Light for Ships 船の照明



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Note

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Floodlights スポットライト



Luminaires for technical and outdoor areas 技術関連分野と屋外の照明器具



Luminaires and floodlights for hazardous areas 爆発の危険を伴う分野のための 照明器具とスポットライト



Luminaires for accommodation and indoor areas 住宅と屋内の照明器具



aqua signal dimming system ASD ASD(アクア・シグナル調光システム)

87 - 90

21 - 39

41 - 58

59 - 86



Technical information + light sources 仕様とランプ

91 - 128

 Legend / 記号説明

 N

 Remark for light distribution curve no. ... (□92 - 97)

 ...番の配光曲線を参照 (□92 - 97)

 Allowable / not allowable mounting arrangement 取付上のご注意

 大
 Extras, not included 付属品は商品に含まれておりません。

 [mm]
 Dimensions in mm. Conversion rate: 1 mm = 0.039370 inch (*) 寸法単位はmm

 小pr. weight in kilogrammes. Conversion rate: 1 kg = 2.2046 lbs. およその重量単位はKg

Concept and Design by ADMEDIA · D - 27749 Delmenhorst · Printed in Germany 8/01





Consulting	Conception	Design + Engineering	Production
コンサルティング	着想	デザインと 設計	製造
New trends	Targeted concepts	Design models	Ring-networked CAD/CAM
トレンド	ねらい定かな構想	デザイン模型	CAD、CAMネットワーク製造システム
New technologies	Technology identification	Functional models	High-capacity die-cutting
新しいテクノロジー	技術選定	機能模型	高性能打ち抜き機
Light management	Layout of system	Production models	Special-purpose presses
ライト・マネジメント	仕組みの解釈	製造模型	特殊加圧機
Operation	Environmental aspects	3D design	Plastics forming
機能	環境管理	3D設計	合成樹脂の変形
Material recommendations	Materials + colours selection	Product development	Surface refinement
材料の提案	材料と色の選定	新規開発	表面加工
Local	Drafts	One-off developments	Paintshop
出張コンサルティング	ドラフト	特別開発	塗装業
Telephone	Product design	Project solutions	Final assembly
テレホン・コンサルティング	プロダクト・デザイン	プロジェクト解決策	最終組立て
New media	Costing	Light calculation	Quality inspection
新しいメディアによるコンサルティング	見積もり	照度算出	品質点検
At international fairs		Documentation	Own tooling construction
国際展示会でのコンサルティング		記録書の作成	当社で工具を製造
By video conference		Environmental simulation	Own equipment construction
ビデオ会議によるコンサルティング		環境シミュレーション	当社で装置を製造

_ aqua signal also will take over system responsibility for complex lighting projects アクア・シグナルは複雑な照明設計の総合企画も承っております。



Installation + Service 施工とアフターサービス Own assembly teams

当社取付作業チーム

Set to work

Service points worldwide 世界中にサービス拠点を展開

使用開始

Installation instructions 施工上のご注意

Spare parts documentation 補修パーツの記録

Detailed product information 商品関連情報

Environmental safe packaging 環境にやさしい包装

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Todays concepts from investors, architects and designers demand precise responses in both products and services from a competent manufacturer. Against this backdrop, aqua signal is proud to provide:

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- a huge, modular product range with an infinite number of variations and combinations
- development and manufacture of customized products and unique items in accordance with specified or jointly developed ideas
- excellent quality and delivery in accordance with the standards and specifications of all major classification societies
- system responsibility, installation and after-sales service

Take advantage of our experienced personal in our light calculation department, who will competently assist you in finding the most adequate solutions.

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4 Gignal Light for Ships / 船の照明



Floodlights

スポットライト







Floodlight for halogen lamps Seamlessly drawn stainless steel housing. Having no welding seams or spots this type offers extremely long lifetime. Application: Yachts, fishing vessels, commercial shipping and industrial areas Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 67 Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Pane: Safety glass Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C; 1.5 m connection cable wired (H07RN-F3G, 3 x 1.5 mm²) Cable entry: Brass cable gland M 24 x 1.5 Lamp base: R 7 s Light sources (not included): Halogen lamp L 64.2 - 114.2 mm, 100 - 200 W, adjustable socket distance (L 114.2 mm = standard) Mounting: Adjustable bracket with central mounting hole, dia. 14 mm

Type /種別	Part No. / ご注文品番 max. 240 V
max. 1 x 200 W, 🗴 3.0 kg 🗟 73, 36°	107606000
Light distribution curves / 配光曲線 🛄 92-97	

ハロゲン・ランプ用スポットライト ステンレス製本体をシームレスに深絞り。 溶接の継ぎ目や点溶接の箇所のないこの構造 は耐久性に極めて優れています。 使用分野:大型ヨット、漁船、大型船航行 および工業施設 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 67 本体:ステンレスをシームレスに深絞り 投光器:ポリッシュド・アルミニウム、アル マイト加エ 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:安全ガラス 電気設備:フレキシブルなシリコン電線、180°C まで耐熱、1.5mの接続ケーブル配線済み (H07RN-F3G、3x1.5mm2) <u>ケーブルの差込</u>:M24x1.5ブラス製止めネジ 口金:R7 s ランプ(商品に含まれておりません。): 100-200Wのハロゲン・ランプL64.2-114.2mm、

ソケット間隔調節可能(標準=L114.2mm)

<u>取付</u>:Ø14mmの中心部留め穴付き調節可能 取付金具



100 W 12 V 64.2 100 W 230 V 78.3 100 W 240 V 78.3 150 W 230 V 78.3 150 W 240 V 78.3 200 W 240 V 78.3 200 W 240 V 60.2 200 W 115 V 114.2 200 W 120 V 114.2 200 W 230 V 114.2 200 W 240 V 114.2	Power 消費電力	Voltage 電圧	Length of lamps ランプの長さ
100 W 230 V 78.3 100 W 240 V 78.3 150 W 230 V 78.3 150 W 240 V 78.3 200 W 240 V 78.3 200 W 240 V 60.2 200 W 115 V 114.2 200 W 120 V 114.2 200 W 230 V 114.2 200 W 240 V 114.2	100 W	12 V	64.2
100 W 240 V 78.3 150 W 230 V 78.3 150 W 240 V 78.3 200 W 24 V 60.2 200 W 115 V 114.2 200 W 120 V 114.2 200 W 230 V 114.2 200 W 240 V 114.2	100 W	230 V	78.3
150 W 230 V 78.3 150 W 240 V 78.3 200 W 24 V 60.2 200 W 115 V 114.2 200 W 120 V 114.2 200 W 230 V 114.2 200 W 240 V 114.2	100 W	240 V	78.3
150 W 240 V 78.3 200 W 24 V 60.2 200 W 115 V 114.2 200 W 120 V 114.2 200 W 230 V 114.2 200 W 240 V 114.2	150 W	230 V	78.3
200 W 24 V 60.2 200 W 115 V 114.2 200 W 120 V 114.2 200 W 230 V 114.2 200 W 230 V 114.2 200 W 240 V 114.2	150 W	240 V	78.3
200 W 115 V 114.2 200 W 120 V 114.2 200 W 230 V 114.2 200 W 240 V 114.2	200 W	24 V	60.2
200 W 120 V 114.2 200 W 230 V 114.2 200 W 240 V 114.2	200 W	115 V	114.2
200 W 230 V 114.2 200 W 240 V 114.2	200 W	120 V	114.2
200 W 240 V 114.2	200 W	230 V	114.2
	200 W	240 V	114.2







This floodlight is best where there is instant light required. The external junction box enables easy connecting.

Application: Decks and holds, ramps, industrial and sport areas

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Pane: Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C; exterior connection box **Cable entry:** Brass cable gland M 24 x 1.5 MGCG **Lamp base:** R 7 s

Light sources (not included): Halogen lamp L 114.2 mm, 200 / 300 / 500 W

Mounting: Adjustable bracket with 4 mounting holes, dia. 10.5/14 mm

<u>ハロゲン・ランプ用スポットライト</u>

瞬発的な照明を必要とするところにはこの スポットライトが最適です。配線工事が簡単 な外付け接続箱付き。

<u>使用分野</u>:デッキ、船倉、スロープ、工業・ スポーツ施設

仕様:船級協会の規定ならびにVDEおよび

Type /種別	Part No. / ご注文品番 max. 240 V
1 x 200 W / 1 x 300 W / 1 x 500 W	1076001000
∎ 5.5 kg 🛛 74, 34°	
Light distribution curves / 翻坐曲線 □□ 02-07	





IEC/ENの規定に対応

<u>保護形式</u>:IP 67 <u>本体</u>:ステンレスをシームレスに深絞り <u>投光器</u>:ポリッシュド・アルミニウム、アル マイト加工 <u>塗装</u>:白色紛体塗装RAL 9016、塗装厚70-80µm <u>ランプ・カバー</u>:安全ガラス 電気設備:フレキシブルなシリコン電線、180℃

<u>電気設備</u>:ノレキシフルなシリコ まで耐熱。外付け接続箱 <u>ケーブルの差込</u>: M24x1.5 MGCGブラス製 止めネジ <u>口</u>金: R7 s ランプ(商品に含まれておりません。): 200/300/500Wのハロゲン・ランプ∟114.2mm 取付: Ø10.5/14mmの留め穴4ヶ所付き調節可能 取付金具







Floodlight for halogen lamps

Vibration compatible type of durable stainless steel.

Application: Decks and holds, industrial and sport areas

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67 Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Pane: Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C; exterior connection box **Cable entry:** Brass cable gland M 24 x 1.5 MGCG **Lamp base:** E 40

Light sources (not included): Halogen lamp 500 / 1000 W

Mounting: Adjustable bracket with 4 mounting holes, dia. 10.5 / 14 mm

Spare Parts / *Extras - 補修パーツ、*付属品

Remark: For 1000 W use only lamps of following manufacturers: BLV, Philips, General Electric

ハロゲン・ランプ用スポットライト 耐久性が高いステンレス製の他指導性構造。 使用分野:デッキ、船倉、工業・スポーツ施設 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 67 本体:ステンレスをシームレスに深絞り 投光器:ポリッシュド・アルミニウム、アル マイト加工 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:安全ガラス <u>電気設備</u>:フレキシブルなシリコン電線、180°C まで耐熱。外付け接続箱 ケーブルの差込: M24x1.5 MGCGブラス製 止めネジ 口金:E40 ランプ(商品に含まれておりません。): 500/1000Wのハロゲン・ランプ 取付:Ø10.5/14mmの留め穴4ヶ所付き調節可能 取付金具 備考:1000Wについては下記のメーカーの ランプのみご使用ください。BLV、Philips、 **General Electric**

Type / 種別		Part No. / ご注文品番 max, 240 V
1 x 500 W /	∎ 7.1 kg 🛛 69, 16°	1076092000
1 x 1000 W	∎ 7.1 kg 🛛 70, 70°	1076093000
Light distribution curv	es / 配光曲線 🛄 92-97	





8



Floodlight for halogen lamps Intensive brightness.

Application: Decks and holds, industrial and sport areas

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Pane: Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C; exterior connection box **Cable entry:** Brass cable gland M 24 x 1.5 MGCG **Lamp base:** R 7 s

Light sources (not included): Halogen lamp L 185.7 mm, 750 / 1000 W

Mounting: Adjustable bracket with 4 mounting holes, 10.5 / 14 mm

Remark: For 1000 W use only lamps of following manufacturers: BLV, Philips, General Electric

ハロゲン・ランプ用スポットライト

多量の光。

<u>使用分野</u>:デッキ、船倉、工業・スポーツ施設 <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応

保護形式:IP 67

_____ 本体:ステンレスをシームレスに深絞り

Type /種別		Part No. / ご注文品番 max. 240 V
1 x 750 W /	∎ 7.0 kg 🛛 75, 18°	1076090000
1 x 1000 W	🕯 7.0 kg 🗟 103, 34°	1076091000
Light distribution curr	ves / 配光曲線 🛄 92-97	

Burning position p15 / 配線端末の位置p15







<u>投光器</u>:ポリッシュド・アルミニウム、アル マイト加工 <u>塗装</u>:白色紛体塗装RAL 9016、塗装厚70-80μm <u>ランプ・カバー</u>:安全ガラス <u>電気設備</u>:フレキシブルなシリコン電線、180°C まで耐熱。外付け接続箱 ケーブルの差込:M24x1.5 MGCGブラス製

<u>クークルの差広</u>:M24x1.5 MGCGククス製 止めネジ <u>口金</u>: R7 s ランプ(商品に含まれておりません。): 750/1000Wのハロゲン・ランプL185.7mm <u>取付</u>:Ø10.5/14mmの留め穴4ヶ所付き調節可能 取付金具

<u>備考</u>: 1000Wについては下記のメーカーの ランプのみご使用ください。BLV、Philips、 General Electric







Floodlight for high pressure sodium (HPS) or metal halide (MH) lamps, separate ballast required

High light output because of high lamp efficiency.

Application: Decks and holds, industrial and sport areas

Design: According to rules of maritime classifica-

Type /種別		Part No. / ご注文品番 max. 240 V			
1 x 250 W/	🕯 7.4 kg 🛿 67, 34°	1076010000			
1 x 400 W	∎ 7.4 kg 🛛 68, 42°	1076011000			
Other voltages on request / その他の電圧はお問い合わせください。					

Light distribution curves / 配光曲線 []] 92-97

tion societies, additional VDE and IEC / EN **Protection degree:** IP 67 **Housing:** Stainless steel deep drawn, seamless **Reflector:** Highly polished aluminium, anodized **Finish:** Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness **Pane:** Safety glass **Electric:** Flexible wiring, silicone insulated, heat resistant up to 180° C; exterior connection box with ignition unit

Cable entry: Brass cable gland M 24 x 1.5 MGCG **Lamp base:** E 40

Light sources (not included): High pressure

sodium (HPS), metal halide (MH) lamp **Mounting:** Adjustable bracket with 4 mounting holes, dia. 10.5 / 14 mm **Remark:** Ballast unit has to be ordered separately (see type no. 1507, 214)

高圧ナトリウム灯または高圧ハロゲン・ ランプ用スポットライト、別途安定器必要 高性能ランプによる高い光出力。 使用分野:デッキ、船倉、工業・スポーツ施設 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 67 本体:ステンレスをシームレスに深絞り <u>投光器</u>:ポリッシュド・アルミニウム、アル マイト加工 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:安全ガラス 電気設備:フレキシブルなシリコン電線、180°C まで耐熱、点灯装置付き外付け接続箱 ケーブルの差込: M24x1.5 MGCGブラス製 止めネジ 口金:E40 <u>ランプ(商品に含まれておりません。)</u>: 高圧ナトリウム灯/高圧金属ハロゲン・ランプ 取付:Ø10.5/14mmの留め穴4ヶ所付き調節可能 取付金具 備考:安定器は別途ご注文ください。 (Nr. 1507タイプ参照 💷 14)







Floodlight for high pressure sodium (HPS) lamps with instant ignition, separate ballast required

This floodlight features very rapid re-ignition. Connection box and ignition unit are installed outside.

Application: Decks and holds, industrial and sport areas. Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 67

Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Pane: Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C; exterior connection box and ignition unit

Cable entry: Brass cable gland M 24 x 1.5 MGCGLamp base: Fc 2

Light sources (not included): High pressure sodium (HPS) lamp with instant ignition, L 206 mm Mounting: Adjustable bracket with 4 mounting holes, dia. 10.5 / 14 mm

Remark: Ballast unit has to be ordered separately (see type no. 1507, 114)

瞬発点灯型高圧ナトリウム灯用スポット ライト、別途安定器必要

極めて速い再点灯がこのスポットライトの

Type /種別

| max. 240 V max. 1 x 400 W, ▲ 8.0 kg ፬ 76, 88° 1076008000 Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves) 配光曲線 □ 92-97

Part No. / ご注文品番





特徴です。外付け接続箱および点灯装置。
使用分野:デッキ、船倉、工業・スポーツ施設
仕様:船級協会の規定ならびにVDEおよび
IEC/ENの規定に対応
保護形式:IP 67
本体:ステンレスをシームレスに深絞り
投光器:ポリッシュド・アルミニウム、アル
マイト加工
塗装:白色紛体塗装RAL 9016、塗装厚70-80μm

<u>ランプ・カバー</u>:安全ガラス 電気設備:フレキシブルなシリコン電線、180°C

Spare Parts / *Extras - 補修パーツ、*付属品

まで耐熱、外付け接続箱および点灯装置 <u>ケーブルの差込</u>: M24x1.5 MGCGブラス製 止めネジ <u>口金</u>: Fc 2 ランプ(商品に含まれておりません。): 瞬発点灯高圧ナトリウム灯、L206mm 取付: Ø10.5/14mmの留め穴4ヶ所付き調節可能 取付金具 備考:安定器は別途ご注文ください。

(Nr. 1507タイプ参照 🛄14)





i 13.0 kg 72, 38°

Light distribution curves / 配光曲線 []] 92-97

Other voltages on request / その他の電圧はお問い合わせください。

2 x 400 W

1076009000



533

Π.

9840046600

(5 pcs. cpl.

9840045600

e No

9840035600 (cpl./計)

9840062500

* 🖽 126 - 128

(cpl./計)

計5個)

12 Clight for Ships / 船の照明

[mm]



Floodlight for high pressure sodium (HPS) or metal halide (MH) lamps, separate ballast required

Extremely powerful highly efficient narrow beam floodlight.

