



Navigation Light

TEF 2880

Document properties (TUM6500)

Revision	Comment	Revision date	Approved
K	Added additional information – sealed for life, do not open	15.03.2022	CS
L	Minor editorial changes	05.10.2022	MRE
M	Minor editorial changes	01.11.2022	MRE
N	Certification changes	07.05.2024	TBH

Installation and operating manual

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Warnings and risk levels

DANGER

Non-compliance with the instruction results in risk of severe or fatal injuries to persons

WARNING

Non-compliance with the instruction may result in risk of severe or fatal injuries to persons

CAUTION

Non-compliance with the instruction may result in risk of injuries or damage to equipment

NOTICE

Non-compliance with the instruction may result in reduced lifetime of equipment, malfunctions etc.

General information

Before installation, make sure to read and understand this installation and operating manual.

Observe national assembly and installation regulations.

Always contact the manufacturer if anything is unclear, or if you notice any faults on the product or in this document.

This installation and operating manual shall be available to anyone operating, installing, inspecting, modifying or repairing the equipment.

Content in box

- The TEF2880 navigation light.
- Cable termination nut. One pc for simplex models and two pcs for duplex models (except duplex models with single cable entry)
- 4 pcs M8 washers, stainless steel A4.
- Installation instructions.
- Product certificate.

Note:

Pre-hoistable models, part # 28804****, delivered with plug connector instead of cable termination nut, two cable strain relief ties and no M8 washers.

Technical data

Property		
Material	Seawater resistant aluminium, borosilicate glass and stainless steel base.	
Voltage	24V DC (18-32V DC)	
Power	Max. 22W (Dependent on model)	
Digital input	Logic '0': -3V DC to +5V DC Logic '1': 11V DC to 30V DC	Nominal current: 2.4mA
Digital output	Voltage: = Power supply -0.25V	Current: Max. 25mA
Electrical connection	Wire cross section: 1.0 to 2.5mm ²	Cable diameter: Ø9-16mm
Working hours	100,000 h (Each light source)	
Operating temperature	-30°C to +55°C	
Ingress protection	IP 66/67	
Dimensions	Simplex models: 140 x 140 x 139 mm (Excluding cable entry)	Duplex models: 140 x 140 x 185 mm (Excluding cable entry)
Net weight	Simplex model: 2.0 kg	Duplex model: 2.5 kg
Approval	DNV GL MEDB000048S DNV-MERB000046S ABS-23-2490533-PDA (EU) 2019/1397, item No. MED/6.1. COLREG 72 as amended, Annex I/14, IMO Res. A.694(17), IMO Res. MSC.253(83)	



Product description

LED navigation light with leading optical and LED driver solutions. No maintenance is obtained through a simplified plug and play, modular design for ease of installation, and unmatched availability self-monitoring capabilities.

Application

- Observe national and class society assembly and installation regulations.
- Observe national safety and accident prevention regulations.
- Navigation light as stated in product type approval.
- Signal light required by various national and canal authorities as stated in product type approval.
- General signal light.

Transport and storage

- Transport and store the equipment only in the original packaging
- Store the equipment in a dry and vibration free place
- Do not drop!

Mounting and installation

DANGER

Incorrect mounting and installation may lead to risk for falling objects, risk for electric shock or fire and risk for equipment malfunction. In turn, this can lead to severe damage and/or injuries.

Mounting

See figure 1 & 2.

Fixing

The navigation light shall be fixed to a plane horizontal surface, by 4x M8 bolts. Maximum torque: 8 Nm. Ref. figure 2 & figure 3.

Cable entries

Direction of cable entries; see figure 1. Ensure enough space to route cable and terminate cable properly. Minimum space requirement: Cables bending radius + 50 mm.

