	Voltage	Conductors	Conductor sizes	Conductor material	Separator tape	Insulation	Shielding	Jacket	Armor	Sheath
1	Type P Single Conductor Cables 2 kV Unarmoured 100°C & 110°C	2018-03-TS_46 (Rev. 3)	2000 V	Single	AWG 18 to 3/0	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	No	No	No
2	Type P Single Conductor Power Cables 2 kV armoured 100°C & 110°C	2018-03-TS_47 (Rev. 3)	2000 V	Single	AWG 18 to 1111 kcmil	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	No	Bronze or tinned copper basket-weave wire armour	No
3	Type P Single Conductor Power Cables 2 kV armoured & sheathed 100°C & 110°C	2018-03-TS_48 (Rev. 3)	2000 V	Single	AWG 18 to 1111 kcmil	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	No	Bronze or tinned copper basket-weave wire armour	Thermoset chlorinated polyethylene (CPE)
4	Type P Two Conductor Power Cables 0.6/1 kV unarmoured 100°C & 110°C	2018-03-TS_49 (Rev. 2)	600/1000 V	Two	AWG 16 to 4/0	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	No	No	Thermoset chlorinated polyethylene (CPE)
5	Type P Three Conductor Power Cables 0.6/1 kV unarmoured 100°C & 110°C	2018-03-TS_50 (Rev. 3)	600/1000 V	Three	AWG 16 to 777 kcmil	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	No	No	Thermoset chlorinated polyethylene (CPE)
6	Type P Four Conductor Power Cables 0.6/1 kV unarmoured 100°C & 110°C	2018-03-TS_51 (Rev. 3)	600/1000 V	Four	AWG 16 to 646 kcmil	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	No	No	Thermoset chlorinated polyethylene (CPE)
7	Type P Five Conductor Power Cables 0.6/1 kV unarmoured 100°C & 110°C	2018-03-TS_52 (Rev. 2)	600/1000 V	Five	AWG 18 to 4/0	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	No	No	Thermoset chlorinated polyethylene (CPE)
8	Type P Multi Conductor Power Cables 0.6/1 kV unarmoured 100°C & 110°C	2018-03-TS_53 (Rev. 3)	600/1000 V	7 to 60	AWG 16 to 12	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	No	No	Thermoset chlorinated polyethylene (CPE)
9	Type P Two Conductor Power Cables 0.6/1 kV armoured 100°C & 110°C	2018-03-TS_54 (Rev. 2)	600/1000 V	Two	AWG 16 to 4/0	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	No

No	Description	Technical Specification	Voltage	Conductors	Conductor sizes	Conductor material	Separator tape	Insulation	Shielding	Jacket	Armor	Sheath
10	Type P Three Conductor Power Cables 0.6/1 kV armoured 100°C & 110°C	2018-03-TS_55 (Rev. 3)	600/1000 V	Three	AWG 16 to 777 kcmil	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	No
11	Type P Four Conductor Power Cables 0.6/1 kV armoured 100°C & 110°C	2018-03-TS_56 (Rev. 3)	600/1000 V	Four	AWG 16 to 646 kcmil	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	No
12	Type P Five Conductor Power Cables 0.6/1 kV armoured 100°C & 110°C	2018-03-TS_57 (Rev. 3)	600/1000 V	Five	AWG 18 to 4/0	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	No
13	Type P Multi Conductor Power Cables 0.6/1 kV armoured 100°C & 110°C	2018-03-TS_58 (Rev. 3)	600/1000 V	7 to 60	AWG 16 to 12	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	No
14	Type P Two Conductor Power Cables 0.6/1 kV armoured & sheathed 100°C & 110°C	2018-03-TS_59 (Rev. 3)	600/1000 V	Two	AWG 16 to 4/0	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	Thermoset chlorinated polyethylene (CPE)
15	Type P Three Conductor Power Cables 0.6/1 kV armoured & sheathed 100°C & 110°C	2018-03-TS_60 (Rev. 3)	600/1000 V	Three	AWG 16 to 777 kcmil	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	Thermoset chlorinated polyethylene (CPE)
16	Type P Four Conductor Power Cables 0.6/1 kV armoured & sheathed 100°C & 110°C	2018-03-TS_61 (Rev. 3)	600/1000 V	Four	AWG 16 to 646 kcmil	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	Thermoset chlorinated polyethylene (CPE)
17	Type P Five Conductor Power Cables 0.6/1 kV armoured & sheathed 100°C & 110°C	2018-03-TS_62 (Rev. 3)	600/1000 V	Five	AWG 18 to 4/0	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	Thermoset chlorinated polyethylene (CPE)
18	Type P Multi Conductor Power Cables 0.6/1 kV armoured & sheathed 100°C & 110°C	2018-03-TS_63 (Rev. 3)	600/1000 V	7 to 60	AWG 16 to 12	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	No	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket-weave wire armour	Thermoset chlorinated polyethylene (CPE)

Signal Cables

No	Description	Technical Specification	Voltage	Pairs	Conductor sizes	Conductor material	Separator tape	Insulation	Shielding	Jacket	Armor	Sheath
1	Type P Shielded Pairs Instrumentation Cables 0.6/1 kV unarmoured 100 °C & 110 °C - Individually Shielded Pairs	2018-03-TS_64 (Rev. 3)	600/1000 V	1 to 24	AWG 18 to 14	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	Each pair twisted with a tinned drain wire and polyester-backed aluminum foil tape to 100% coverage	Thermoset chlorinated polyethylene (CPE)	No	No
2	Type P Shielded Pairs Instrumentation Cables 0.6/1 kV armoured & sheathed 100 °C & 110 °C - Individually Shielded Pairs	2018-03-TS_65 (Rev. 3)	600/1000 V	1 to 24	AWG 18 to 14	Stranded tinned copper	Polyester tape	Cross-linked polyolefin X110 per UL 1309 - meeting the requirements for IEEE 1580 Type P	Each pair twisted with a tinned drain wire and polyester-backed aluminum foil tape to 100% coverage	Thermoset chlorinated polyethylene (CPE)	Bronze or tinned copper basket weave wire armour	Thermoset chlorinated polyethylene (CPE)