Application: Decks and holds, industrial and sport areas, illumination of water surfaces, fishing-nets etc. **Design:** According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing: Stainless steel deep drawn, seamless **Reflector:** Highly polished aluminium, anodized **Finish:** Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness **Pane:** Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C; exterior connection box with ignition unit

Cable entry: Brass cable gland M 24 x 1.5 MGCG **Lamp base:** E 40

Light sources (not included): High pressure sodium (HPS), metal halide (MH) lamp Mounting: 2 adjustable brackets with 2 mounting holes each, dia. 14 mm

Remark: Ballast unit has to be ordered separately (see type no. 1507, 114)

高圧ナトリウム灯または高圧ハロゲン・ ランプ用スポットライト、別途安定器必要 極めて高い光出力の高性能スポットライト。

Type /種別		Part No. / ご注文品番 max. 250 V
1 x 1000 W	İ 19.75 kg 🖗 77, 7°	1076081000
	🕯 19.75 kg 🖗 159, 24°	1076082000
Other voltages on	request / その他の電圧はお問	い合わせください。

Light distribution curves / 配光曲線 [] 92-97

Use only these types of lamps にのタイプのランプのみ使用可 HPS BLV HST 1000 W, Osram NAV-T 1000 W, Philips SON-T 1000 W, Radium RNP-T 1000 W MH Philips HPI-T 1000 W





使用分野:デッキ、船倉、工業・スポーツ
 施設、水面照明、魚網等
 仕様:船級協会の規定ならびにVDEおよび
 IEC/ENの規定に対応
 保護形式:IP 67
 本体:ステンレスをシームレスに深絞り
 投光器:ポリッシュド・アルミニウム、アル
 マイト加工
 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm

<u>坐表</u>. 日色初件坐表RAL 9016、坐表序70-80µm <u>ランプ・カバー</u>:安全ガラス 電気設備:フレキシブルなシリコン電線、180℃

<u>電気設備</u>、アビインアルなクラゴン電線、18000 Spare Parts / *Extras - 補修パーツ、*付属品 まで耐熱、点灯装置付き外付け接続箱 <u>ケーブルの差込</u>: M24x1.5 MGCGブラス製 止めネジ <u>口金</u>: E40 <u>ランプ(商品に含まれておりません。)</u>: 高圧ナトリウム灯/高圧金属ハロゲン・ランプ <u>取付</u>: それぞれØ14mmの留め穴2ヶ所付き調節 可能取付金具 備考: 安定器は別途ご注文ください。 (Nr. 1507タイプ参照 □14)





<u>240 V</u> 250 V



Ballast unit for floodlights with high pressure sodium (HPS) or metal halide (MH) lamps

Close-to-daily-work design: No tool required to open the housing, undetachable lid.

Application: Decks and holds, industrial and sport areas

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing and lid: Stainless steel deep drawn, seamless

Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Electric: Flexible wiring, heat resistant up to 105° C Cable entry: 2 / 3 brass cable glands M 24 x 1.5 MGCG

135

⊕ ⊕ ⊕ ______

35

- E

⊕ ⊕ ⊕ ______

[mm]

ر سے

Mounting: 2 welded brackets with 2 mounting holes each, dia. 10.5 mm **Remark:** Floodlight has to be ordered separately (see type No. 1076 or type 1776 when ballast unit can be installed outside hazardous areas)

高圧ナトリウム灯および高圧ハロゲン・ ランプを使ったスポットライト用安定器

実地に即した開発、工具なしに本体を開ける ことが可能、フタは紛失不可能。

<u>使用分野</u>:デッキ、船倉、工業・スポーツ施設 <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応

<u>保護形式</u>:IP 67

<u>本体とカバー</u>:ステンレスをシームレスに 深絞り

<u>塗装</u>:白色紛体塗装RAL 9016、塗装厚70-80μm <u>電気設備</u>:フレキシブルな電線、105°Cまで耐熱 <u>ケーブルの差込</u>: M24x15 MGCGブラス製 止めネジ2/3個

<u>取付</u>:溶接持ち送り2本にそれぞれØ10.5mmの 留め穴2ヶ所

備考:スポットライトは別途ご注文ください。 (Nr. 1076タイプまたは安定器が爆発の危険に さらされていないところに取付可能の場合は 1776タイプを参照)

Type /種別			Part No. /ご注文品番						
			110 V	22	O V	23	O V	240 V	250 V
			h.p.f.c.~	I.p.f.~	h.p.f.c.~	l.p.f.~	h.p.f.c.~	h.p.f.c.~	h.p.f.c.~
1 x 250 W, HPS / MH	1	50 Hz	-	-	-	1507009000	1507010000	1507064000	-
∎ 7.5 kg	U	60 Hz	-	1507011000	1507012000	-	-	1507066000	-
2 x 250 W, HPS / MH	0	50 Hz	-	-	-	1507013000	1507014000	1507068000	-
i 13.0 kg	Q	60 Hz	-	1507015000	1507016000	-	-	1507070000	-
1 x 400 W, HPS	1	50 Hz	-	-	-	1507001000	1507002000	1507035000	-
∎ 8.5 kg	U	60 Hz	-	1507003000	1507004000	-	-	1507074000	-
	3	60 Hz	1507017000	-	-	-	-	-	-
2 x 400 W, HPS	0	50 Hz	-	-	-	1507005000	1507006000	1507033000	-
i 15.0 kg	Q	60 Hz	-	1507007000	1507008000	-	-	1507078000	-
1 x 400 W, MH	1	50 Hz	-	-	-	1507024000	1507025000	1507072000	-
∎ 8.5 kg	U	60 Hz	-	1507026000	1507027000	-	-	1507037000	-
	3	60 Hz	1507020000	-		-	-	-	-
2 x 400 W, MH	0	50 Hz	-	-	-	1507028000	1507029000	1507076000	-
i 15.0 kg	Q	60 Hz	-	1507030000	1507031000	-	-	1507080000	-
1 x 1000 W, HPS / MH	6	50 Hz	-	-	-	1507043000	1507044000	1507051000	-
i 19.3 kg	4	60 Hz	-	1507045000	1507046000	-	-	1507052000	-
with core and coil ballast	3	50 Hz	-	-	1507086000	-	1507088000	1507090000	1507092000
露出安定器付き	9	60 Hz	-	-	1507087000	-	1507089000	1507091000	1507093000
Other voltages on request / その他の電圧はお問い合わせください。									



Spare Parts / 補修パーツ Part No. /ご注文品番 180 2 Ø 10.5 Clamp (5 pcs. cpl.) 締め金(計5個) 9840095800 i 200 Max. Distance / 最大設置間隔 90 пс Inside areas / 屋内 455 100 m 180 3 Ø 10.5 â œ 200 ĥ TH-Outside areas / 屋外





Floodlight with incorporated ballast for high pressure sodium (HPS) lamps Small highly efficient floodlight requiring no external ballast.

Application: Decks and holds, industrial and sport areas

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Pane: Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, exterior connection box **Cable entry:** Brass cable gland M 24 x 1.5 MGCG **Lamp base:** E 27

Light sources (not included): High pressure sodium (HPS) lamp

Mounting: Adjustable bracket with 4 mounting holes, dia. 10.5 / 14 mm

<u>高圧ナトリウム灯用安定器内蔵型スポット</u> ライト

外付け安定器不要の小型高性能スポット ライト。

<u>使用分野</u>:デッキ、船倉、工業・スポーツ施設 <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応

Type /種別		Part No. / ご注文品番
1 x 70 W	230 V, 50 Hz h.p.f.c.~	1076075000
🕯 7.6 kg 🛿 78, 84°	220 V, 60 Hz h.p.f.c.~	1076080000

Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves / 配光曲線 🛄 92-97





 保護形式:IP 67
 ケーブル

 本体:ステンレスをシームレスに深絞り
 止めネジ

 投光器:ポリッシュド・アルミニウム、アル
 口金:E2

 マイト加工
 ランプ(酒

 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm
 高圧ナト

 ランプ・カバー:安全ガラス
 取付:Ø

 電気設備:フレキシブルなシリコン電線、180°C
 取付金具

 まで耐熱。外付け接続箱
 外付け接続箱

<u>ケーブルの差込</u>: M24x1.5 MGCGブラス製 止めネジ <u>口金</u>: E27 <u>ランプ(商品に含まれておりません。)</u>: 高圧ナトリウム灯 取付: Ø10.5/14mmの留め穴4ヶ所付き調節可能 取付金具







Floodlight with incorporated ballast for high pressure sodium (HPS) or metal halide (MH) lamps

C

250 / 400 W

This is the solution where there is no space left for a separate ballast.

Application: Decks and holds, industrial and sport areas

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Pane: Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, exterior connection box with ignition unit, ballast is incorporated **Cable entry:** Brass cable gland M 24 x 1.5 MGCG **Lamp base:** E 40

Light sources (not included): High pressure sodium (HPS), metal halide (MH) lamp Mounting: 2 adjustable brackets with 2 mounting holes each, dia 14 mm 高圧ナトリウム灯または高圧ハロゲン・ ランプ用安定器内蔵型スポットライト 別個の安定器を取付ける場所がない場合は このタイプが解決策です。 使用分野:デッキ、船倉、工業・スポーツ施設 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 67 本体:ステンレスをシームレスに深絞り 投光器:ポリッシュド・アルミニウム、アル マイト加工

<u>塗装</u>:白色紛体塗装RAL 9016、塗装厚70-80µm <u>ランプ・カバー</u>:安全ガラス

lype / 種別		Part No. / ご注文品	番
		l.p.f.~	h.p.f.c.~
1 x 250 W, HPS / MH	230 V, 50 Hz	1076015000	1076016000
∎ 20.0 kg 🗟 67, 26°	220 V, 60 Hz	1076017000	1076018000
1 x 250 W, HPS / MH	230 V, 50 Hz	1076019000	1076020000
∎ 20.0 kg 🗟 68, 50°	220 V, 60 Hz	1076021000	1076022000
1 x 400 W, HPS	230 V, 50 Hz	1076023000	1076024000
∎ 21.0 kg 🗟 67, 26°	220 V, 60 Hz	1076025000	1076026000
1 x 400 W, HPS	230 V, 50 Hz	1076027000	1076028000
∎ 21.0 kg 🗟 68, 50°	220 V, 60 Hz	1076029000	1076030000
1 x 400 W, MH	230 V, 50 Hz	1076037000	1076038000
∎ 21.0 kg 🗟 67, 26°	220 V, 60 Hz	1076039000	1076040000
1 x 400 W, MH	230 V, 50 Hz	1076041000	1076042000
i 21.0 kg ∅ 68, 50°	220 V, 60 Hz	1076043000	1076044000

Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves / 配光曲線 1 92-97 まで耐熱、点灯装置付き外付け接続箱、安定器は 内蔵 <u>ケーブルの差込</u>: M24x1.5 MGCGブラス製 止めネジ <u>ロ金</u>: E40 <u>ランプ(商品に含まれておりません。)</u>: 高圧ナトリウム灯/高圧金属ハロゲン・ランプ <u>取付</u>: それぞれØ14mmの留め穴2ヶ所付き調節 可能取付金具



*Extras not included /*付属品は商品に含まれておりません。







Watertight luminaire

Produces light like a floodlight in design of a luminaire.

Application: Workshops, engine rooms, stores, holds, etc.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 67

Housing: Stainless steel deep drawn, seamless Reflector: Stainless steel, white RAL 9016 Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Diffuser: Clear polycarbonate, crystal-like Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, exterior connection box Cable entry: 2 brass cable glands M 24 x 1.5 MGCG

Lamp base: E 27

Light sources (not included): High pressure mercury (HPM) lamp 80 W Mounting: 2 welded brackets with 2 mounting holes each, dia. 10.5 mm Remark: Luminaires only available without power factor correction

防水照明器具

照明器具のデザインでありながらスポット ライトのような光を放つ。 使用分野:技術関連分野、機関室、船倉、 倉庫等

仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 67 本体:ステンレスをシームレスに深絞り 投光器:ステンレス、白RAL 9016 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:クリア・ポリカルボナート、 クリスタル模様 電気設備:フレキシブルなシリコン電線、180°C まで耐熱。外付け接続箱 ケーブルの差込: M24x1.5 MGCGブラス製 止めネジ2個 口金:E27 <u>ランプ(商品に含まれておりません。)</u>: 高圧水銀灯80 W 取付:溶接持ち送り2本にそれぞれØ10.5mmの 留め穴2ヶ所 備者・照明器具は誘導仕様のみ納品可能

Type /種別		Part No. / ご注文品番		
1 x 80 W	230 V, 50 Hz I.p.f.~	1023005000		
单 5.3 kg 🖗 95	220 V, 60 Hz I.p.f.~	1023007000		
1 x 80 W	110 V, 50 Hz I.p.f.~	1023013000		
🕯 6.8 kg 🕅 95	110 V, 60 Hz I.p.f.~	1023015000		
2 x 80 W	230 V, 50 Hz I.p.f.~	1023105000		
🖠 7.1 kg 🕅 96	220 V, 60 Hz I.p.f.~	1023107000		
Other voltages on request / その他の電圧はお問い合わせください。				

Light distribution curves / 配光曲線 🛄 92-97







技術関連分野と屋外の照明器具



Light for Ships / 船の照明 〇三四二 21





Flatter, smaller, shorter and smoother than comparable ones.

Application: Workshops, engine rooms, stores, holds, passage ways, galleys, etc. Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 55 or IP 67 Housing: Zinc coated steel sheet deep drawn, seamless

Gear tray: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Diffuser: Clear polycarbonate, others on request, turn buttons for quick mounting Electric: Flexible wiring, heat resistant up to 105° C; easy clip-in-system for removable gear tray with

plug-in connector to the housing Cable entry: To be ordered separately; e.g. PG 16, M 24 x 1.5 MGG / MGCG. When you place your order, please use symbols like O- / O= / -O- / -O= / =O= for location

Lamp base: G 13

Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W. 36 / 40 W Mounting: 2 mounting holes, dia. 10 mm Remark: Variations on request. Short-dated delivery of luminaires with standard variations

防水多目的照明器具、外付け 類似のタイプに比べより平らで、細く、 短く、かつ滑らかな表面。 使用分野:技術関連分野、機関室、船倉、 倉庫、通路、厨房等 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 55またはIP 67 本体:亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:クリア・ポリカルボナート、 その他はお問い合わせください、スピード組立の標準仕様はすぐに納品可能。 ためのねじ込み金具付き

電気設備:フレキシブルな電線、105℃まで 耐熱、本体への差込接続付き取外し可能な配線 シャシーのための簡単なスナップ・システム <u>ケーブルの差込</u>:例えばPG16、M24x1.5 MGG/MGCGは別途ご注文ください。ご注文の 際はO-/O=/-O-/-O=/=O=等の配置記号を ご利用ください。 口金:G13 ランプ(商品に含まれておりません。): 18/20W、36/40WのT26/T38蛍光灯 取付:Ø10mmの留め穴2ヶ所 備考:その他仕様はお問い合わせください。

Type / 種別		Part No. /ご注文品	番			
		230 V	230 V	220 V	220 V	24 V =
		50 Hz	50 Hz	60 Hz	60 Hz	
		l.p.f.~	h.p.f.c.~	l.p.f.~	h.p.f.c.~	
1 x 18 / 20 W	IP 55	1888001200	1888002200	1888003200	1888004200	-
🖠 3.6 kg 🗟 44	IP 67	1888005200	1888006200	1888007200	1888008200	-
2 x 18 / 20 W Tandem	IP 55	1888101200	1888102200	1888103200	1888104200	-
∎ 3.7 kg 🛛 45 タンデム	IP 67	1888105200	1888106200	1888107200	1888108200	1888185200
2 x 18 / 20 W	IP 55	1888201200	1888202200	1888203200	1888204200	-
🖠 4.5 kg 🗟 45	IP 67	1888205200	1888206200	1888207200	1888208200	-
1 x 36 / 40 W	IP 55	1888301200	1888302200	1888303200	1888304200	-
🖠 4.7 kg 🛿 46	IP 67	1888305200	1888306200	1888307200	1888308200	-
2 x 36 / 40 W	IP 55	1888401200	1888402200	1888403200	1888404200	-
🖠 5.4 kg 🗟 47	IP 67	1888405200	1888406200	1888407200	1888408200	-

Other voltages + electron. ballasts on request /その他の電圧および電子安定器はお問い合わせください。

Light distribution curves / 配光曲線 []] 92-97







Numberless customized variations possible. Application: Workshops, engine rooms, stores, holds, passage ways, galleys, etc. Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 55 or IP 67

Housing: Zinc coated steel sheet deep drawn, seamless

Gear tray: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 µm thickness, special colours on request

Diffuser: Clear polycarbonate, others on request; turn buttons for quick mounting

Electric: Flexible wiring, heat resistant up to 105° C; easy clip-in system for removable gear tray with plug-in connector to the housing

Cable entry: To be ordered separately; e.g. PG 16, M 24 x 1.5 MGG / MGCG. When you place your order, please use symbols like O- / O= / -O- / -O= / =O= for location Lamp base: G 13

Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W Mounting: 2 mounting holes, dia. 10 mm **Remark:** Special variations e.g. non-magnetic housing, welded brackets or semi recessed model on request

防水多目的照明器具、外付け 無数のバリエーションによりどの使用目的 にも適合可能。 使用分野:技術関連分野、機関室、船倉、 倉庫、通路、厨房等 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 55またはIP 67 本体:亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー:亜鉛めっき薄鋼板 塗装:白色粉体塗装RAL 9016、塗装厚 70-80µm、その他のRAL色およびスペシャル・ カラーはお問い合わせください。 ランプ・カバー:クリア・ポリカルボナート、 その他はお問い合わせください、スピード組立の合わせください。

ためのねじ込み金具付き

電気設備:フレキシブルな電線、105°Cまで 耐熱、本体への差込接続付き取外し可能な配線 シャシーのための簡単なスナップ・システム ケーブルの差込:例えばPG16、M24x1.5 MGG/MGCGは別途ご注文ください。ご注文の 際はO-/O=/-O-/-O=/=O=等の配置記号を ご利用ください。 口金:G13 ランプ(商品に含まれておりません。): 18/20W、36/40WのT26/T38蛍光灯

取付: Ø10mmの留め穴2ヶ所 備考:例えば無磁気性の本体、溶接金具または

半埋め込みタイプ等その他の特殊仕様はお問い

Type / 種別		Part No. /ご注文品	番			
		230 V	230 V	220 V	220 V	24 V =
		50 Hz	50 Hz	60 Hz	60 Hz	
		l.p.f.~	h.p.f.c.~	l.p.f.~	h.p.f.c.~	
1 x 18 / 20 W	IP 55	1889001200	1889002200	1889003200	1889004200	-
i 3.6 kg 🛿 44	IP 67	1889005200	1889006200	1889007200	1889008200	-
2 x 18 / 20 W Tandem	IP 55	1889101200	1889102200	1889103200	1889104200	-
∎ 3.7 kg 🛛 45 タンデム	IP 67	1889105200	1889106200	1889107200	1889108200	1889185200
2 x 18 / 20 W	IP 55	1889201200	1889202200	1889203200	1889204200	-
🛉 4.5 kg 🛿 45	IP 67	1889205200	1889206200	1889207200	1889208200	-
1 x 36 / 40 W	IP 55	1889301200	1889302200	1889303200	1889304200	-
∎ 4.7 kg 🛛 46	IP 67	1889305200	1889306200	1889307200	1889308200	-
2 x 36 / 40 W	IP 55	1889401200	1889402200	1889403200	1889404200	-
i 5.4 kg 🛿 47	IP 67	1889405200	1889406200	1889407200	1889408200	-

Other voltages + electron. ballasts on request /その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [] 92-97







The established watertight luminaire for various applications.