Figure 1 (view from top)

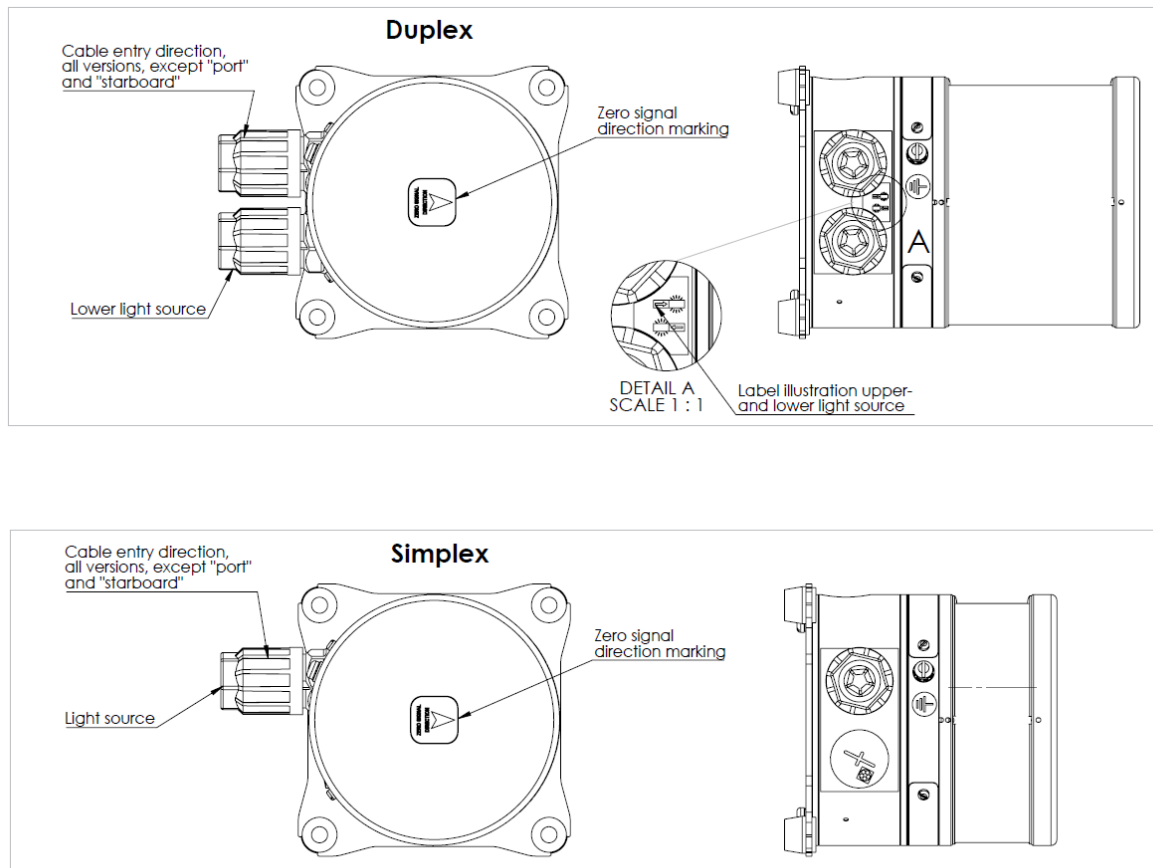


Figure 1 (view from top)