Application: Workshops, engine rooms, stores, holds, passage ways, etc.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 55 or IP 67

Housing: Zinc coated steel sheet deep drawn, seamless

Gear tray: Zinc coated steel sheet

Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Diffuser: Clear polycarbonate, others on request Electric: Flexible wiring, heat resistant up to 105° C; removable gear tray with plug-in connector to the housing

Cable entry: To be ordered separately; e.g. PG 16, M 24 x 1.5 MGG / MGCG. When you place your order, please use symbols like 0- / 0= / -0- / -0= / =0= for location

Lamp base: G 13

Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W

Mounting: 2 mounting holes, dia. 10 mm **Remark:** Variations on request. Short dated delivery of luminaires with standard variations

防水多目的照明器具、外付け

多目的に使用可能な実証済み防水照明器具。 使用分野: 技術関連分野、機関室、船倉、 倉庫、通路等 <u>仕様</u>: 船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 55またはIP 67 <u>本体</u>: 亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー: 亜鉛めっき薄鋼板 塗装: 白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー: クリア・ポリカルボナート、 その他はお問い合わせください。

電気設備:フレキシブルな電線、105°Cまで

耐熱、本体への差込接続付き取外し可能な配線シャシー

<u>ケーブルの差込</u>:例えばPG16、M24x1.5 MGG/MGCGは別途ご注文ください。ご注文の 際はO-/O=/-O-/-O=/=O=等の配置記号を ご利用ください。 <u>口金</u>:G13 ランプ(商品に含まれておりません。): 18/20W、36/40WのT26/T38蛍光灯 取付:Ø10mmの留め穴2ヶ所 備考:その他仕様はお問い合わせください。 標準仕様はすぐに納品可能。

Type / 植別		Part No. /ご注文品	番			
		230 V	230 V	220 V	220 V	24 V =
		50 Hz	50 Hz	60 Hz	60 Hz	
		l.p.f.~	h.p.f.c~	l.p.f.~	h.p.f.c~	
1 x 18 / 20 W	IP55	1044001200	1044002200	1044003200	1044004200	-
菌 4.4 kg 🛿 48	IP67	1044005200	1044006200	1044007200	1044008200	1044085200
2 x 18 / 20 W, <u>T</u> and <u>em</u>	IP55	1044101200	1044102200	1044103200	1044104200	-
■ 4.5 kg 🛛 49	IP67	1044105200	1044106200	1044107200	1044108200	1044185200
2 x 18 / 20 W	IP55	1044201200	1044202200	1044203200	1044204200	-
🕯 5.0 kg 🛿 49	IP67	1044205200	1044206200	1044207200	1044208200	1044285200
1 x 36 / 40 W	IP55	1044301200	1044302200	1044303200	1044304200	-
🕯 6.2 kg 🛿 50	IP67	1044305200	1044306200	1044307200	1044308200	1044385200
2 x 36 / 40 W	IP55	1044401200	1044402200	1044403200	1044404200	-
🕯 6.6 kg 🛛 51	IP67	1044405200	1044406200	1044407200	1044408200	1044485200
Other voltages + electron	hallacte on re	auect /その他の雪田	お上が電子空空に	お問い合わせくだ。	+11	

Other voltages + electron. ballasts on request /その他の電圧および電子安定器はお問い合わせください. Light distribution curves / 配光曲線□□ 92-97







The watertight luminaire with extras available to suit particular demands.

Application: Workshops, engine rooms, stores, holds, passage ways, etc.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 55 or IP 67

Housing: Zinc coated steel sheet deep drawn, seamless

Gear tray: Zinc coated steel sheet

Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness **Diffuser:** Clear polycarbonate, others on request **Electric:** Flexible wiring, heat resistant up to 105° C; removable gear tray with plug-in connector to the

housing **Cable entry:** To be ordered separately; e.g. PG 16, M 24 x 1.5 MGG / MGCG. When you place your order, please use symbols like 0- / 0= / -0- / -0= / =0= for location

Lamp base: G 13

Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W

Mounting: 2 mounting holes, dia. 10 mm **Remark:** Special variations e.g. stainless steel housing, welded brackets or AC / DC ballast on request 防水多目的照明器具、外付け 特殊な要請に対応する特別仕様納品可能な 防水照明器具。 使用分野:技術関連分野、機関室、船倉、 倉庫、通路等 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 55またはIP 67 本体:亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80μm ランプ・カバー:クリア・ポリカルボナート、 その他はお問い合わせください。 <u>電気設備</u>:フレキシブルな電線、105℃まで 耐熱、本体への差込接続付き取外し可能な配線 シャシー

<u>ケーブルの差込</u>:例えばPG16、M24x1.5 MGG/MGCGは別途ご注文ください。ご注文の 際はO- / O= / -O- / -O= /=O=等の配置記号を ご利用ください。

口金:G13

<u>ランプ(商品に含まれておりません。)</u>: 18/20W、36/40WのT26/T38蛍光灯 取付: Ø10mmの留め穴2ヶ所 備考: 例えばステンレス製本体、溶接持ち送り またはAC/DC安定器のような特殊な仕様はお問い 合わせください。

Type / 種別		Part No. / ご注文品	番			
		230 V	230 V	220 V	220 V	24 V =
		50 Hz	50 Hz	60 Hz	60 Hz	
		l.p.f.~	h.p.f.c~	l.p.f.~	h.p.f.c~	
1 x 18 / 20 W	IP55	1444001200	1444002200	1444003200	1444004200	-
🕯 4.4 kg 🖗 48	IP67	1444005200	1444006200	1444007200	1444008200	1444085200
2 x 18 / 20 W, Tandem	IP55	1444101200	1444102200	1444103200	1444104200	-
∎ 4.5 kg 🛛 49 タンデム	IP67	1444105200	1444106200	1444107200	1444108200	1444185200
2 x 18 / 20 W	IP55	1444201200	1444202200	1444203200	1444204200	-
🕯 5.0 kg 🛿 49	IP67	1444205200	1444206200	1444207200	1444208200	1444285200
1 x 36 / 40 W	IP55	1444301200	1444302200	1444303200	1444304200	-
🕯 6.2 kg 🗟 50	IP67	1444305200	1444306200	1444307200	1444308200	1444385200
2 x 36 / 40 W	IP55	1444401200	1444402200	1444403200	1444404200	-
菌 6.6 kg 🗟 51	IP67	1444405200	1444406200	1444407200	1444408200	1444485200

Other voltages + electron. ballasts on request /その他の電圧および電子安定器はお問い合わせください。

Light distribution curves / 配光曲線 🛄 92-97









Hold luminaire, heavy duty, surface There is no alternative for applications under extreme mechanical strain.

Application: Workshops, engine rooms, stores, holds, etc.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing: Zinc coated steel sheet deep drawn, seamless

Gear tray: Zinc coated steel sheet **Finish:** Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness **Diffuser:** Clear polycarbonate, reinforced **Electric:** Flexible wiring, heat resistant up to 105° C; through wiring up to 16 A; removable gear tray with plug-in connector to the housing **Cable entry:** To be ordered separately; e.g. PG 16, M 24 x 1.5 MGG / MGCG. When you place your order, please use symbols like O- / O= / -O- / -O= / =O= for location **Lamp base:** G 13

Light sources (not included): T 26 fluorescent lamp 18 / 36 W

Mounting: 2 welded brackets with 2 mounting holes each, dia. 10.5 mm

Remark: Model for T 38 fluorescent lamp on request

冷蔵室照明器具、外付け

低温域では通常の遠距離照明器具には問題が 起こります。これらの特殊照明器具には問題 が起こらず、高温でも機能します。 使用分野:低温スペース、冷蔵室、冷凍室、 周辺温度最低マイナス30℃、最高30℃ 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 67 本体:亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm

<u>ランプ・カバー</u>:クリア・ポリカルボナート 電気設備:フレキシブルな電線、105°Cまで 耐熱、16Aまで供給網用電流通過型配線、本体 への差込接続付き取外し可能な配線シャシー <u>ケーブルの差込</u>:M24x1.5 MGCGブラス製 止めネジ2個 口金:G13 ランプ(商品に含まれておりません。): 115WのT38蛍光灯 取付:Ø10mmの留め穴2ヶ所

Type / 種別		Part No. / ご注文品番
2 x 18 W Jandem	230 V, 50 Hz h.p.f.c.~	1075106000
∎ 6.0 kg 🛛 52	220 V, 60 Hz h.p.f.c.~	1075108000
2 x 18 W	230 V, 50 Hz h.p.f.c.~*)	1075206000
🕯 6.9 kg 🖗 52	220 V, 60 Hz h.p.f.c.~*)	1075208000
1 x 36 W	230 V, 50 Hz h.p.f.c.~	1075306000
i 9.2 kg 🛿 86	220 V, 60 Hz h.p.f.c.~	1075308000
2 x 36 W	230 V, 50 Hz h.p.f.c.~	1075406000
i 10.1 kg 🛛 53	220 V, 60 Hz h.p.f.c.~	1075408000
Other voltages + electr	on. ballasts on request /	

その他の電圧および電子安定器はお問い合わせください。 *) Not available for delivery with emergency lampholder / *) 非常用予備電流ソケット付きは納品不可

Light distribution curves / 配光曲線 [__] 92-97





1075





Ceiling luminaire, surface

For kitchens there are strict hygienic rules. This has been taken into account when designing this luminaire. The soft contours enable easy and rapid cleaning.

Application: Kitchens, galleys, pantries, provision rooms

Design: According to the regulations of USPH (U. S. Public Health) and according to rules of maritime classification societies, additional VDE and IEC/EN Protection degree: IP 67 Ground plate: Stainless steel Gear tray: Zinc coated steel sheet, stainless steel on request Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Diffuser: Clear polycarbonate Electric: Flexible wiring, heat resistant up to 105° C

Type /種別		Part No. / ご注文品番
2 x 18 / 20 W, Tandemタンデム	230 V, 50 Hz h.p.f.c.~	1961102200
∎ 4.2 kg 🗄 54	220 V, 60 Hz h.p.f.c.~	1961104200
2 x 18 / 20 W	230 V, 50 Hz h.p.f.c.~	1961502200
∎ 4.2 kg 🗄 54	220 V, 60 Hz h.p.f.c.~	1961504200
2 x 36 / 40 W	230 V, 50 Hz h.p.f.c.~	1961802200
∎ 7.0 kg 🗄 55	220 V, 60 Hz h.p.f.c.~	1961804200
0		

Other voltages + electron. ballasts on request /その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [__] 92-97 Cable entry: 2 inlets for max. cable dia. 12.7 mm, others on request Lamp base: G 13 Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W

Mounting: 6 / 10 mounting holes, dia. 5 mm

天井照明器具、外付け

厨房には特別の衛生管理規定が適用されます が、本タイプのデザイン開発にあたっては この管理規定を熟慮しました。 使用分野:厨房、調理室、食料貯蔵室、貯蔵室 仕様:米国公衆衛生局、船級協会ならびにVDE およびIEC/ENの規定に対応 保護形式: IP 67 ベース:ステンレス 配線シャシー:亜鉛めっき薄鋼板、ステンレス はお問い合わせください。 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:クリア・ポリカルボナート 電気設備:フレキシブルな電線、105℃まで耐熱 ケーブルの差込:最高Ø12.7mmのケーブル用 インレット2個、その他はお問い合わせ ください。 口金:G13 ランプ(商品に含まれておりません。): 18/20W、36/40WのT26/T38蛍光灯

取付:Ø5mmの留め穴6/10ヶ所











Downlight for energy-saving lamps Hosed watertight for indoor and outdoor areas. Application: Kitchens, pantries, passage ways, etc. Design: According to the regulations of USPH (U.S. Public Health) and according to rules of maritime classification societies, additional VDE and IEC/EN Protection degree: IP 44 / IP 55 Housing: Zinc coated steel sheet, deep drawn Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Fascia: Stainless steel Diffuser: Clear polycarbonate Electric: Flexible wiring, heat resistant up to 105° C Lamp base: G 23 Cable entry: 2 plastic cable glands PG 16 Light sources (not included): Tubular compact fluorescent lamp 5 / 7 W Mounting: 4 mounting holes dia. 4 mm for ceiling thickness of max. 30 mm

省エネランプ用ダウン・ライト 屋内および屋外用に防水加工。 使用分野:厨房、貯蔵室、通路等 仕様:米国公衆衛生局、船級協会ならびにVDE およびIEC/ENの規定に対応 保護形式: IP 44/IP 55 本体:亜鉛めっき薄鋼板、シームレスに深絞り 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm 投光器:ポリッシュド・アルミニウム、アル マイト加工 カバー・リング:ステンレス ランプ・カバー:クリア・ポリカルボナート 電気設備:フレキシブルな電線、105°Cまで耐熱 ケーブルの差込:PG16合成樹脂製止めネジ2個 口金:G23 ラン<u>プ(商品に含まれておりません。)</u> : 5/7WのTCコンパクト型蛍光灯 取付: Ø4mmの留め穴4ヶ所、最高30mmの 天井厚用



Type /種別	Part No. / ご注文品番			
2 x 5 / 7 W, Tandem 230 V, 50 Hz l.p.f.~	0243301000			
■ 1.5 kg 🛯 100 タンデム 220 V, 60 Hz l.p.f.~	0243303000			
Other voltages + electron. ballasts on request /				

ての他の電圧および電子女定裔はお問い合わせください。 Light distribution curves / 配光曲線 [__] 92-97









Waterpressuretight luminaire

Continuously improved and even more reliable. Absolutely safe up to 20 m under water. Application: Decks

Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 68 h 20

Ambient temperature: -20° C up to 45° C; 14 W: -20° C up to 40° C

Reflector and gear tray: Zinc coated steel sheet **Finish:** Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness **Cover tube:** Clear polycarbonate 4 mm thickness, polycarbonate end caps white $\label{eq:constraint} \begin{array}{l} \mbox{Electric: Flexible wiring, heat resistant up to 105° C; removable gear tray including reflector \\ \mbox{Cable entry: plastic gland M 20 x 1.5 for cable} \end{array}$

dia. 6 - 12 mm Lamp base: G5 / 2G 11 / G 13. Light sources (not included): T 16 high efficient fluorescent lamp 14 W; TC-L Tubular compact fluorescent lamp 18 W; T 26 / T 38 fluorescent lamp 18/20 W, 36/40 W Mounting: 2 fixing clamps: stainless steel or polycarbonate (clamps are not part of supply, please order separately)

防水照明器具

常に開発を続けより信頼性を高める。 水深20mまで完全防水。 <u>使用分野</u>:デッキ <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 <u>保護形式</u>:IP 68 h 20 <u>周辺温度</u>:マイナス20°Cから45°C、 14W:マイナス20°Cから40°C <u>投光器と配線シャシー</u>: 亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm <u>カバーチューブ</u>: 透明ポリカルボナート、壁厚 4mm、エンド・キャップは白色ポリカルボナート 電気設備:フレキシブルな電線、105℃まで 耐熱、取外し可能な投光器付き配線シャシー ケーブルの差込: Ø6-12mmのケーブル用 M20x1.5合成樹脂製止めネジ 口金:G5/2G11/G13

ランプ(商品に含まれておりません。):

14WのT16高効率蛍光灯、18WのTC-Lコンパクト 型チューブ蛍光灯、18/20W、36/40WのT26/T38 蛍光灯

<u>取付</u>:ステンレスまたはポリカルポナート製 取付用止め輪2個。(止め輪は商品に含まれて おりませんので別途具注文ください。)

Type / 種別		Part No. / ご注文品番
1 x 14 W, i 1.9 kg, 🛿 160	220-240 V, 0/50/60 Hz	1773001000
1 x 18 W, TC-L	230 V, 50 Hz l.p.f.~	1773505000
i 2.4 kg	230 V, 50 Hz h.p.f.c.~	1773506000
3 59	220 V, 60 Hz l.p.f.~	1773507000
	220 V, 60 Hz h.p.f.c.~	1773508000
1 x 18 / 20 W	230 V, 50 Hz l.p.f.~	1773005000
🕯 3.8 kg	230 V, 50 Hz h.p.f.c.~	1773006000
57	220 V, 60 Hz l.p.f.~	1773007000
	220 V, 60 Hz h.p.f.c.~	1773008000
1 x 36 / 40 W	230 V, 50 Hz l.p.f.~	1773305000
∎ 5.0 kg	230 V, 50 Hz h.p.f.c.~	1773306000
58	220 V, 60 Hz l.p.f.~	1773307000
	220 V, 60 Hz h.p.f.c.~	1773308000

Other voltages + electron. ballasts on request / その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線□□ 92-97








Coldroom luminaire, surface Normal fluorescent tube luminaires run into troubles under operation in low ambient temperatures. This one won't, but will work under higher temperatures as well.

Application: Refrigerated areas, coldrooms, freezing rooms; ambient temperature min. -30° C, max. +30° C

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing: Zinc coated steel sheet deep drawn, seamless

Gear tray: Zinc coated steel sheet **Finish:** Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness **Diffuser:** Clear polycarbonate

Electric: Flexible wiring, heat resistant up to 105° C; through wiring up to 16 A; removable gear tray with plug-in connector to the housing **Cable entry:** 2 brass cable glands M 24 x 1.5 MGCG

Lamp base: G 13

Light sources (not included): T38 fluorescent lamp 115 W

Mounting: 2 mounting holes, dia. 10 mm



冷蔵室照明器具、外付け

低温域では通常の遠距離照明器具には問題が 起こります。これらの特殊照明器具には問題 が起こらず、高温でも機能します。 使用分野:低温スペース、冷蔵室、冷凍室、 周辺温度最低マイナス30℃、最高30℃ 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 67 本体:亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:クリア・ポリカルボナート 電気設備:フレキシブルな電線、105℃まで 耐熱、16Aまで供給網用電流通過型配線、本体 への差込接続付き取外し可能な配線シャシー <u>ケーブルの差込</u>: M24x1.5 MGCGブラス製 止めネジ2個 口金:G13 ランプ(商品に含まれておりません。): 115WのT38蛍光灯

取付: Ø10mmの留め穴2ヶ所

Type / 種別		Part No. / ご注文品番
1 x 115 W	220 V, 50 Hz I.p.f.~	1044505200
∎ 6.1 kg	220 V, 50 Hz h.p.f.c.~	1044506200
60	220 V, 60 Hz I.p.f.~	1044507200
	220 V, 60 Hz h.p.f.c.~	1044508200

Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves / 配光曲線 □── 92-97



*Extras not included / * 付属品は商品に含まれておりません。

* 📖 126 - 128

9840005600

9840046500 (5 pcs. / 5個)





Coldroom luminaire, surface

Reliable operation under low temperatures in new design.

Application: Refrigerated areas, coldrooms, freezing rooms; ambient temperature min. -40° C, max. +5° C; optimum light output at -10° C to -20° C **Design:** According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Housing: Zinc coated steel sheet deep drawn, seamless

Gear tray: Zinc coated steel sheet **Finish:** Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness **Diffuser:** Clear polycarbonate, turn buttons for quick mounting

Electric: Flexible wiring, heat resistant up to 105° C, easy clip-in-system for removable gear tray with plug-in connector to the housing

Cable entry: To be ordered separately; e.g. PG 16, M 24 x 1.5 MGG / MGCG. When you place your order, please use symbols like O - / O = / -O - / -O = /=O = for location **Lamp base:** G 13

Light sources (not included): T 38 fluorescent lamp 40 W, 590 mm long

Mounting: 2 mounting holes, dia. 10 mm

冷蔵室照明器具、外付け 新デザインで低温時も安定した光。 使用分野:寒冷区域、冷蔵室、冷凍室、周辺 温度最低マイナス40℃、最高5℃、最適摂取光量 はマイナス10℃からマイナス20℃時 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 67 本体:亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:クリア・ポリカルボナート、 スピード組立のためのねじ込み金具付き 電気設備:フレキシブルな電線、105°Cまで 耐熱、本体への差込接続付き取外し可能な配線 シャシーのための簡単なスナップ・システム ケーブルの差込:例えばPG16、M24x1.5 MGG/MGCGは別途ご注文ください。ご注文の 際はO-/O=/-O-/-O=/=O=等の配置記号を ご利用ください。 口金:G13 ランプ(商品に含まれておりません。): 40WのT38蛍光灯、長さ590 mm <u>取付</u>:Ø10mmの留め穴2ヶ所

Type / 種別 Part No. / ご注文品番 2 x 40 W, 590 mm 230 V, 50 Hz h.p.f.c.~ 1891202000 4.2 kg ③ 98 220 V, 60 Hz h.p.f.c.~ 1891204000 Other voltages + electron. ballasts on request / 1891204000 1891204000

Other voltages + electron. ballasts on request / その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [__] 92-97







Coldroom luminaire, surface

The easily and rapidly cleanable luminaire for low temperature application.

Application: Refrigerated areas, coldrooms, freezing rooms; ambient temperature min. -40° C, max. +10° C; optimum light output at -10° C to -20° C

Design: According to the regulations USPH (U. S. Public Health) and according to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 67

Ground plate: Stainless steel

Gear tray: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness

Diffuser: Clear polycarbonate

Electric: Flexible wiring, heat resistant up to 105° C; removable gear tray with plug-in connector to the housing

Cable entry: 2 cable glands PG 13.5, brass nickelplated

Lamp base: G 13

Light sources (not included): T 38 fluorescent lamp 40 W, 590 mm long Mounting: 6 mounting holes, dia. 5 mm

冷蔵室照明器具、外付け 簡単かつ速く手入れができる照明器具で低温 時使用向き。 使用分野:寒冷区域、冷蔵室、冷凍室、周辺 温度最低マイナス40℃、最高10℃。最適摂取光量 はマイナス10℃からマイナス20℃時 仕様:米国公衆衛生局、船級協会ならびにVDE およびIEC/ENの規定に対応 保護形式:IP 67 ベース:ステンレス 配線シャシー:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:クリア・ポリカルボナート

電気設備:フレキシブルな電線、105℃まで 耐熱、本体への差込接続付き取外し可能な配線 シャシー

<u>ケーブルの差込</u>:ニッケルめっきしたブラス製 PG13.5止めネジ2個

<u>口金</u>:G13

<u>ランプ(</u>商品に含まれておりません。): 40WのT38蛍光灯、長さ590mm 取付:Ø5mmの留め穴6ヶ所

「ype / 種別		Part No. / ご注文品番
2 x 40 W, 590 mm	230 V, 50 Hz h.p.f.c.~	1771202000
i 4.0 kg 🛿 99	220 V, 60 Hz h.p.f.c.~	1771204000
	helleste en reguest /	

Other voltages + electron. ballasts on request / その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線□__ 92-97











Luminaires and floodlights for hazardous areas

爆発の危険を伴う分野のための 照明器具とスポットライト

Attention: Certification is based on EN 50014 ff. Requirements for use of electrical apparatus in hazardous location must be considered.

ご注意: 許可の基準はEN 50014 ffです。 爆発の危険を伴う分野では電気装置が要求する 事項を考慮する必要があります。





EEx e luminaire, surface

With lampholdersystem for standard fluorescent tubes 2-pin.

Application: Hazardous areas zone 1 and 2, (EN 50014)

Design: According to rules of maritime classification societies, additional VDE and IEC / EN

Approval authority: Physikalisch-Technische Bundesanstalt, Braunschweig.

PTB cert. nos.

① Standard execution: PTB 01 ATEX 2093 and Ex-01.E.2095

② Battery back up execution: PTB 01 ATEX 2094 and Ex-01.E.2096

Protection degree: IP 67

Ignition class: EEx e md IIC T.

Housing: Zinc coated steel sheet, deep drawn. seamless. Gear tray: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 µm thickness Diffuser: Clear polycarbonate, reinforced Electric: Electronic ballast; flexible wiring, heat resistant up to 105° C; through wiring up to 16 A possible; type with battery back up system, integrated NiCd battery, incorporated overloading protection, LED for indication of battery power Emergency operation: 1 x 18 / 20 W 180 minutes at 45 % luminous intensity, 1 x 36 / 40 W 180 minutes at 25 % luminous intensity

Charge time after full discharge: 18 / 20 W 24 h, 36 / 40 W 36 h

Cable entry: With Ex-certificate, M 25 x 1.5 for cable dia. 10 to 17 mm

Lamp base: G 13

Light sources (not included): 2-pin T 26 / T 38 fluorescent lamp 18/20 W, 36/40 W

Mounting: 2 welded brackets with 2 mounting holes each, dia. 10.5 mm

EEx e照明器具、外付け

標準ニピン蛍光灯用口金システム付き。 使用分野:爆発の危険を伴う部屋、区域1 および2(EN 50014) 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 検査局:ブラウンシュヴァイク・ドイツ連邦 物理工学研究所 PTB Zert. Nrn. 標準仕様: PTB 01 ATEX 2093および Ex-01.E.2095 ② 標準仕様: PTB 01 ATEX 2094および Ex-01.E.2096 保護形式: IP 67 発火保護形式:EExemd IIC T 本体:亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:溝入クリア・ポリカルボ ナート、特別強化タイプ

電気設備:電子安定器、フレキシブルな電線、 105°Cまで耐熱、16Aまで供給網用電流通過型 配線使用可能、電池式非常用電流システム・ タイプ、ファン付きニカド電池内蔵、内蔵型 過充電防止機能、LEDで電池の充電状態を表示 非常用電流使用可能時間:1x18/20W光度45% の時なら180分、1x36/40W光度25%の時なら 180分 最長の充電時間:18/20Wなら24時間、36/40W なら36時間 ケーブルの差込: Ø10-17mmのケーブル用 前認可M25x1.5合成樹脂 口金:G13 ランプ(商品に含まれておりません。): 18/20W、36/40WのT26/T38ニピン蛍光灯 取付:溶接持ち送り2本にそれぞれØ10.5mmの

Туре	/ 種別		Part No. /ご注文品番 Through wiring / without / 無	電流通過形配線 with / 有
1	Standard execution /	1 x 18 / 20 W, 🗴 7.0 kg	0285006000	0285006010
	標準仕様	2 x 18 / 20 W, 🌢 8.0 kg 🖗 161	0285206000	0285206010
	230-254 V, 0/50/60 Hz	1 x 36 / 40 W, 🛔 11.0 kg 🗟 162	0285306000	0285306010
		2 x 36 / 40 W, 🛔 13.0 kg 🗟 163	0285406000	0285406010
2	Battery back up execution /	1 x 18 / 20 W, 🌢 8.0 kg	0285036000	-
	非常用予備電流仕様	2 x 18 / 20 W, 🌢 9.0 kg 🖗 161	0285236000	-
	230-254 V, 50-60 Hz	1 x 36 / 40 W, 🛔 14.0 kg 🗟 162	0285336000	0285336010
		2 x 36 / 40 W, 🌢 15.0 kg 🗟 163	0285436000	0285436010

Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves / 配光曲線 []] 92-97

留め穴2ヶ所







EEx e luminaire, surface

20 / 40 W

When it comes to safety there must not be made any compromises. Rely on many thousandfold proof.

Application: Hazardous areas zone 1 and 2, (EN 50014)

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Approval authority:** Physikalisch-Technische Bundesanstalt, Braunschweig

PTB cert. no. Ex-87/2184 (20 W); Ex-87/2185 (40 W) Protection degree: IP 67

Ignition class: EEx edq IIC T4

Housing: Zinc coated steel sheet, deep drawn, seamless

Gear tray: Zinc coated steel sheet

Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness

Diffuser: Clear polycarbonate reinforced

Electric: Flexible wiring, heat resistant up to 105° C; through wiring up to 16 A

Cable entry: 2 brass cable glands M 24 x 1.5 MGCG

Lamp base: Single pin Fa 6 according to IEC 61 - 1 Light sources (not included): 1-pin T 38 fluorescent lamp 20 W, 40 W

Mounting: 2 welded brackets with 2 mounting holes each, dia. 10.5 mm

EEx e照明器具、外付け 安全面に妥協は禁物です。何千回も実証済みで信頼できます。 使用分野:爆発の危険を伴う部屋、区域1 および2(EN 50014) 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 検査局:ブラウンシュヴァイク・ドイツ連邦物理工学研究所 PTB Zert. Nr. Ex-87/2184 (20W)、 Ex-87/2185 (40W) 保護形式: IP 67 発火保護形式: EEx edq IIC T4 本体: 亜鉛めっき薄鋼板、シームレスに深絞り

 配線シャシー:亜鉛めっき薄鋼板

 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm

 ランプ・カバー:溝入クリア・ポリカルボ

 ナート、特別強化タイプ

 電気設備:フレキシブルな電線、105℃まで

 耐熱、16Aまで供給網用電流通過型配線

 ケーブルの差込:M24x1.5 MGCGブラス製

 止めネジ2個

 ロ金:IEC 61-1に従う片口金ピンタイプFa 6

 ランプ(商品に含まれておりません。):

 20W、40WのT38ーピン蛍光灯

 取付:溶接持ち送り2本にそれぞれØ10.5mmの

Type / 種別		Part No. /ご注文品	番			
		110 V	127 V	220 V	240 V	254 V
2 x 20 W	50 Hz I.p.f.~	-	-	0278205000	0278221000	-
∎ 8.3 kg	50 Hz h.p.f.c~	-	-	0278206000	0278222000	-
🛿 101	60 Hz I.p.f.~	-	-	0278207000	0278223000	0278247000
	60 Hz h.p.f.c~	-	-	0278208000	0278224000	0278248000
1 x 40 W	50 Hz I.p.f.~	0278313000	0278337000	0278305000	0278321000	-
i 11.6 kg	50 Hz h.p.f.c~	0278314000	0278338000	0278306000	0278322000	-
64	60 Hz I.p.f.~	0278315000	0278339000	0278307000	0278323000	0278347000
	60 Hz h.p.f.c~	0278316000	0278340000	0278308000	0278324000	0278348000
2 x 40 W	50 Hz I.p.f.~	0278413000	0278437000	0278405000	0278421000	-
i 13.7 kg	50 Hz h.p.f.c~	0278414000	0278438000	0278406000	0278422000	-
3 79	60 Hz I.p.f.~	0278415000	0278439000	0278407000	0278423000	0278447000
	60 Hz h.p.f.c~	0278416000	0278440000	0278408000	0278424000	0278448000

Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves / 配光曲線 [1] 92-97







EEx e luminaire, surface

One of the few existing ex-proof luminaires with emergency power unit included.

Application: Hazardous areas zone 1 and 2, (EN 50014) **Design:** According to rules of maritime classifica-

tion societies, additional VDE and IEC / EN Approval authority: Physikalisch-Technische Bundesanstalt, Braunschweig

PTB cert. no. Ex-92.C.1023 (2x20 W), Ex-92.C.1025 (1x40 W), Ex-92.C.1026 (2x40 W)

Protection degree: IP 67

Ignition class: EEx edgm IIC T4

Housing: Zinc coated steel sheet, deep drawn, seamless

Gear tray: Zinc coated steel sheet

Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness **Diffuser:** Clear polycarbonate, reinforced **Electric:** Flexible wiring, heat resistant up to 105° C; integrated NiCd battery with ventilation, incorporated overloading protection, red LED for indication of batterie power: through wiring up to 16 A (not

of batterie power; through wiring up to 16 A (not for 2x20 W) **Emergency operation:** 1x20 W 90 minutes at 40%

luminous intensity / 1x40 W 60 minutes at 40% luminous intensity and +25° C

Charge time after full discharge: 24 hours **Cable entry:** 2 brass cable glands M 24 x 1.5 MGCG

Lamp base: Single pin Fa 6 according to IEC 61 - 1 Light sources (not included): 1-pin T 38 fluorescent lamp 20 W / 40 W Mounting: 2 welded brackets with 2 mounting holes each, dia. 10.5 mm

<u>EEx e照明器具、外付け</u>

非常用電流装置付きの数少ない防爆照明器具 使用分野:爆発の危険を伴う部屋、区域1 および 2 (EN 50014) <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 検査局:ブラウンシュヴァイク・ドイツ連邦 物理工学研究所 PTB Zert. Nr. Ex-92.C.1023 (2x20W)、 Ex-92.C.1025 (1x40W)、Ex-92.C.1026 (2x40W) 保護形式: IP 67 発火保護形式: EEx edqm IIC T4 本体:亜鉛めっき薄鋼板、シームレスに深絞り

配線シャシー:亜鉛めっき薄鋼板

<u>塗装</u>:白色紛体塗装RAL 9016、塗装厚70-80μm <u>ランプ・カバー</u>:溝入クリア・ポリカルボ ナート、特別強化タイプ

■気設備:フレキシブルな電線、105°Cまで 耐熱。ファン付きニカド電池内蔵、内蔵型過充電 防止機能、赤色LEDで電池の充電状態を表示、 16Aまで供給網用電流通過型配線(2x20Wは不可) 非常用電流使用可能時間:1x20W光度40%の 時なら90分/1x40W光度40%、気温25°Cの時 なら60分

最長の充電時間: 24時間

<u>ケーブルの差込</u>: M24x1.5 MGCGブラス製 止めネジ2個 <u>口金</u>: IEC 61-1に従う片口金ピンタイプFa 6 <u>ランプ(商品に含まれておりません。)</u>: 20W、40WのT38ーピン蛍光灯 取付:溶接持ち送り2本にそれぞれØ10.5mmの 留め穴2ヶ所

Type / 種別		Part No. /ご注文品番					
		110 V	127 V	220 V	240 V	250 V	
2 x 20 W	50 Hz h.p.f.c~	-	-	0248206000	0248222000	-	
i 9.0 kg 🛛 102	60 Hz h.p.f.c~	-	-	0248208000	0248224000	0248248000	
1 x 40 W	50 Hz h.p.f.c~	0248314000	0248338000	0248306000	0248322000	-	
🕯 14.0 kg 🛿 64	60 Hz h.p.f.c~	0248316000	0248340000	0248308000	0248324000	0248348000	
2 x 40 W	50 Hz h.p.f.c~	0248414000	0248438000	0248406000	0248422000	-	
i 15.0 kg 🛯 79	60 Hz h.p.f.c~	0248416000	0248440000	0248408000	0248424000	0248448000	

Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves / 配光曲線 [__] 92-97







Ex n luminaire, surface In hazardous areas there may be zones requiring only a reduced safety level. This is a luminaire especially for these zones. Application: Hazardous areas zone 2 Design: According to rules of maritime classification societies, additional VDE and IEC Approval authority: NEMKO, cert. no. Ex 95 Y 022 Protection degree: IP 44 / IP 67 Ignition class: Ex nA II T4 Housing: Zinc coated steel sheet, deep drawn, seamless Gear tray: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness **Diffuser:** Clear polycarbonate Electric: Flexible wiring, heat resistant up to 105° C; through wiring up to 16 A; removable gear tray with plug-in connector to the housing Cable entry: 2 plastic cable glands PG 16 Lamp base: G 13 Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W Mounting: 2 mounting holes, dia. 10 mm

Ex n照明器具、外付け 安全規定がない場合でも一定分野には低度の 安全性が要請されます。このタイプは特に そのために開発されました。 使用分野:爆発の危険を伴う部屋、区域2 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 検査局:NEMKO、Zert. Nr. Ex 95 Y 022 保護形式: IP 44/IP 67 発火保護形式:Ex nA Ⅱ T4 本体:亜鉛めっき薄鋼板、シームレスに深絞り 配線シャシー:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm <u>ランプ・カバー</u>:クリア・ポリカルボナート 電気設備:フレキシブルな電線、105°Cまで 耐熱、16Aまで供給網用電流通過型配線、本体 への差込接続付き取外し可能な配線シャシー ケーブルの差込: PG16合成樹脂製止めネジ2個 口金:G13 ランプ(商品に含まれておりません。):

<u>ンンン(周期に日本代でのうなこれ。)</u> 18/20W、36/40WのT26/T38蛍光灯 取付:Ø10mmの留め穴2ヶ所



Type / 種別		Part No. /ご注い	之品番			
		230 V	240 V			
1 x 18 W, IP 67	50 Hz h.p.f.c.~	1744006000				
🕯 4.7 kg 🖗 48	60 Hz h.p.f.c.~	1744008000	1744024000			
2 x 18 W, IP 67	50 Hz h.p.f.c.~	1744206000				
🕯 5.0 kg 🖗 49	60 Hz h.p.f.c.~	1744208000	1744224000			
1 x 36 W, IP 44	50 Hz h.p.f.c.~	1744306000				
i 6.1 kg 🖗 50	60 Hz h.p.f.c.~	1744308000	1744324000			
2 x 36 W, IP 44	50 Hz h.p.f.c.~	1744406000				
🕯 6.6 kg 🖗 51	60 Hz h.p.f.c.~	1744408000	1744424000			
Other voltages on	Other voltages on request / その他の電圧はお問い合わせください。					
Light distribution curv	es / 配光曲線 🛄 92-	97				







1744







EEx de - luminaire, surface

For supreme safety!