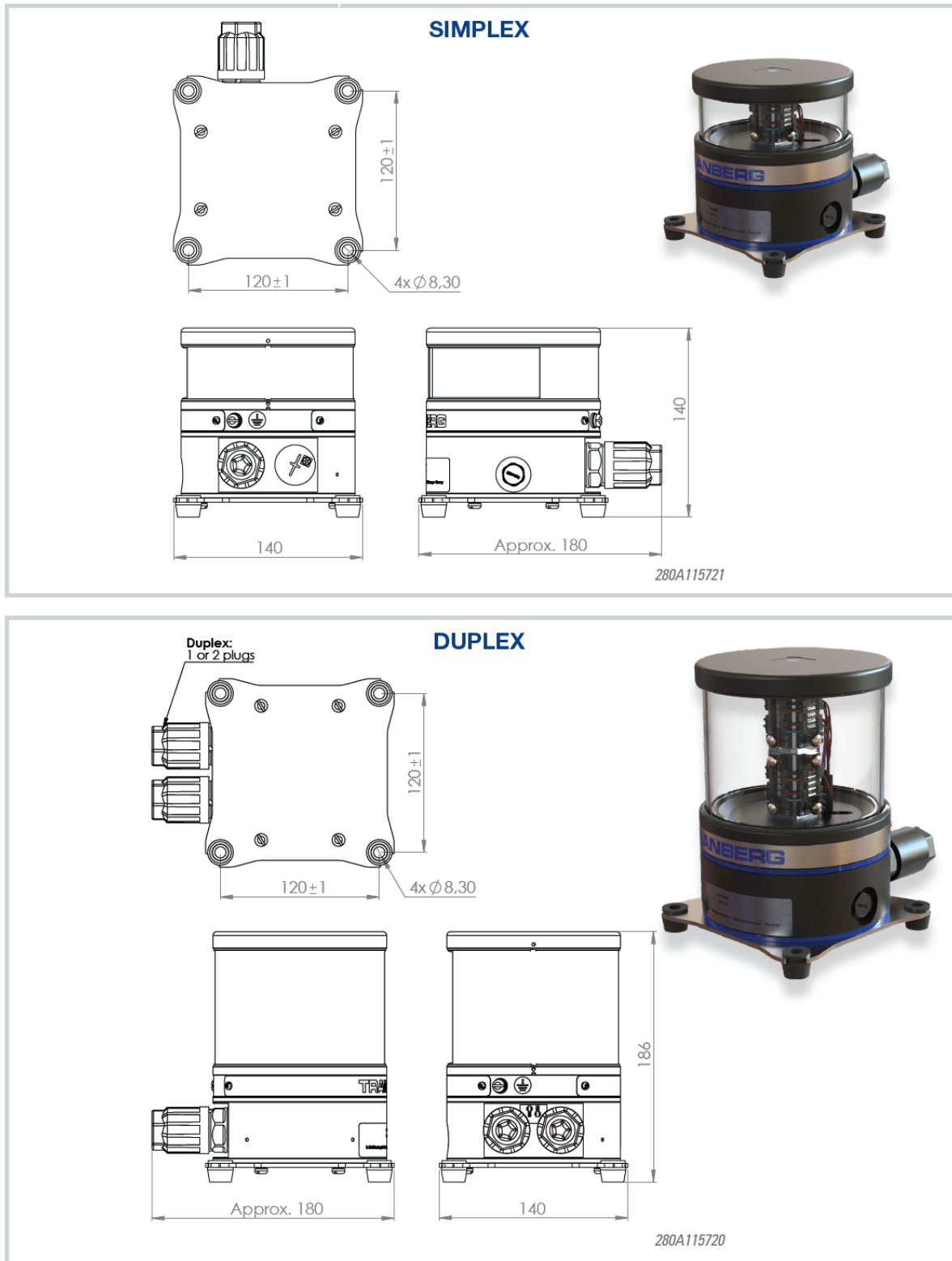
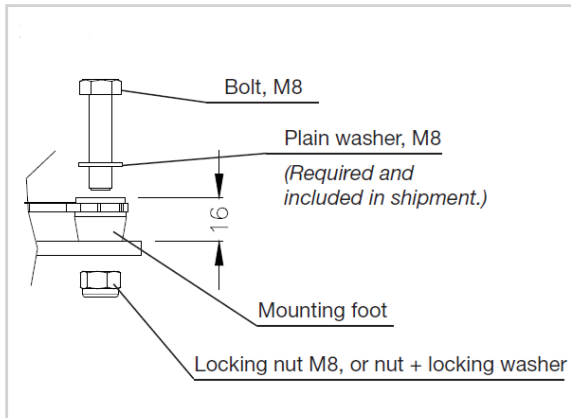


Figure 3



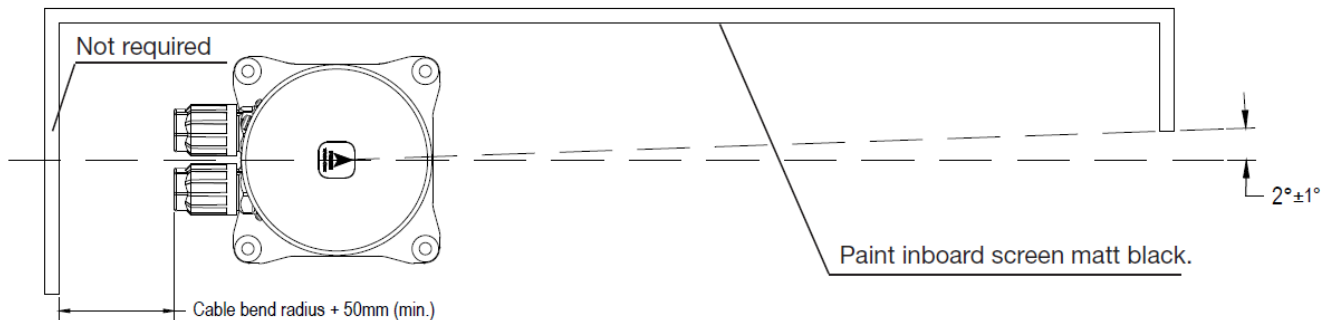
Positioning of lights

Inboard screen is not required as the light itself fulfill the requirements. If an inboard screen is installed please follow the following procedure:

Ref. COLREG 72, Annex I.

Positioning of side lights (port and starboard)

COLREG 72, Annex I, 5: The sidelights shall be fitted with inboard screens painted matt black, and meeting the requirements of Section 9 of this Annex.



Positioning of all-round lights

COLREG 72, Annex I, 9(b): All-round lights shall be so located as not to be obscured by masts, topmasts or structures within angular sectors of more than 6 degrees, except anchor lights, which need not be placed at an impracticable height above the hull.

Zero signal direction

Zero signal direction is denoted on all sector lights (e.g. "masthead" and "port") with an arrow. For correct installation, this arrow shall point parallel to the ships centre line. It should be pointing in the same direction as the light distribution. It can be both backwards and forwards depending on the sector of the navigation light. Ref. figure 1.

Electrical connections

Only qualified electrical personnel may install and start up the QPD components. **For correct electrical termination please follow the Phoenix user manual, Appendix 1 in the end of this user manual.** Check if you have the right cable type to ensure a correct connection. Below is an excerpt of the Phoenix user manual describing the main points of the procedure. Please note that the dust caps mounted on lights connector sockets are not IP rated and will not protect against water intrusion.

CAUTION

**Do not open the product. The R. Stahl TRANBERG TEF2880 series is sealed for life.
Non-compliance with the instruction may result in risk of injuries or damage to equipment**

Cable termination

Cable diameter: Ø9-16 mm.

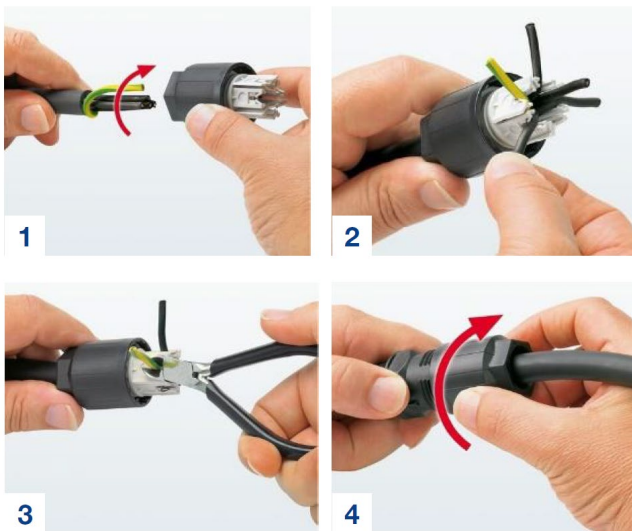
Part # 2880***0* delivered as standard with terminal nut for Ø9-16 mm cable.

Wire cross section: 1.0 mm² to 2.5 mm².

Wire diameter incl. insulation: 2,0 mm to 3,80mm.