This luminaire will never ignite any ambient explosive atmosphere. Application: Hazardous areas zone 1 and 2, (EN50014) Design: According to rules of maritime classification societies, additional VDE and IEC / EN Approval authority: Physikalisch-Technische Bundesanstalt, Braunschweig PTB cert. no. Ex-91-96.D.1012 Protection degree: IP 65 Ignition class: EEx de IIB T5 Housing: Aluminium die-casting, seawater resistant, gear tray with cpl. electroinstallation removable Finish: Grey Diffuser: Safety glass, pressure tested up to 10 bar Electric: Flexible wiring, heat resistant up to 105° C Cable entry: 2 brass cable glands M 24 x 1.5 MGCG Lamp base: G 13 Light sources (included): T 26 fluorescent lamp 18 W / 36 W, white Mounting: 2 brackets with 1 mounting hole each, dia. 11 x 25 mm

<u>EEx de照明器具、外付け</u>

最高度の安全のために! この照明器具は周囲の爆発しうる気体を点火 しません。 <u>使用分野</u>:爆発の危険を伴う部屋、区域1 および2(EN 50014) <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 <u>検査局</u>:ブラウンシュヴァイク・ドイツ連邦 物理工学研究所 PTB Zert. Nr. Ex-91-96.D.1012 <u>保護形式</u>:IP 65 <u>発火保護形式</u>:EEx de IIB T5 <u>本体</u>:アルミニウム注入鋳造、耐塩害型。電気 配線全体が取外し可能な配線シャシー 塗装:グレー ランプ・カバー:安全ガラス、10バールまで 耐圧試験済み <u>電気設備</u>:フレキシブルな電線、105℃まで耐熱 <u>ケーブルの差込</u>:M24x1.5 MGCGブラス製 止めネジ2個 <u>□金</u>:G13 ランプ(商品に含まれております。): 18/36WのT26蛍光灯、白 取付:それぞれØ11x25mmの留め穴付き取付 金具2個

Type / 種別		Part No. / ご注文品番		
2 x 18 / 20 W	220 V, 50 Hz h.p.f.c.~	9700035700		
i 12.0 - 13.0 kg, 🖗 104	220 V, 60 Hz h.p.f.c.~	9700036100		
2 x 36 / 40 W	220 V, 50 Hz h.p.f.c.~	9700035800		
🕯 20.0 - 21.0 kg, 🖗 66	220 V, 60 Hz h.p.f.c.~	9700036200		
Other voltages on request / その他の電圧はお問い合わせください。				
Light distribution curves / 配光曲	線 🔲 92-97			





EEx d - luminaire, surface For supreme safety! This luminaire will never ignite any ambient explosive atmosphere. Application: Hazardous areas zone 1 and 2, (EN50014) Design: According to rules of maritime classification societies, additional VDE and IEC / EN Approval authority: Physikalisch-Technische Bundesanstalt, Braunschweig PTB cert. nos. PTB 01 ATEX 1073 and Ex-01.E.1074 Protection degree: IP 67 Ignition class: EEx d IIB T5 Ambient temperature: -20° C up to 40° C Housing: Stainless steel, seawater resistant, gear tray with cpl. electroinstallation removable **Diffuser:** Polycarbonate Electric: Flexible wiring, heat resistant up to 105° C; 2 m connection cable wired (3 x 1.5 mm²) Cable entry: 1 x Ex d Lamp base: 2G 11 Light sources (not included): TC-L fluorescent lamp 18 W Mounting: 2 fixing clamps: stainless steel or polycarbonate (not included) EEx d照明器具、外付け

最高度の安全のために! この照明器具は周囲の爆発しうる気体を点火 しません。 使用分野:爆発の危険を伴う部屋、区域1



および2(EN 50014)

仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 検査局:ブラウンシュヴァイク・ドイツ連邦

物理工学研究所

PTB Zert. Nrn. PTB 01 ATEX 1073および

Ex-01.E.1074

保護形式: IP 67

発火保護形式:EEx d IIB T5

周辺温度:マイナス20°Cから40°C

本体:ステンレス、耐塩害型。電気配線全体が 取外し可能な配線シャシー ランプ・カバー:ポリカルボナート <u>電気設備</u>:フレキシブルな電線、105°Cまで

耐熱、2mの接続ケーブルの配線済み(3x1.5mm2) ケーブルの差込:1xEx d 口金:2G11 ランプ(商品に含まれておりません。): 18WのTC-L蛍光灯 取付:ステンレスまたはポリカルボナート製取付 止め輪2個。(商品に含まれておりません。)

Type / 種別	Part No. / ご注文品番
1x 18W TC-L, 单 4.0 kg 🛛 164 230 V, 50 Hz h.p.f.c.~	0273805000
Other voltages on request / その他の電圧はお問い合わ	せください。
Light distribution curves / 配光曲線 🛄 92-97	

2. 1.



Spare Parts / *Extras - 補修パーツ、*付属品





Type / 種別		Part No. /ご注文品番			
		220 V	230 V	240 V	
1 x 250 W, HPS / MH	50 Hz I.p.f.~	-	1776005000	1776029000	
∎ 20.0 kg	50 Hz h.p.f.c.~	-	1776006000	1776030000	
	60 Hz I.p.f.~	1776007000	-	1776031000	
	60 Hz h.p.f.c.~	1776008000	-	1776032000	
1 x 250 W, HPS / MH	50 Hz I.p.f.~	-	1776009000	1776033000	
∎ 20.0 kg	50 Hz h.p.f.c.~	-	1776010000	1776034000	
	60 Hz I.p.f.~	1776011000	-	1776035000	
	60 Hz h.p.f.c.~	1776012000	-	1776036000	
1 x 400 W, HPS	50 Hz I.p.f.~	-	1776013000	1776037000	
∎ 21.0 kg	50 Hz h.p.f.c.~	-	1776014000	1776038000	
◎ 67, 26°	60 Hz I.p.f.~	1776015000	-	1776039000	
	60 Hz h.p.f.c.~	1776016000	-	1776040000	
1 x 400 W, HPS	50 Hz I.p.f.~	-	1776017000	1776041000	
∎ 21.0 kg	50 Hz h.p.f.c.~	-	1776018000	1776042000	
§ 68, 50°	60 Hz I.p.f.~	1776019000	-	1776043000	
	60 Hz h.p.f.c.~	1776020000	-	1776044000	
1 x 400 W, MH	50 Hz I.p.f.~	-	1776021000	1776045000	
∎ 21.0 kg	50 Hz h.p.f.c.~	-	1776022000	1776046000	
◎ 67, 26°	60 Hz I.p.f.~	1776023000	-	1776047000	
	60 Hz h.p.f.c.~	1776024000	-	1776048000	
1 x 400 W, MH	50 Hz I.p.f.~	-	1776025000	1776049000	
∎ 21.0 kg	50 Hz h.p.f.c.~	-	1776026000	1776050000	
	60 Hz I.p.f.~	1776027000	-	1776051000	
	60 Hz h.p.f.c.~	1776028000	-	1776052000	

Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves / 配光曲線 □ 192-97

Light distribution curves / 配元曲線 [__] 92-97



250 / 400 W

max. 400 W

Ex n floodlight with incorporated ballast for high pressure sodium (HPS) or metal halide (MH) lamps Floodlight and ballast in just one housing. Safe and proved "aqua signal" quality. Application: Hazardous areas zone 2 **Design:** According to international rules for zone 2 and to IEC 79-15 Approval authority: Physikalisch-Technische Bundesanstalt, Braunschweig PTB cert. no. Ex-97.Y.2602 X Protection degree: IP 67 Ignition class: Ex nR II T3 Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness Pane: Safety glass Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, exterior connection box with ignition unit, ballast incorporated Cable entry: Brass cable gland M 24 x 1.5 MGCG Lamp base: E 40 Light sources (not included): High pressure sodium (HPS), metal halide (MH) lamp Mounting: 2 adjustable brackets with 2 mounting holes each, dia. 14 mm 高圧ナトリウム灯または高圧ハロゲン・ ランプ用安定器内蔵型Ex nスポットライト スポットライトおよび安定器一体型。安全で 実証済みのアクア・シグナル高品質。 使用分野:爆発の危険を伴う部屋、区域2 仕様: IEC 79-15による区域2に関する国際規定 に対応 検査局:ブラウンシュヴァイク・ドイツ連邦 物理工学研究所 PTB Zert. Nr. Ex-97.Y.2602 X 保護形式: IP 67 発火保護形式:Ex nR II T3 本体:ステンレスをシームレスに深絞り 投光器:ポリッシュド・アルミニウム、アル マイト加工 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm <u>ランプ・カバー</u>:安全ガラス 電気設備:フレキシブルなシリコン電線、180°C まで耐熱、点灯装置付き外付け接続箱、安定器は 内蔵 ケーブルの差込: M24x1.5 MGCGブラス製 止めネジ 口金:E40 ランプ(商品に含まれておりません。): 高圧ナトリウム灯/高圧金属ハロゲン・ランプ 取付:それぞれØ14mmの留め穴2ヶ所付き調節

52 Guine Light for Ships / 船の照明

可能取付金具







Ex n floodlight for high pressure sodium (HPS) or metal halide (MH) lamps, separate ballast required

Small ex-proof floodlight requiring an external ballast. Depending on the type of ballast it may operate even two floodlights.

Application: Hazardous areas zone 2

Design: According to international rules for zone 2

and to IEC 79-15

Approval authority: Physikalisch-Technische Bun-Spare Parts / *Extras – 補修パーツ、*付属品

desanstalt, Braunschweig PTB cert. no. Ex-97.Y.2602 X Protection degree: IP 67 Ignition class: Ex nR II T3 Housing: Stainless steel deep drawn, seamless **Reflector:** Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 µm thickness Pane: Safety glass Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, exterior connection box Cable entry: Brass cable gland M 24 x 1.5 MGCG Lamp base: E 40 Light sources (not included): High pressure sodium (HPS), metal halide (MH) lamp Mounting: Adjustable bracket with 4 holes. dia. 10.5 / 14 mm Remark: Ballast unit has to be ordered separately

Remark: Ballast unit has to be ordered separately (see type no. 1527, \Box 58)

高圧ナトリウム灯または高圧ハロゲン・ラン プ用Ex nスポットライト、別途安定器必要 別個の安定器を取付けた小型元スポット ライト。安定器のタイプによってスポット ライトが最高2個使用可能。 使用分野:爆発の危険を伴う部屋、区域2 仕様: IEC 79-15による区域2に関する国際規定 に対応 検査局:ブラウンシュヴァイク・ドイツ連邦 物理工学研究所 PTB Zert. Nr. Ex-97.Y.2602 X 保護形式: IP 67 発火保護形式:Ex nR Ⅱ T3 本体:ステンレスをシームレスに深絞り <u>投光器</u>:ポリッシュド・アルミニウム、アル マイト加エ 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm <u>ランプ・カバー</u>:安全ガラス 電気設備:フレキシブルなシリコン電線、180°C まで耐熱。外付け接続箱 ケーブルの差込: M24x1.5 MGCGブラス製 止めネジ 口金:E40 ランプ(商品に含まれておりません。): 高圧ナトリウム灯/高圧金属ハロゲン・ランプ 取付:Ø10.5/14mmの留め穴2ヶ所付き調節可能 取付金具 備考:安定器は別途ご注文ください。

(Nr. 1527タイプ参照 Ⅲ58)

Type / 種別		Part No. / ご注文品番 220 / 240 V	
1 x 250 / 400 W	67, 26°	1776001000	
∎ 7.4 kg	◎ 68, 50°	1776002000	
Other voltages on request / その他の電圧はお問い合わせく			

Unter voltages on request / その他の電圧はの同い ロクセイルとので、 Light distribution curves / 配光曲線 []] 92-97







Halogen 500 w

Ex n - floodlight for halogen lamps Halogen technology makes the light shine the very moment power is on. Application: Hazardous areas zone 2

Design: According to international rules for zone 2 and to IEC 79-15

Approval authority: Physikalisch-Technische Bundesanstalt, Braunschweig

PTB cert. no. Ex-97.Y.2602 X Protection degree: IP 67

500 W

Ignition class: Ex nR II T3

Type / 種別

1 x 500 W,

∎ 8.2 kg

187 325

Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Pane: Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, exterior connection box **Cable entry:** Brass cable gland M 24 x 1.5 MGCG **Lamp base:** E 40

Light sources (not included): Halogen lamp 500 W

Mounting: Adjustable bracket with 4 mounting holes, dia. 10.5 / 14 mm

Remark: Use only lamps of following manufacturers: BLV, Philips, General Electric

69, 16°

370, 50°

Ø14 Ø10,5

🔹 🖂 💊

Light distribution curves / 配光曲線 🔲 92-97

Part No. / ご注文品番

120 / 220 V

20

-220

[mm]

1776073000

1776074000



<u>ハロゲン・ランプ用Ex nスポットライト</u> 電流並みに速い点灯。 <u>使用分野</u>:爆発の危険を伴う部屋、区域2 <u>仕様</u>:IEC 79-15による区域2に関する国際規定 に対応 <u>検査局</u>:ブラウンシュヴァイク・ドイツ連邦 物理工学研究所 PTB Zert. Nr. Ex-97.Y.2602 X <u>保護形式</u>:IP 67 <u>発火保護形式</u>:Ex nR II T3 <u>本体</u>:ステンレスをシームレスに深絞り <u>投光器</u>:ポリッシュド・アルミニウム、アル マイト加工

 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm

 ランプ・カバー:安全ガラス

 電気設備:フレキシブルなシリコン電線、180°C

 まで耐熱。外付け接続箱

 ケーブルの差込:M24x1.5 MGCGブラス製

 止めネジ

 口金:E40

 ランプ(商品に含まれておりません。):

 500Wのハロゲン・ランプ

 取付:Ø10.5/14mmの留め穴2ヶ所付き調節可能

 取付金具

 備考:下記のメーカーのランプのみご使用

 ください。BLV、Philips、General Electric







250 / 400 W

Ex n - floodlight for high pressure sodium (HPS) or metal halide (MH) lamps, separate ballast required

One housing, double amount of light. Application: Hazardous areas zone 2 **Design:** According to international rules for zone 2 and to IEC 79-15

Approval authority: Physikalisch-Technische Bundesanstalt, Braunschweig

PTB cert. no. Ex-97.Y.2602 X Protection degree: IP 67 Ignition class: Ex nR II T3 Housing: Stainless steel deep drawn, seamless Reflector: Highly polished aluminium, anodized Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness

Pane: Safety glass

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, 2 exterior connection boxes with 1 ignition unit each. Cable entry: 2 brass cable glands M 24 x 1.5 MGCG

Lamp base: E 40

Light sources (not included): High pressure sodium (HPS), metal halide (MH) lamp Mounting: 2 adjustable brackets with 2 mounting holes each, dia. 14 mm

Remark: Ballast unit has to be ordered separately (see type no. 1527, 🛄 58)

高圧ナトリウム灯または高圧ハロゲン・ラン プ用Exnスポットライト、別途安定器必要 本体1個で光2倍。 使用分野:爆発の危険を伴う部屋、区域2 仕様:IEC 79-15による区域2に関する国際規定 に対応 検査局:ブラウンシュヴァイク・ドイツ連邦 物理工学研究所 PTB Zert. Nr. Ex-97.Y.2602 X 保護形式: IP 67 発火保護形式:ExnRIIT3 本体:ステンレスをシームレスに深絞り 投光器:ポリッシュド・アルミニウム、アル マイト加工 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:安全ガラス 電気設備:フレキシブルなシリコン電線、180°C まで耐熱、点灯装置付き外付け接続箱二個 ケーブルの差込: M24x1.5 MGCGブラス製 止めネジ2個 口金:E40 ランプ(商品に含まれておりません。): 高圧ナトリウム灯/高圧金属ハロゲン・ランプ 取付:それぞれØ14mmの留め穴2ヶ所付き調節 可能取付金具 備考:安定器は別途ご注文ください。 (Nr. 1527タイプ参照 158)

	Type /種別		Part No. / ご注文品番 220 / 240 V
,	2 x 250 W,	[™] 71, 22°	1776060000
	∎ 13.0 kg	◎ 72, 38°	1776062000
	2 x 400 W,	◎ 71, 22°	1776064000
	∎ 13.0 kg	◎ 72, 38°	1776066000

Other voltages on request / その他の電圧はお問い合わせくだざざい。 Light distribution curves / 配光曲線 🛄 92-97











Ex n ballast unit for floodlights with high pressure sodium (HPS) and metal halide (MH) lamps

Robust and reliable ballasts for discharge light sources.