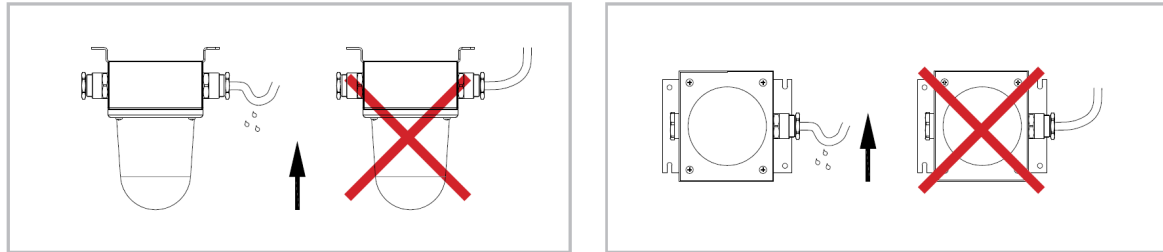
Connections

1. Strip approx. 60 mm off the cable.
2. Loop the PE conductor around the live conductors (1). As a result, the PE conductor will be pulled out of the terminal block last if strong tension is exerted on the cable.
3. Insert the cable into the terminal nut.
4. Fix the wires in the conductor support of the splice body (2).
5. Cut off the wires with a diagonal cutter flush on the splice body (3).
6. When connecting the terminal nut to the light connector socket, make sure that their markings are aligned.
7. Screw the terminal nut together with the light connector socket (4). For this, we recommend using either the socket wrench, a wrench, or a plier. Screw the terminal nut as far as it will go, or with the specified torque. It must not be possible to unscrew the terminal nut again by hand.
8. Seal off any non-allocated connections using a protective cap.



Photos courtesy of Phoenix Contact GmbH.

Note: Be sure to install cable in a way which prevents water to penetrate into the enclosure through the connection plug, also make sure to use the correct QPD Plug connector size (according to the cable diameter) when you install the luminaire.



Ground bonding screw

The navigation lights are equipped with an external M5 ground bonding screw. Connect to ground where national or company regulations require it.

Versions without DI/DO, part #2880***0* and 2880**9*

Terminal #	Standard versions, part # 2880***0*	Duplex versions with single cable entry, part# 2880***9*
1	+24V	+24V Upper deck
2	-	+24V Lower deck
3	-	0V Lower deck
N	0V	0V Upper deck
PE	Protective earth	Protective earth

Note: In order to obtain proper EMI, PE wire should always be terminated.

Versions with DI/DO and self-contained blinking lights, part # 2880***X* (where X= 1 or 3 or 5 or 6 or 7 or 8):

Terminal #	Versions with DI/DO, part # 2880***X* (X=1/3)	Self-contained blinking lights, part # 2880***X* (X=5/6/7/8)
1	+24V	+24V
2	Digital input (On/off, dimming or blinking control)	-
3	Digital output (Alarm output)	Not in use
N	0V (Common)	0V (Common)
PE	Protective earth	Protective earth

Note: In order to obtain proper EMI, PE wire should always be terminated.

Control and monitoring

Navigation lights and signal light required by national and canal authorities shall be connected to a dedicated control and monitoring system. Control and monitoring of the TEF2880 series can be obtained in two different ways (ref. part # matrix page 4):

- Part # 2880***X* where X = 0 or 9. (Versions without digital input/output):
 - On/off control by switching power on and off.
 - Monitoring by measuring current. When a failure occurs, current draw falls below 10 mA. The monitoring system must be compatible with table below.

	Power	Current draw*
6 NM lights	Max 20W	
5 NM lights	Max 15W	Min 240 mA
3 NM lights	Max 8W	+24V
2 NM lights	Max 5W	-
Additional fishing lights	Max 3W	Digital output (Alarm output)

- Part # 2880****1* (Versions with digital input/output, on/off (blinking) control):
 - Digital input = on/off or blinking control. Logical '0' = off. '1' = on. Alternatively, tie DI to +24V and control on/off by switching power. Do not use this mode for blinking lights.
 - Digital output = Alarm output, normal state = 'high'.

In addition, two special control modes are available:

- Panama steering lights. Part # 28805513* (Panama steering light):
 - On/off control by switching power on and off.
 - Digital input = step dimming control. 7 dimming steps. Shifts one dimming step for each positive pulse at DI.
 - Digital output = Alarm output, normal state = 'high'.
- Self-contained blinking lights. Part # 2880***X* where X = 5, 6, 7 or 8.
 - On/off control by switching power on and off.
 - Digital output = Alarm output, normal state = 'high'.

The navigation light monitors the following parameters, and if a failure occurs the light is switched off resulting in current draw <10mA. (Alarm output switch state for versions with DI/DO).

- Failure of any LED.
- Deviating LED current.
- Abnormal temperature.
- Under-voltage.
- Working hours >100,000 hours.

Timer

The light has a timer built in to monitor working hours, pre-set to 100,000 hours. When 100,000 working hours has elapsed, the light stops working and hence alarm will arise at navigation lights control system.

Maintenance and cleaning

No maintenance required. Clean only with a damp cloth, water and mild detergents. Avoid chemicals with high or low pH, abrasives, high pressure washer, strong detergents, solvents, petroleum- or alcohol based cleaning agents and similar. Avoid any corrosive media.

Part No Matrix

Format: 2880ABCDE (9 numbers).*

2880	A		B		C		D		E	
	Sector		Colour		Visible Range		Option (functional)		Option	
	0	Simplex All-round (360°)	0		0		0	Non	0	Non
	1	Simplex Half All-round (181°)	1	White	1	1 nm	1	DI/DO (on/off or blinking function)	1	White painted
	2	Simplex Masthead/Side (225/112,5°)	2	Red	2	2 nm	2	DI/DO (PWM dimming function)	2	
	3	Simplex stern (135°)	3		3	3 nm	3	DI/DO (Step dimming function)	3	
	4	Simplex Pre hoistable All-round (360°)	4	Green	4		4		4	
	5	Simplex Panama Steering	5	Blue	5	5 nm	5	Blink light 30/ min	5	
	6	Duplex All-round (360°)	6	White/ Red	6	6 nm	6	Blink light 60/ min	6	
	7	IDuplex Half All-round (181°)	7	White/ Green	7		7	Blink light 120/ min	7	
	8	Duplex Masthead/Side (225/112,5°)	8	Red/Ye llow	8		8	Blink light 180/ min	8	
	9	Duplex stern (135°)	9	Red/Gr een	9		9	Single cable entry for duplex models	9	

* Notes / limitations part # matrix:

Approved variants limited to lights described in COLREG 72 and by other canal and national authorities.

Not all combinations of matrix above can be delivered, and at the same time may not reflect all variants available.

Simplex = Light with single light source.

Duplex = Two electrically separate and independent light sources mounted in same housing.

Options and spare parts

Image	Description	Part No
	Cable termination nut Ø6 -11 mm	50500223
	Cable termination nut Ø9-16 mm	50091435
	Plug connector for cable Ø6 - 11 mm	50500224
	Plug connector for cable Ø9-16 mm	50500225
	Protective cap for unused cable entries IP68	50500226
	Breather plug M12 IP68	50091434
	Blind plug M25	50091436
	Standoff feet M8, set of 4 pcs	7247
	Mounting adapter to 155 x 155 mm M10 hole pattern	6694
	Mounting adapter to TEF 2850 and TEF2870 hole pattern	6693

Disposal

CAUTION

This equipment or part of this equipment is considered EE-Waste, and shall be handled accordingly

- Observe national and local regulations and statutory regulations regarding disposal
- Separate materials when sending it for recycling
- Ensure environmentally friendly disposal of all components
- No component or packaging shall end up in the ocean during any stage of the product's lifetime

Compliance/Conformity

- COLREG 1972
- EU Directive 2014/90/EU (MED Directive)
- IMO Resolution MSC.253(83)
- EN 14744 (2005), AC (2006)
- CCNR and CEVNI

Appendix #1

PHOENIX CONTACT
 PHOENIX CONTACT GmbH & Co. KG
 Flachmarkstraße 8, 32825 Blomberg, Germany
 Fax +49-(0)5235-341200, Phone +49-(0)5235-300
 phoenixcontact.com MNR 0139827 - 04 2018-06-06

DE Einbauanweisung für den Elektroinstallateur
 EN Installation notes for electricians
 FR Instructions d'installation pour l'électricien
 IT Istruzioni di installazione per l'elettricista
 ES Instrucciones de montaje para el instalador eléctrico

QPD...1,5...
 QPD...2,5...
 QPD...6,0...