Application: Hazardous areas zone 2 Design: According to international rules for zone 2 and to IEC 79-15 Approval authority: Physikalisch-Technische Bundesanstalt, Braunschweig PTB cert. no. Ex-97Y.2603 X Protection degree: IP 67 Ignition class: Ex nR II T5 Housing and lid: Stainless steel deep drawn, seamless



Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness **Electric:** Flexible wiring, heat resistant up to 105° C **Cable entry:** 2 / 3 brass cable glands M 24 x 1.5 MGCG

Mounting: 2 welded brackets with 2 mounting holes each, dia. 10.5 mm Remark: Floodlight has to be ordered separately (see type no. 1776)

高圧ナトリウム灯または高圧ハロゲン・ラン プ使用のスポットライト用Ex n安定器

<u>塗装</u>:白色紛体塗装RAL 9016、塗装厚70-80µm <u>電気設備</u>:フレキシブルな電線、105℃まで耐熱 <u>ケーブルの差込</u>:M24x15 MGCGブラス製 止めネジ2/3個

<u>取付</u>:溶接持ち送り2本にそれぞれØ12mmの 留め穴2ヶ所

<u>備考</u>:スポットライトは別途ご注文ください。 (Nr. 1776タイプ参照)

Type / 種別		Part No. /ご注文品番		
		220 V	230 V	240 V
1 x 250 W	50 Hz I.p.f.~	-	1527001000	1527025000
HPS / MH	50 Hz h.p.f.c.~	-	1527002000	1527026000
i 7.5 kg	60 Hz I.p.f.~	1527003000	-	1527027000
	60 Hz h.p.f.c.~	1527004000	-	1527028000
2 x 250 W	50 Hz I.p.f.~	-	1527005000	1527029000
HPS / MH	50 Hz h.p.f.c.~	-	1527006000	1527030000
i 13.0 kg	60 Hz I.p.f.~	1527007000	-	1527031000
	60 Hz h.p.f.c.~	1527008000	-	1527032000
1 x 400 W	50 Hz I.p.f.~	-	1527009000	1527033000
HPS	50 Hz h.p.f.c.~	-	1527010000	1527034000
i 8.5 kg	60 Hz I.p.f.~	1527011000	-	1527035000
	60 Hz h.p.f.c.~	1527012000	-	1527036000
1 x 400 W	50 Hz I.p.f.~	-	1527017000	1527041000
МН	50 Hz h.p.f.c.~	-	1527018000	1527042000
i 8.5 kg	60 Hz I.p.f.~	1527019000	-	1527043000
	60 Hz h.p.f.c.~	1527020000	-	1527044000
2 x 400 W	50 Hz I.p.f.~	-	1527013000	1527037000
HPS	50 Hz h.p.f.c.~	-	1527014000	1527038000
i 15.0 kg	60 Hz I.p.f.~	1527015000	-	1527039000
	60 Hz h.p.f.c.~	1527016000	-	1527040000
2 x 400 W	50 Hz I.p.f.~	-	1527021000	1527045000
МН	50 Hz h.p.f.c.~	-	1527022000	1527046000
i 15.0 kg	60 Hz I.p.f.~	1527023000	-	1527047000
-	60 Hz h.p.f.c.~	1527024000	-	1527048000
Other volta	aes on request /	その他の電圧	はお問い合わせ	ナくだだおいい

Spare Parts / 補修パーツ	Part No. /ご注文品番
Clamp (5 pcs. cpl.) / 締め金(計5個)	9840095800

[mm]



Luminaires for accommodation and indoor areas

住宅と屋内の照明器具

Light for Ships / 船の照明 〇月17月2 59







Other voltages + electron. ballasts on request / その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [] 92-97

本体:亜鉛めっき薄鋼板

お問い合わせください。

塗装:白色紛体塗装RAL 9016、塗装厚70-80µm
 ランプ・カバー:乳白色ボリカルボナート
 電気設備:フレキシブルな電線、105℃まで耐熱
 ケーブルの差込:18/20W時最高Ø11mmの
 ケーブル用インレット3個、36/40W時最高
 Ø12.7mm
 口金:G13
 ランプ(商品に含まれておりません。):
 18/20W、36/40WのT26/T38蛍光灯
 取付:Ø5mmの留め穴4/6ヶ所
 備考:その他の保護形式および防火天井用仕様は



Ceiling luminaire, surface Especially flat family of lighting fixtures of excellent performance.

Application: Accommodation areas, public areas etc. Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 30 Housing: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Diffuser: Opal polycarbonate

Electric: Flexible wiring, heat resistant up to 105° C

Cable entry: 3 inlets for max. cable dia. 11 mm for 18 / 20 W; max. cable dia. 12.7 mm for 36 / 40 W **Lamp base:** G 13

Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W **Mounting:** 4 / 6 mounting holes, dia. 5 mm **Remark:** Other protection degrees and versions for ceilings with fire protection classes on request

天井照明器具、外付け

優れた摂取光量がある特に平らな照明 システム。

<u>使用分野</u>:居住スペースと社交室 <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 <u>保護形式</u>:IP 30





Type /種別		Part No. / ご注文品番
2 x 18 / 20 W, Tandem	230 V, 50 Hz I.p.f.~	0667101200
■2.7 kg ダンテム	230 V, 50 Hz h.p.f.c.~	0667102200
167	220 V, 60 Hz I.p.f.~	0667103200
	220 V, 60 Hz h.p.f.c.~	0667104200
2 x 18 / 20 W	230 V, 50 Hz I.p.f.~	0667201200
∎ 3.5 kg	230 V, 50 Hz h.p.f.c.~	0667202200
lefa 167	220 V, 60 Hz I.p.f.~	0667203200
	220 V, 60 Hz h.p.f.c.~	0667204200
2 x 36 / 40 W	230 V, 50 Hz I.p.f.~	0667401200
∎ 6.8 kg	230 V, 50 Hz h.p.f.c.~	0667402200
168	220 V, 60 Hz I.p.f.~	0667403200
	220 V, 60 Hz h.p.f.c.~	0667404200

Other voltages + electron. ballasts on request / その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [1] 92-97



Ceiling luminaire, recessed Especially flat family of lighting fixtures of excellent performance.

Application: Accommodation areas, public areas etc.Design: According to rules of maritime classification societies, additional VDE and IEC / ENProtection degree: IP 30Housing: Zinc coated steel sheetFinish: Powder coated white RAL 9016 andenamelled up to 70 - 80 µm thicknessDiffuser: Opal polycarbonateElectric: Flexible wiring, heat resistant up to 105° C



Cable entry: 4 inlets for max. cable dia. 12.7 mm Lamp base: G 13

Light sources (**not** included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W **Mounting:** 4 / 6 mounting holes, dia. 5 mm **Remark:** Other protection degrees and versions for ceilings with fire protection classes on request

天井照明器具、埋め込み

優れた摂取光量がある特に平らな照明 システム。 <u>使用分野</u>:居住スペースと社交室 <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 <u>保護形式</u>:IP 30 <u>本体</u>:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80μm
 ランプ・カバー:乳白色ポリカルボナート
 電気設備:フレキシブルな電線、105°Cまで耐熱
 ケーブルの差込:最高Ø12.7mmのケーブル用
 インレット4個
 口金:G13
 ランプ(商品に含まれておりません。):
 18/20W、36/40WのT26/T38蛍光灯
 取付:Ø5mmの留め穴4/6ヶ所
 備考:その他の保護形式および防火天井用仕様は
 お問い合わせください。











Ceiling luminaire, recessed and surface The solution for extremely narrow ceiling areas and for little rooms.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 30 Housing: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 µm thickness Diffuser: Opal polycarbonate

Electric: Flexible wiring, heat resistant up to 105° C Cable entry: 4 inlets for max. cable dia. 11 mm Lamp base: G 23 Light sources (not included): TC tubular compact fluorescent lamp 9 W Mounting: 4 mounting holes, dia. 5 mm

天井照明器具、埋め込みおよび外付け

特に小さい天井や狭い部屋のための。 使用分野:居住スペースとラウンジ 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 30 本体:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:乳白色ポリカルボナート 電気設備:フレキシブルな電線、105°Cまで耐熱 <u>ケーブルの差込</u>:最高Ø11mmケーブル用 インレット4個 口金:G23 ランプ(商品に含まれておりません。): 9WのTCコンパクト型蛍光灯

取付: Ø5mmの留め穴4ヶ所

Type /種別		Part No. / ご注文品番
2 x 9 W	230 V, 50 Hz I.p.f.~	1600901200
∎ 1.9 kg	230 V, 50 Hz h.p.f.c.~	1600902200
8	220 V, 60 Hz I.p.f.~	1600903200
	220 V, 60 Hz h.p.f.c.~	1600904000
Other veltages , electro	hallasta an request /	

その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [1] 92-97







Ceiling luminaire, surface Our all-round classic type. Application: Accommodation areas, passage ways Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 30 Housing: Zinc coated steel sheet, polycarbonate end caps white Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Diffuser: Opal polycarbonate, others on request Electric: Flexible wiring, heat resistant up to 105° C Cable entry: 4 inlets for max. cable dia. 11 mm Lamp base: G 13 Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W Mounting: 4 / 6 mounting holes, dia. 5 mm 天井照明器具、外付け 当社の実証済みクラッシック照明器具。 使用分野:居住スペース、通路 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 30 本体:亜鉛めっき薄鋼板、エンド・キャップは 白色ポリカルボナート 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm <u>ランプ・カバー</u>:乳白色ポリカルボナート、 その他はお問い合わせください。



<u>電気設備</u>:フレキシブルな電線、105℃まで耐熱 <u>ケーブルの差込</u>:最高Ø11mmケーブル用 インレット4個 <u>口金</u>:G13 <u>ランプ(商品に含まれておりません。)</u>: 18/20W、36/40WのT26/T38蛍光灯

<u>取付</u>:Ø5mmの留め穴4/6ヶ所

Type / 種別		Part No. / ご注文品番
2 x 18 / 20 W, <u>Tandem</u>	230 V, 50 Hz I.p.f.~	1113101000
■ 3.1 kg タンデム	230 V, 50 Hz h.p.f.c.~	1113102000
§ 7	220 V, 60 Hz I.p.f.~	1113103000
	220 V, 60 Hz h.p.f.c.~	1113104000
2 x 18 / 20 W	230 V, 50 Hz I.p.f.~	1113201000
i 3.9 kg	230 V, 50 Hz h.p.f.c.~	1113202000
§ 7	220 V, 60 Hz I.p.f.~	1113203000
	220 V, 60 Hz h.p.f.c.~	1113204000
2 x 36 / 40 W	230 V, 50 Hz I.p.f.~	1113401000
∎ 5.9 kg	230 V, 50 Hz h.p.f.c.~	1113402000
8	220 V, 60 Hz I.p.f.~	1113403000
	220 V 60 Hz h.p.f.c.~	1113404000

Other voltages + electron. ballasts on request / その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [__] 92-97



*Extras not included / * 付属品は商品に含まれておりません。

9840008700 (5 pcs. / 5個)



P 230 V G 13 G 13 230 V 18/20W 36/40W

Ceiling luminaire, recessed Installed flush with the surface in DAMPA T308 or DANACOUSTIC M300 continuously ceiling systems, with opal diffuser or louvre. **Application:** Accommodation areas, public areas, passage ways

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 20 **Housing:** Zinc coated steel sheet **Finish:** Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness **Diffuser:** ① - ④ see table Electric: Flexible wiring, heat resistant up to 105° C Cable entry: 2 rubber inlets Lamp base: G 13 Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W Mounting: Mounting brackets and siderails (1 set each) included Remark: Luminaires and mounting extras for other ceiling systems on request

天井照明器具、埋め込み

DAMPA社T308またはDANACOUSTIC社 M300のようなシステム天井にぴったり埋め 込み、乳白色カバーまたはルーバ付き。 使用分野:居住スペース、社交室および通路 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 20 本体:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー: ① - ④ は表を参照 電気設備:フレキシブルな電線、105°Cまで耐熱 ケー<u>ブルの差込</u>:ゴム製インレット2個 口金:G13 ランプ(商品に含まれておりません。): 18/20W、36/40WのT26/T38蛍光灯 取付:取付金具および側面レール(各1セット)は 商品に含まれております。 備考:照明器具およびその他の天井用照明 システム用埋め込み付属部品はお問い合わせ ください。



Type / 種別		Part No. /ご注文品番				
				Plastic louvre / 🗧	合成樹脂製ルーバ	
		1		2	3	4
		Plastic panel, 合成樹脂製 カバー、乳	opal/ 照明 白色	Batwing louvre / ルーバ	Small cell / ハチの巣状	Silver metallized / シルバーメタリック
2 x 18 / 20 W	230 V, 50 Hz h.p.f.c~	5070019000	12	5070017000	5070021000	5070023000
∎ 4.0 kg	230 V, 60 Hz h.p.f.c~	5070020000	12	5070018000	5070022000	5070024000
2 x 36 / 40 W	230 V, 50 Hz h.p.f.c~	5070027000	11	5070025000	5070029000	5070031000
∎ 7.2 kg	230 V, 60 Hz h.p.f.c~	5070028000	11	5070026000	5070030000	5070032000

Other voltages on request / その他の電圧はお問い合わせください。 Light distribution curves / 配光曲線 [__] 92-97





64





G 13

36 / 40 W



20

230 V 18/20W Ceiling luminaire, surface

The diffuser extending beyond the dimensions of the assembly plate creates the impression of a gap between fixture and ceiling. Several variants of diffusers.

Application: Accommodation areas, public areas, passage ways

Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20

Housing: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness **Diffuser:** ① - ④ see table Electric: Flexible wiring, heat resistant up to 105° C Cable entry: 2 rubber inlets Lamp base: G 13 Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W Mounting: 4 / 6 mounting holes, dia. 5.5 mm

天井照明器具、外付け

縁のデザインにより照明が天井から間隔を おいて取付けられているような印象が生じ ます。ランプ・カバーにはその他の仕様も ございます。

使用分野:居住スペース、社交室および通路 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応

保護形式: IP 20

本体:亜鉛めっき薄鋼板

塗装:白色紛体塗装RAL 9016、塗装厚70-80µm <u>ランプ・カバー</u>:①-④は表を参照 電気設備:フレキシブルな電線、105°Cまで耐熱 ケーブルの差込:ゴム製インレット2個

口金:G13

<u>ランプ(商品に含まれておりません。)</u>: 18/20W、36/40WのT26/T38蛍光灯 取付:Ø5.5mmの留め穴4/6ヶ所





Type / 種別		Part No. /ご注文品番				
					Plastic louvre / f	合成樹脂製ルーバ
		1		2	3	4
		Plastic panel, 合成樹脂製 カバー、乳	opal / 照明 白色	Batwing louvre / ルーバ	Small cell / ハチの巣状	Silver metallized / シルバーメタリック
2 x 18 / 20 W	230 V, 50 Hz h.p.f.c~	5070003000	12	5070001000	5070005000	5070007000
∎ 4.0 kg	230 V, 60 Hz h.p.f.c~	5070004000	12	5070002000	5070006000	5070008000
2 x 36 / 40 W	230 V, 50 Hz h.p.f.c~	5070011000	11	5070009000	5070013000	5070015000
i 7.2 kg	230 V, 60 Hz h.p.f.c~	5070012000	11	5070010000	5070014000	5070016000

Other voltages on request / その他の電圧はお問い合わせください。

Light distribution curves / 配光曲線 🛄 92-97









Ceiling luminaire, recessed

The modifiable! Find your execution yourself by composing optionals and variants to your convenience. E.g.: Twin-compartment system for white and red light (important for bridge to maintain night vision), 2 circuits, lampholder E14 or B15 for emergency lamp, coloured louvres of plastic or metal, etc.

Application: Wheel houses, accommodation areas, public areas etc.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20

Housing: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and

enamelled up to 70 - 80 μm thickness Louvre: White plastic Electric: Flexible wiring, heat resistant up to 105° C

Cable entry: 4 inlets for max. cable dia. 11 mm Lamp base: G 13

Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W Mounting: 4 / 8 mounting holes, dia. 7 mm

天井照明器具、埋め込み

これこそフレキシブル!付属部品およびバリ エーションでオリジナルの仕様を定めます。 例えば、白色および赤色の照明用二室シス テム(目が慣れるまでの橋渡しにとり重要)、 2電流回路、非常電流用口金E14またはB15、

カラー合成樹脂および金属ルーバ等。
使用分野:船橋、室内および社交分野(施設、
宴会場)
<u>仕様</u> :船級協会の規定ならびにVDEおよび
IEC/ENの規定に対応
<u>保護形式</u> :IP 20
本体:亜鉛めっき薄鋼板

塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー: 白色合成樹脂ルーバ

Devit No. /

Type /種別		ご注文品番			
1 x 18/20 W	230 V, 50 Hz I.p.f.~	1227001000			
∎ 3.7 kg	230 V, 50 Hz h.p.f.c.~	1227002000			
85	220 V, 60 Hz I.p.f.~	1227003000			
	220 V, 60 Hz h.p.f.c.~	1227004000			
2 x 18 / 20 W, Tandem	230 V, 50 Hz I.p.f.~	1227101000			
∎ 5.0 kg タンデム	230 V, 50 Hz h.p.f.c.~	1227102000			
13	220 V, 60 Hz I.p.f.~	1227103000			
	220 V, 60 Hz h.p.f.c.~	1227104000			
2 x 18 / 20 W	230 V, 50 Hz I.p.f.~	1227201000			
∎ 5.6 kg	230 V, 50 Hz h.p.f.c.~	1227202000			
13	220 V, 60 Hz I.p.f.~	1227203000			
	220 V, 60 Hz h.p.f.c.~	1227204000			
1 x 36 / 40 W	230 V, 50 Hz I.p.f.~	1227301000			
∎ 6.2 kg	230 V, 50 Hz h.p.f.c.~	1227302000			
80	220 V, 60 Hz I.p.f.~	1227303000			
	220 V, 60 Hz h.p.f.c.~	1227304000			
2 x 36 / 40 W	230 V, 50 Hz I.p.f.~	1227401000			
∎ 7.0 kg	230 V, 50 Hz h.p.f.c.~	1227402000			
14	220 V, 60 Hz I.p.f.~	1227403000			
	220 V, 60 Hz h.p.f.c.~	1227404000			
Other voltages + electron, hallasts on request /					

その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 []] 92-93

電気設備:フレキシブルな電線、105℃まで耐熱 ケーブルの差込:最高Ø11mmケーブル用 インレット4個 口金:G13 ランプ(商品に含まれておりません。): 18/20W、36/40WのT26/T38蛍光灯 取付: Ø7mmの留め穴4/8ヶ所









Samples of possible *louvres / *ルーバの実例



Aluminium white / ホワイト・アルミニウム



Aluminium black /ブラック・アルミニウム



1227

Aluminium silver / シルバー・アルミニウム





Cornice luminaire, surface

From the corner with high performance and no allowances! Emergency lamp and diffusers with relief surface available as optionals. Application: Accommodation areas, passage ways Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 30

Housing: Zinc coated steel sheet, polycarbonate end caps white

Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness **Diffuser:** Opal polycarbonate, others on request **Electric:** Flexible wiring, heat resistant up to 105° C **Cable entry:** 4 inlets for max. cable dia. 11 mm **Lamp base:** G 13

Light sources (not included): T 26 / T 38 fluorescent lamp 18 / 20 W, 36 / 40 W Mounting: 4 mounting holes, dia. 5 mm

天井照明器具、外付け

隅から高性能で妥協なし!非常用照明組込み 可能、模様入りランプ・カバーはオプ ション。 使用分野:居住スペース、通路 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 30 本体:亜鉛めっき薄鋼板、エンド・キャップは 白色ポリカルボナート 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:乳白色ポリカルボナート、 その他はお問い合わせください。 電気設備:フレキシブルな電線、105°Cまで耐熱 <u>ケーブルの差込</u>:最高Ø11mmケーブル用 インレット4個 口金:G13 ランプ(商品に含まれておりません。): 18/20W、36/40WのT26/T38蛍光灯 取付: Ø5mmの留め穴4ヶ所