Technical data

Rated voltage (III/3)
Rated current (QPD W M20 FC = 15 A)
Contact resistance
Housing material
Contact material
Flammability rating according to UL 94
Degree of protection
Ambient temperature (operation)
Temperature while connecting cable
QUICKON connection
Wire insulation material: PVC, PE, TPE, rubber
Wire diameter incl. insulation
Stripping length
Litz wire structure / smallest wire diameter
Frequency of connections
Conductor cross section (solid/stranded)
AWG conductor cross section
Tightening torque (QUICKON nut)
Loosening torque (QUICKON nut)

QPD...1,5...	QPD...2,5...	QPD...6,0...
	690 V	
17,5 A	20 A	40 A
	< 3 mΩ	
	PA	
	CuZn	
	V0	
	IP66, IP68 (24 h / 2 m), IP69K	
	-40 °C ... 100 °C	
	-5 °C ... 50 °C	
	√	
1,60 ... 3,00 mm	2,00 ... 3,60 mm	2,95 ... 5,00 mm
	60 mm	
	VDE 0295 Class 1...6 / min. 0,15 mm	
	10	
0,5 ... 1,5 mm²	1 ... 2,5 mm²	2,5 ... 6,0 mm²
AWG 20 ... 16	AWG 16 ... 14	AWG 14 ... 10
8 Nm	10 Nm	15 Nm
	> 5 Nm	

Appendix #2, DoC

EU Declaration of Conformity*EU-Konformitätserklärung**Déclaration de Conformité UE***TRANBERG****R. Stahl Tranberg AS • Strandsvingen 6 • 4032 Stavanger • Norway**declares in its sole responsibility, *erklärt in alleiniger Verantwortung, déclare sous sa seule responsabilité,***that the product:***dass das Produkt:**que le produit:***Navigation Light***Navigationslicht**Lumière de navigation***Type(s), Typ(en), type(s):****TEF 2880 "BlueLine"***(2880****)***is in conformity with the requirements of the following directives and standards.***mit den Anforderungen der folgenden Richtlinien und Normen übereinstimmt.**est conforme aux exigences des directives et des normes suivantes.*

Directive(s) / Richtlinie(n) / Directive(s)		Standard(s) / Norm(en) / Norme(s)
2014/90/EU	Marine Equipment Directive	(EU) 2019/1397, item No. MED/6.1. (EU) 2020/1170, item No. MED/6.1. COLREG 72 as amended, Annex I/14, IMO Res. A.694(17) and IMO Res. MSC.253(83) EN 14744 EN 60945
2014/90/EU	<i>Schiffsausrüstung-Richtlinie</i>	
2014/90/UE	<i>Directive Équipements Marins</i>	

Marking, kennzeichnung, marquage:**0575/<2021> + Batch number****EC/EU Type Examination Certificate:***EG/EU-Baumusterprüfbescheinigung:**Attestation d'examen CE/UE de type:***MEDB000048S***(DNV-GL AS, Høvik, Norway)***Quality system certificate no. :****MEDD000006D***(DNV-GL AS, Høvik, Norway)***2011/65/EU****RoHS Directive***2011/65/EU**RoHS-Richtlinie**2011/65/UE**Directive RoHS***EN 50581:2012****The technical documentation for this equipment is retained at the following address***Die technische Dokumentation für dieses Gerät wird unter folgender Adresse aufbewahrt**La documentation technique de cet équipement est conservée à l'adresse suivante*

R. Stahl Tranberg AS, Strandsvingen 6, 4032 Stavanger, Norway.

Stavanger, 14.04.2021

Place and date*Ort und Datum**Lieu et date***Chris Schneeberg**

Product owner

Kjell Are Berg-Hagen

Technical Director