Type /種別		Part No. / ご注文品番
1 x 18 / 20 W	230 V, 50 Hz I.p.f.~	1133001200
∎ 3.1 kg	230 V, 50 Hz h.p.f.c.~	1133002200
15	220 V, 60 Hz I.p.f.~	1133003200
	220 V, 60 Hz h.p.f.c.~	1133004200
2 x 18 / 20 W	230 V, 50 Hz I.p.f.~	1133101200
Tandem /タンデム	230 V, 50 Hz h.p.f.c.~	1133102200
∎ 3.6 kg	220 V, 60 Hz I.p.f.~	1133103000
16	220 V, 60 Hz h.p.f.c.~	1133104200
2 x 18 / 20 W	230 V, 50 Hz I.p.f.~	1133201200
i 4.2 kg	230 V, 50 Hz h.p.f.c.~	1133202200
16	220 V, 60 Hz I.p.f.~	1133203000
	220 V, 60 Hz h.p.f.c.~	1133204200
1 x 36 / 40 W	230 V, 50 Hz I.p.f.~	1133301200
∎ 4.4 kg	230 V, 50 Hz h.p.f.c.~	1133302200
l 17	220 V, 60 Hz I.p.f.~	1133303200
	220 V, 60 Hz h.p.f.c.~	1133304200
2 x 36 / 40 W	230 V, 50 Hz I.p.f.~	1133401200
∎ 5.0 kg	230 V, 50 Hz h.p.f.c.~	1133402200
18	220 V, 60 Hz I.p.f.~	1133403200
	220 V, 60 Hz h.p.f.c.~	1133404200

Other voltages + electron. ballasts on request / その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [__] 92-97






Type 1814 for TC tubular compact fluorescent lamp 5 - 11 W, lamp base G 23

1814

5-11Wのコンパクト型蛍光灯用は1814タイプ、 口金はG23



Batten luminaire The classic type! Solid, rigid, efficient, suitable to be installed in series. Application: Accommodation areas Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20 Housing: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and enamelled up to 70 - 80 μm thickness Electric: Flexible wiring, heat resistant up to 105° C Cable entry: Opening on rear side, dia. 17x39 mm Lamp base: G 13. Light sources (not included):



帯状照明器具

クラッシック照明器具!安定し、堅牢で、 機能的、光の帯状取付に適しています。 使用分野:居住スペース 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 20 本体:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm 電気設備:フレキシブルな電線、105°Cまで耐熱 ケーブルの差込:裏面にØ17x39mmの開口部 口金:G13 ランプ(商品に含まれておりません。): 18/30/36WのT26蛍光灯 取付: Ø10mmの留め穴2ヶ所



[mm]



Recessed fixture of flat size. Frame of polished

Application: Accommodation areas, shower rooms,

Design: According to rules of maritime classifica-

Electric: Flexible wiring, heat resistant up to 105° C

Cable entry: 2 inlets for max. cable dia. 11 mm

Light sources (not included): Incandescent lamp

60 W (type 1402) / TC tubular compact fluorescent

tion societies, additional VDE and IEC / EN

stainless steel (brass or chromium plated on

Ceiling luminaire, recessed

request).

wash rooms, toilets

Protection degree: IP 44

Housing: Zinc coated steel sheet Finish: Powder coated white RAL 9016 and

Diffuser: Opal polycarbonate

Lamp base: E 27 / B 22 / G 23

lamp 9 W (type 1282)

enamelled up to 70 - 80 µm thickness

Mounting: 4 mounting holes, dia. 4 mm

天井照明器具、埋め込み

埋め込み寸法の小さい埋め込み型照明器具。 可視フレームはポリッシュド・ステンレス (ブラスまたはクロームめっきはお問い合わせ ください)。 使用分野:居住スペースと 衛生設備 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 44 本体:亜鉛めっき薄鋼板 塗装:白色紛体塗装RAL 9016、塗装厚70-80µm ランプ・カバー:乳白色ポリカルボナート 電気設備:フレキシブルな電線、105°Cまで耐熱 ケーブルの差込:最高Ø11mmのケーブル用 インレット2個 口金:E27/B22/G23 ランプ(商品に含まれておりません。): 60Wの白熱ランプ(1402タイプ)/9Wコンパクト型 蛍光灯(1282タイプ) 取付: Ø4mmの留め穴4ヶ所

 Type / 種別
 Part No. / 二注文品番

 1 x 60 W, max. 250 V IP 44, i 0.90 kg 월25
 E 27
 1402150000

 2 x 9 W TC
 230 V, 50 Hz
 1.p.f.-*
 1282701000

 IP 54, i 0.90 kg 월84
 220 V, 60 Hz
 1.p.f.-*
 1282701000

 Other voltages + electron. balasts on request / その他の電圧および電子安定器はお問い合わせください。
 * h.p.f.c. (high power factor correction) not possible / h.p.f.c. Ard
 * h.p.f.c. (high power factor correction) not possible / h.p.f.c.

Light distribution curves / 配光曲線 [1] 92-97



Spare Parts / *Extras - 補修パーツ、*付属品 Ø 252 Ø 215 0 0 ļ ł 65 0 35 * 126 - 128 200 Type / 種別 1402 E27 **9840034500** (5 pcs. / 5個) B22 **9840084800** 252 (5 pcs. / 5個) Type / 種別 1282 G23 **9840052500** (2 pcs. / 2個) 9840068000 Maintenance envelope / 整備空間 [mm] *Extras not included / * 付属品は商品に含まれておりません。



 IP
 220 V
 G 5
 G 13

 44
 230 V
 Image: Wight of the second
Mirror luminaire, surface Mirror lamps of many versions! May also be installed above mirror cabinets. Application: Accommodation areas, shower rooms,

> wash rooms, toilets **Design:** According to rules of maritime classifica-

tion societies, additional VDE and IEC / EN **Protection degree:** IP 44, with universal socket IP 23 **Housing:** Zinc coated steel sheet, polycarbonate end caps white **Finish:** Powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness **Diffuser:** Opal polycarbonate **Electric:** Flexible wiring, heat resistant up to 105° C **Cable entry:** 2 inlets for max. cable dia. 11 mm **Lamp base:** G 5 / G 13 **Light sources (not included):** T 16 / T 26 / T 38 fluorescent lamp 8 / 15 / 18 / 20 / 30 / 36 / 40 W **Mounting:** 4 / 6 mounting holes, dia. 4.8 mm

鏡用照明器具、外付け

多種バリエーションのある鏡用照明器具。 鏡台の上にも取付可能!

<u>使用分野</u>:居住スペースと 衛生設備 <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応

<u>保護形式</u>: IP 44、万能コンセント付きの場合 IP 23

<u>本体</u>:亜鉛めっき薄鋼板、エンド・キャップは 白色ポリカルボナート

<u>塗装</u>:白色紛体塗装RAL 9016、塗装厚70-80µm <u>ランプ・カバー</u>:乳白色ポリカルボナート <u>電気設備</u>:フレキシブルな電線、105℃まで耐熱 <u>ケーブルの差込</u>:最高Ø11mmのケーブル用 インレット2個

口金:G5/G13

Type /種別

1 x 8 W

<u>ランプ(商品に含まれておりません。)</u>: 8/15/18/20/30/36/40WのT16/T26/T38蛍光灯 取付:Ø4.8mmの留め穴4/6ヶ所

230 V, 50 Hz I.p.f.~*

Part No. / ご注文品番

1166401200



1166403200 🕯 1.6 kg 🖗 29 220 V, 60 Hz I.p.f.~* Tandem タンデム 230 V, 50 Hz I.p.f.~* 1166601200 2 x 8 W i 1.6 kg 🛛 32 220 V, 60 Hz I.p.f.~* 1166603200 1 x 15 W 1166001200 230 V. 50 Hz l.p.f.~ i 2.2 kg 230 V, 50 Hz h.p.f.c. 1166002200 27 1166003200 220 V. 60 Hz I.p.f.~ 220 V, 60 Hz h.p.f.c.~ 1166004200 1 x 18 / 20 W 230 V. 50 Hz l.p.f.~ 1166201200 i 2.3 kg 230 V, 50 Hz h.p.f.c.~ 1166202200 1166203200 28 220 V. 60 Hz l.p.f.~ 1166204200 220 V, 60 Hz h.p.f.c.~ 1 x 30 W 230 V. 50 Hz l.p.f.~ 1166801200 **i** 3.6 kg 1166802200 230 V, 50 Hz h.p.f.c. 31 1166803200 220 V, 60 Hz l.p.f.~ 1166804200 220 V, 60 Hz h.p.f.c.~ 1 x 36 / 40 W 230 V, 50 Hz I.p.f.~ 1166901200 **i** 4.3 kg 230 V, 50 Hz h.p.f.c. 1166902200 30 220 V, 60 Hz I.p.f.~ 1166903200 220 V, 60 Hz h.p.f.c.~ 1166904200

Other voltages + electron. ballasts on request / その他の電圧および電子安定器はお問い合わせください。 * h.p.f.c (high power factor correction) not possible / h.p.f.c不可 **h.p.f.c. only possible without isolating transformer / h.p.f.c 変圧器の不使用時のみ可

Light distribution curves / 配光曲線 🛄 92-97

[mm]

74 〇二四二 Light for Ships / 船の照明

X

Maintenance envelope / 整備空間





1-way u.p. switch, if 44			
Part No. /ご注文品番	*Extra / *付属品	Spare Parts /補修パーッ (5 pcs. / 5 個)	
*cpl. / 言十	VE 10	•	
End cap /エンド・キャップ		9840006200	
Socket/コンセント			
Switch /スイッチ		9840008500	
Transformer /絶縁変圧器			

*Extra / *付属品

VE 11

2.6

selector switch, isolating trans-former with resetable cut-out and un Part N *cpl./1

Schuko-type socket, IP 44

End cap /エンド・キャッフ

Transformer /絶縁変圧器

Socket /コンセント

Switch / スイッチ

*cpl./言+

Tran

End cap Socket Switch Transfo

二極on/offスイッチ、 230V/120V電圧切替器、 過負荷保護機能付き絶縁変圧器、

二極安全コンセント、IP 44

9840078000

9840010900

iiversal socket, IP 23 方能コンセント、IP 23				
lo./ご注文品番	*Extra / *付属品	Spare Parts /補修パーツ (5 pcs. / 5個)		
+	VE 14	-		
/エンド・キャップ		9840077800		
コンセント		9840002800		
スイッチ		9840008500		
rmer /絶縁変圧器		9840044600		

Part No. / ご注文品番 |*Extra /*付属品 | Spare Parts /補修パー (5 pcs. / 5個)

VE 15





Switch / スイッチ		-
Transformer /絶縁変圧器		9840044600
1-way d.p. switch, isolat transformer with reseta out and universal sock and 230 V, IP 23	ting 二極on/off ible cut- 過負荷保 iet, 120 V 230Vおよ IP 23	、 マイッチ、 蔓機能付き絶縁変圧器、 び120V万能コンセント、
Part No. /ご注文品番	*Extra / *付属品	Spare Parts /補修パーツ (5 pcs. / 5個)
*cpl. / 言十	VE 12	-
End cap エンド・キャップ		9840077800
Socket /コンセント		9840077700

End cap /エンド・キャップ		9840077800
Socket /コンセント		9840077700
Switch /スイッチ		9840008500
Transformer 絶縁変圧器		9840044600
120 V / 230 V selector switch,	230V/120	√電圧切替器、

120 V / 230 V selector switch, isolating transformer with re-setable cut-out and universal socket, IP 23

Isolating transformer with reset-able cut-out and universal socket, 120 V and 230 V, IP 23

Part No. /ご注文品番

End cap /エンド・キャップ

Socket/コンセント

*cpl. / 言+

Swi

過負荷保護機能付き絶縁変圧器、 万能コンセント、IP 23

絶縁変圧器は過負荷保護機能付き、

ご # & 圧 簡は 過 貝 何 保 濃 機 能 付 き、 230 V お よ び 120 V 万 能 コ ン セ ン ト、 IP 23

Spare Parts /補修パーツ (5 pcs. / 5個)

9840077600

9840077700

Part No. /ご注文品番	*Extra / *付属品	Spare Parts /補修/パーツ (5 pcs. / 5個)
*cpl. /計	VE 13	-
End cap /エンド・キャップ		9840077600
Socket /コンセント		9840002800
Switch /スイッチ		-
Transformer 絶縁変圧器		9840044600



Other variations on request / その他のタイプはお問い合わせください。

1-way d.p. switch, Schuko-type socket, IP 44	ニ極on/offスイッチ、 ニ極安全コンセント、IP 44
IP 44	

Part No. /ご注文品番	*Extra / *付属品	Spare Parts /補修パーツ (5 pcs. / 5個)
*cpl./計	VE 16	•
End cap /エンド・キャップ		9840078100
Socket /コンセント		9840010900
Switch / スイッチ		9840008500
Transformer /絶縁変圧器		-



Application: Accommodation areas, public areas etc.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 20

Housing: Zinc coated steel sheet, deep drawn Reflector / Fascia: Higly polished aluminium anodized in gold or silver

Electric: Flexible wiring, heat resistant up to 105° C **Cable entry:** 2 plastic cable inlets with traction relief for max. cable dia. 10.5 mm **Lamp base:** G 23 Light sources (not included): TC tubular compact fluorescent lamp 7 W Mounting: No tools required, three fixing clips for ceiling thickness of 0.7 - 30 mm Remark: Versions for ceilings with fire protection classes on request

省エネランプ用ダウン・ライト 節電筒状コンパクト型蛍光灯用豪華版。 小さい埋め込み寸法、多種電子付属部品、 投光器各種取揃え,カバー・リングおよび ブラインド・リング 使用分野:居住スペースと社交室 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 20 本体:亜鉛めっき薄鋼板、シームレスに深絞り <u>投光器/カバー・リング</u>:ポリッシュド・アルミ ニウム、金色または銀色アルマイト加工 電気設備:フレキシブルな電線、105°Cまで耐熱 ケー ─ブルの差込:最高Ø10.5mmのケーブル用 引張荷重軽減機能付き合成樹脂製ケーブル差込 2個

210

<u>口金</u>:G23 <u>ランプ(商品に含まれておりません。)</u>: 7Wのコンパクト型蛍光灯 <u>取付</u>:工具は使わずに留め金3個でとめる。 0.7-30mmの天井厚用

<u>備考</u>:防火天井用タイプはお問い合わせ ください。







Type / 種別		Part No. /ご	Part No. /ご注文品番		
		g	old /金色	sil	ver/銀色
2 x 7 W	230 V, 50 Hz h.p.f.c. ~	240	0240201003	39	0240201002
∎ 1.0 kg	220 V, 60 Hz h.p.f.c. ~	220 V, 60 Hz h.p.f.c. ~ 🛛 40 0240202004 🖓 39 024020		0240202003	
Other violtages , electron, halleste on request /その他の電圧おとび電子中空間はお問い合わせください					

Other voltages + electron. ballasts on request /その他の電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線[___] 92-97

Spare Parts /補修パーツ	Part No. / ご注文品番
Reflector gold /投光器は金色	9840002700
Reflector silver /投光器は銀色 r	9840014600
Fascia gold /カバー・リングは金色	9840051800
Fascia silver /カバー・リングは銀色	9840057200





Halogen downlights

Design and materials of these top quality downlights are underlined by the light source being displaced upwards.

Application: Accommodation areas, public areas etc.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20

Housing: Zinc coated steel sheet, deep drawn, seamless

Reflector / Fascia: Higly polished aluminium anodized in gold or silver

Electric: Flexible wiring, heat resistant up to 105° C Lamp base: GZ 4 (type 0647); GU 5.3 / GX 5.3 (type 0648)

Light sources (not included): Cool beam reflector halogen lamp 12 V, 20 - 35 / 50 W

Mounting: No tools required, fixing springs for ceiling thickness of 1 - 20 mm

Remark: Version with mounted transformer unit and decorative variations on request

ハロゲン・ダウンライト

高品質のダウンライトのデザインおよび 材料が表面に飛出さないランプにより強調 されます。 使用分野:居住スペースと社交室

仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応

保護形式: IP 20

本体:亜鉛めっき薄鋼板、シームレスに深絞り <u>投光器/カバー・リ</u>ング:ポリッシュド・アルミ ニウム、金色または銀色アルマイト加工 電気設備:フレキシブルな電線、105℃まで耐熱 口金: GZ4 (0647タイプ)、GU5.3/GX5.3

(0648タイプ)

ランプ(商品に含まれておりません。): 12V、20-35/5Wのクール・ビーム・ランプ 取付:工具は使わずに留めばねでとめる。 1-20mmの天井厚用

備考:変圧器付きおよびその他の装飾仕様は お問い合わせください。



12 -ffh ióċ Ø 88 Mounting envelope / 取付用の空間 [mm]



Spare I	Parts /補修パーツ	Part No. / ご注文品番
1-2	Reflector gold /投光器は金色	9840093000
	Reflector silver /投光器は銀色	9840095400
	Fascia gold /カバー・リングは金色	9840092900
	Fascia silver /カバー・リングは銀色	9840095500
3-6	Reflector gold /投光器は金色	9840093200
	Reflector silver /投光器は銀色	9840093500
	Reflector gold cpl. for wallwasher / 壁照明用投光器は金色	9840093300
	Reflector silver cpl. for wallwasher / 壁照明用投光器は銀色	9840095900
	Fascia gold / カバー・リングは金色	9840093100
	Fascia silver /カバー・リングは銀色	9840093400





Type / 種別		Part No. /ご注い	之品番	1	
		With r 投光	eflector / 5器付き	30° revolvin ビーム角:	g wallwasher / 30°の壁照明
Dia. / Ø 88 mm GZ4	1 x 20 - 35 W, 12 V gold /金色	1 292	0647102000		
∎ 0.2 kg	1 x 20 - 35 W, 12 V silver /銀色	2 🛛 93	0647202000		
Dia. / Ø 110 mm GU 5.3 / GX 5.3	1 x 20 - 50 W, 12 V gold /金色	3 🛙 35	0648101000	5 36	0648111000
∎ 0.4 kg	1 x 20 - 50 W, 12 V silver / 銀色	④ 37	0648201000	6 🛿 38	0648211000
Other voltages on requ	act / その他の雪圧けお問い合わせください				

竜圧はお向い合わせくたさい。

Light distribution curves / 配光曲線 [__] 92-97













Downlight for incandescent lamps Downlight for international common incandescent lamps. Brightness control by simplest dimmers.

Application: Accommodation areas, public areas etc.

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 20

Housing: Zinc coated steel sheet, deep drawn Reflector / Fascia: Higly polished aluminium, anodized in gold or silver

Electric: Flexible wiring, heat resistant up to 105° C **Cable entry:** 2 plastic cable inlets with traction relief for max. cable dia. 10.5 mm

Lamp base: E27

Light sources (not included): Incandescent lamp max. 100 W

Mounting: No tools required, three fixing clips for ceiling thickness of 0.5 - 35 mm **Remark:** Variants for PAR 30-38 or E 26 lamps on

request

<u>万能白熱ランプ用ダウンライト</u> 国際的に広く用いられている万能ランプ用 ダウンライト。簡単な調光器で明度制御。 <u>使用分野</u>:居住スペースと社交室 <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 20 <u>本体</u>:亜鉛めっき薄鋼板、シームレスに深絞り 投光器/カバー・リング:ポリッシュド・アルミ ニウム、金色または銀色アルマイト加工 電気設備:フレキシブルな電線、105℃まで耐熱 ケーブルの差込:最高Ø10.5mmのケーブル用 引張荷重軽減機能付き合成樹脂製ケーブル差込 2個

<u>口金</u>:E27

<u>ランプ(商品に含まれておりません。)</u>: 最高100Wの万能ランプ

<u>取付</u>:埋め込みは工具を使わずに留め金3個で とめる。0.5-35mmの天井厚用

備考:PAR30-38用のその他仕様またはE26

ランプはお問い合わせください。

Type /種別			Part No. / ご注文品番 250 V
1 x max. 100 W, E 27	gold /金色	110	1450002011
∎ 1.2 kg	silver / 銀色	111	1450002010
Light distribution curves / 配头	光曲線 🛄 92-97		

Spare Parts /補修パーツ	Part No. / ご注文品番
Reflector gold /投光器は金色	9840057800
Reflector silver /投光器は銀色 r	9840092700
Fascia gold /カバー・リングは金色	9840051800
Fascia silver /カバー・リングは銀色	9840057200









Halogen downlights

Downlights for highest expectations! Peak quality in design, materials, variety, efficiency, and safety. Easy to install. Available also in a flame proof version as per B0.

Application: Accommodation areas, public areas etc. Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20

Housing: Zinc coated steel sheet, deep drawn Reflector / Fascia: Higly polished aluminium, anodized in gold or silver

Electric: Flexible wiring, heat resistant up to 105° C

Cable entry: Opening in connection box **Lamp base:** E27. **Light sources (not included):** Pressed glass halogen reflector lamp PAR 20 **Mounting:** No tools required, three fixing springs for ceiling thickness of 0.5 - 20 mm

<u>ハロゲン・ダウンライト</u>

最高級のダウンライト!デザイン、材料、多 様性、機能性、安全性および取付容易性の全 ての面で高品質、防火仕様のB0も納品可能。 使用分野:居住スペースと社交室 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 20 本体:亜鉛めっき薄鋼板、シームレスに深絞り

<u>投光器/カバー・リング</u>:ポリッシュド・アルミ

ニウム、金色または銀色アルマイト加工 電気設備:フレキシブルな電線、105°Cまで耐熱 <u>ケーブルの差込</u>:接続箱に開口部

口金:E27

<u>ランプ(商品に含まれておりません。)</u>: プレスドガラス製ハロゲン・ビーム・ランプ PAR20

<u>取付</u>:埋め込みは工具を使わずに留めばね3個で とめる。0.5-20mmの天井厚用

Type / 種別			Part No. / ご注文品番 250 V
1 x 50 W, E 27, PAR 20	gold / 金色	865	1410007005
∎ 0.5 kg	silver / 銀色	81	1410007004
Light distribution curves / 配光	曲線 🔲 92-97		





Spare Parts /補修パーツ	Part No. / ご注文品番
Reflector gold /投光器は金色	9840002600
Reflector silver /投光器は銀色 r	9840016300
Fascia gold /カバー・リングは金色	9840002500
Fascia silver /カバー・リングは銀色	9840092800





Type / 種別		Part No. /ご注文品番			
		E 14	B 15	E 27	B 22
① 1 x 15 W, max. 250 V, i 0.22 kg 🛛 26	Stainless steel /ステンレス	1304001000	1304003000	-	-
② 1 x 15 W, max. 250 V, i 0.26 kg 39	Stainless steel /ステンレス	1303001000	1303003000	-	-
③ 1 x 15 W, max. 250 V, 🌢 0.43 kg 🖗 90	Steel sheet /薄鋼板	-	-	1306002000	1306004000
Light distribution curves / 配光曲線 「「」 92-97					



Emergency luminaire, surface Our tiniest types for emergency lighting ! Stainless steel, galvanized steel sheet, available in 99 RAL colours.

Application: Accommodation areas, public areas, passage ways

Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 30

Housing: Stainless steel (type 1303 / 04) / zinc coated steel sheet (type 1306) Finish: Steel sheet version powder coated white RAL 9016 and enamelled up to 70 - 80 μ m thickness. Diffuser: Opal polycarbonate Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C Cable entry: Knockout opening / 2 inlets Lamp base: E 14 / B 15 / E 27 / B 22 Light sources (not included): Tubular incandescent lamp 15 W Mounting: 2 / 3 mounting holes, dia. 4.5 / 5 mm

非常用照明器具、外付け

ミニ非常用照明器具!ステンレス、亜鉛 めっき薄鋼板、99色のRALカラー可能。 使用分野:居住スペース、社交室および通路 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応

<u>保護形式</u>:IP 30

本体:ステンレス、亜鉛めっき薄鋼板

<u>塗装</u>:薄鋼板仕様白色紛体塗装RAL 9016、 塗装厚70-80µm

<u>ランプ・カバー</u>:乳白色ポリカルボナート <u>電気設備</u>:フレキシブルなシリコン電線、180℃ まで耐熱

<u>ケーブルの差込</u>:開穴部/インレット2個

<u>口金</u>:E14/B15/E27/B22

<u>ランプ(商品に含まれておりません。)</u>:

15Wの筒型白熱ランプ

<u>取付</u>:Ø4.5/5mmの留め穴2/3ヶ所



80 Guill Light for Ships / 船の照明



Desk light

Efficiency has top priority at your work-place! The one of this desk light is matchless!

Application: Working area illumination Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20 Protection class: [(≟) Housing: Zinc coated steel sheet Finish: Powder coated white Electric: Free cable length 1500 mm Lamp base: E 27 Light sources (not included): Incandescent lamp max. 60 W Mounting: Metal screw clamp up to 60 mm

Remark: Other colours on request

卓上用照明器具

作業場では機能性が第一。この機能性を兼ね 備えた卓上用照明器具はこれが最初で最後 です。 使用分野:作業場用照明 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 20 保護形式:I(+) 本体:亜鉛めっき薄鋼板 塗装:白色紛体塗装



Wall light

Application: Accommodation areas Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20 Wall plate: Polycarbonate, colour of ivory

Shade: Zinc coated steel sheet, bronzotic coloured **Electric:** Flexible wiring, silicone insulated, heat resistant up to 180° C, 1 - way d.p. switch **Lamp base:** E 27 or B 22

Light sources (not included): Incandescent lamp 60 W. Mounting: 4 mounting holes, dia. 5 mm



電気設備:最長のケーブルの長さは1500mm
 □金:E27
 ランプ(商品に含まれておりません。):
 最高60Wの白熱ランプ
 取付:60mmまでの金属しゃこ万力
 備考:その他のカラーはお問い合わせください。

Type / 種別	Part No. / ご注文品番 max. 250 V
1 x 60 W, 🗴 1.5 Kg, E 27	0906002000



壁面用照明器具

 使用分野:居住スペース

 仕様:船級協会の規定ならびにVDEおよび

 IEC/ENの規定に対応

 保護形式:IP 20

 壁面取付プレート:ベージュ色ポリカルボ

 ナート

 シェード:亜鉛めっき薄鋼板、ブロンズ色塗装

 電気設備:フレキシブルなシリコン電線、180°C

 まで耐熱、二極のn/offスイッチ

 口金:E27/B22

 ランプ(商品に含まれておりません。):

 60Wの白熱ランプ

 取付:05mmの留め穴4ヶ所

Type / 種別		Part No. / ご注文品番
		max. 250 V
1 x 60 W	E 27	1369002000
🖠 1.0 kg 🕅 41	B 22	1369004000
Other voltages on r	equest / その他の電	圧はお問い合わせください。
Light distribution curve	。/ 罰头曲線[□□] 92-97	













Wall and table light Classical maritime style!

Application: Accommodation areas Design: According to rules of maritime classifica-

tion societies, additional VDE and IEC / EN

Protection degree: IP 20

Shaft of luminaire: Brass polished and clear lacquered. Base of luminaire: Polycarbonate, dark brown. Shade: Made of fabric (has to be ordered separately)

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, 1 - way d.p. switch, 2 m connection cable with plug. **Lamp base:** E 27 or B 22 **Light sources (not included):** Incandescent lamp

60W. **Mounting:** 4 mounting holes, dia. 5 mm **Remark:** Other shade and base colours on request

壁面用および卓上用照明器具 マリン・クラッシック! 使用分野:居住スペース 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 20 照明器具のシャフト:保護ラッカー仕上げ ポリッシュド・ブラス <u>照明器具のベース</u>:こげ茶色ポリカルボナート シェード:布製裏打ちシェード(別途ご注文 ください。) 電気設備:フレキシブルなシリコン電線、180°C まで耐熱、二極on/offスイッチ、2mのプラグ付き 接続線 口金:E27/B22 ランプ(商品に含まれておりません。): 60Wの万能ランプ 取付: Ø5mmの留め穴4ヶ所

<u>取刊</u>: 250mmの日のハ4ッパ <u>備考</u>:その他のシェードおよびペースの色は お問い合わせください。

Type /種別			Part No. / ご注文品番 max. 250 V 1 x 60 W
Without shade / \Im \pm -	ド無し	E 27	1350102000
∎ 0.90 kg		B 22	1350104000
Shade colour / シェードの色		our/ の色	Champagne / シャンパン色
	Part No. ご注文品番		2135011000







Wall and table light *Modern elegance.* Application: Accommodation areas Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20 Housing: Brass mat Shade: Shantung cream Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C Lamp base: E 27 Light sources (not included): Incandescent lamp max. 60 W Mounting: 5 / 3 mounting holes, dia. 4 / 4.5 mm Remark: Other materials on request

<u>壁面用および卓上用照明器具</u> 現代的エレガンス。 <u>使用分野</u>:居住スペース <u>仕様</u>:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 20 <u>本体</u>:つや消し加エブレス <u>シェード</u>:山東絹、クリーム色 電気設備:フレキシブルなシリコン電線、180°C まで耐熱 ロ金:E27 ランプ(商品に含まれておりません。): 最高60Wの白熱ランプ 取付:Ø4/4.5mmの留め穴5/3ヶ所 備考:その他の材料はお問い合わせください。



Type / 種別		Part No. / ご注文品番 max. 250 V 1 x 60 W
Wall light /壁面用照明器具	🕯 1.1 Kg	1090191000
Table light /卓上用照明器具	🕯 1.6 Kg	1090191300





Berth light

Particularly flat and solid for hinged bunks. Only 34 mm thick, resistant material, just ideal for the berth.

Application: Accommodation areas, lounges Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 30

Housing: Aluminium brushed, anodized brown, end caps polycarbonate brown / zinc coated steel sheet, powder coated white, end caps white Diffuser: Opal PMMA **Electric:** Flexible wiring, heat resistant up to 105° C; 1 - way d.p. switch

Cable entry: Opening on rear side **Lamp base:** G 5 (type 1156); G 23 (type 1856) **Light sources (not included):** T 16 fluorescent lamp 8 W (type 1156), tubular compact fluorescent lamp 7 / 9 / 11 W (type 1856) **Mounting:** 4 mounting holes, dia. 5 mm

<u>キャビン用照明器具</u>

特に平らで安定、高さがたった34mm、 堅牢な材料、折り畳み式ベットにも最適。 使用分野:居住スペースとラウンジ 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式:IP 30 本体:ブラッシュド・アルミニウム、茶色アル マイト加工、エンド・キャップは茶色ポリカル ボナート/亜鉛めっき薄鋼板、白色紛体塗装、 エンド・キャップは白色ポリカルボナート
 ランプ・カバー:乳白色PMMA
 電気設備:フレキシブルな電線、105℃まで 耐熱、二極のn/offスイッチ
 ケーブルの差込:裏面に開口部
 口金:G5(1156タイプ)、G23(1856タイプ)
 ランプ(商品に含まれておりません。):
 8 WのT16蛍光灯(1156タイプ)、7/9/11WのTC
 コンパクト型蛍光灯(1856タイプ)
 取付:Ø5mmの留め穴4ヶ所





Part No. /ご注文品番 Type / 種別 brown / 茶 white / 白 230 V 220 V 230 V 240 V 220 V 240 V 1 x 5 / 7 / 9 W 50 Hz I.p.f. 1856101000 1856101003 1 i 1.0 kg 🖗 88 1856103003 60 Hz I.p.f. ~ 1856103000 1 x 8 W 50 Hz I.p.f. ~ 1156201000 1156217000 1156201001 1156217002 (2) i 1.2 kg 🖗 82 60 Hz I.p.f. ~ 1156203000 1156203004 1 x 11 W 50 Hz I.p.f. ~ 1856201000 2 🕯 1.2 kg 🖗 43 60 Hz I.p.f. -1856203000

Other colours, voltages + electron. ballasts on request / その他の色、電圧および電子安定器はお問い合わせください。 Light distribution curves / 配光曲線 [__] 92-97





Tvpe	/種別
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	/ 100 / 00

ihhe / Jun 200			I an mo. / C/L X m	H .	
			110 V	220 V	230 V
1 x 7 W	darkbrown and chrome /	50 Hz I.p.f.~ *	-	-	1854001000
İ 1.1 kg 🖗 94	こげ茶とクローム	60 Hz I.p.f.~ *	1854011000	1854003000	-
1 x 7 W	white /白	50 Hz I.p.f.~ *	-	-	1854001002
і 1.1 kg 🖗 94		60 Hz I.p.f.~ *	1854011002	1854003001	-

Other voltages on request / その他の電圧はお問い合わせください。

*h.p.f.c. (high power factor correction) not possible / h.p.f.e不可 Light distribution curves / 配光曲線 []] 92-97



Berth light with adjustable reflector

Direct the beam to your convenience by

swivelling the reflector.



Application: Accommodation areas Design: According to rules of maritime classification societies, additional VDE and IEC / EN Protection degree: IP 20

Housing: Polycarbonate darkbrown, reflector mat, stainless steel, deep drawn, inside white; or all parts complete white RAL 9016 Electric: Flexible wiring, silicone insulated, heat

resistant up to 180° C, 1 - way d.p. switch; connector between wall plate and light Cable entry: Opening on rear side, dia. 12 x 30 mm Lamp base: G 23 Light sources (not included): TC tubular compact fluorescent lamp 7 W Mounting: 2 mounting holes, dia. 6.4 mm

調節可能投光器付きキャビン用照明器具

投光器の方向転換により拡散が自由に変化 可能。 使用分野:居住スペース 仕様:船級協会の規定ならびにVDEおよび IEC/ENの規定に対応 保護形式: IP 20 本体:茶色ポリカルボナート、投光器はつや消し ステンレス、シームレスに深絞り、内側白または 照明器具全体白RAL 9016 電気設備:フレキシブルなシリコン電線、180°C まで耐熱、二極on/offスイッチ、照明と壁面 プレートの間に差込接続 ケーブルの<u>差込</u>:裏面にØ12x30mmの開口部 口金:G23 ランプ(商品に含まれておりません。): 7Wのコンパクト型蛍光灯

取付:Ø6.4mmの留め穴2ヶ所







Berth light with adjustable reflector For long time the best lamp for bunks because the beam arrives where it ought to thanks to the reflector being turnable by almost 360°. Application: Accommodation areas

Design: According to rules of maritime classification societies, additional VDE and IEC / EN **Protection degree:** IP 20. **Protection class:** II (ID) **Housing:** Polycarbonate darkbrown, reflector mat, stainless steel, deep drawn, interior enamelled white RAL 9016

Electric: Flexible wiring, silicone insulated, heat resistant up to 180° C, 1 - way d.p. switch; connector between wall plate and light **Cable entry:** Opening on rear side, dia. 12 x 30 mm **Lamp base:** E 14 / B 15 / E 27 or B 22 **Light sources (not included):** Incandescent all purpose lamp 40W (type 1355) / incandescent tubular lamp 40 W (type 1354)

Mounting: 2 / 4 mounting holes, dia. 5 mm

調節可能投光器付きキャビン用照明器具

従来よりキャビン・ベットに最適の照明 器具、360°近く回転可能な投光器が欲しい ところに光を届けるからです。 使用分野:居住スペース



仕様:船級協会の規定ならびにVDEおよび
 IEC/ENの規定に対応
 保護形式:IP 20
 保護形式:IP 20
 保護形式:II(回)
 本体:こげ茶色ポリカルボナート、投光器は
 つや消しステンレス、シームレスに深絞り、
 内側白RAL 9016
 電気設備:フレキシブルなシリコン電線、180°C
 まで耐熱、二極のn/offスイッチ、照明と壁面
 プレートの間に差込接続
 ケーブルの差込:裏面にØ12x30mmの開口部
 口金:E14/B15/E27/B22
 ランプ(商品に含まれておりません。):

40Wの万能ランプ(1355タイプ)/40Wの筒型白熱 ランプ(1354タイプ) 取付:Ø5mmの留め穴2/4ヶ所











Decorative and special lighting systems for ships

This page shows an extract from the comprehensive programme of high-quality aqua signal luminaires for special use and downlights. You will find detailed information on the according pages (here put in brackets) of the aqua signal catalogue "Light for Cruise and Ferries".

If qou don't have the catalogue in hand so far, please ask for it immediately! Part No. 9420090000

船用装飾・特殊照明システム

このページには高級なアクア・シグナル特別照明 およびダウンライトの商品シリーズの一部が掲載 されております。詳細はカタログ「アクア・ シグナル観光船とフェリーの照明」の該当ページ (ここではカッコ内の数字)をご覧ください。まだ カタログをお持ちでない方は本日中にでもお求め ください。

ご注文品番:9420090000



109086 (62) Bulkhead light, surface 防水照明器具、外付け TC 1x9 W; E14 1x15 W; IP 67



1090925 (69) Wall- / Ceiling luminaire 壁面用/天井用照明器具 TC-D 1x10 W; E27 1x60 W; IP 55

•	

1986 (62) Steplight recessed, outdoor 埋め込み踏み段用照明器具、屋外 TC 1x5/7 W; IP 67





1997 (70) Wall- and Ceiling luminaire, surface 壁面用/天井用照明器具、外付け E27 1x75 W; TC-D 1x18 W; TC-DEL 1x18 W; TC 2x7 W; IP 56



0620 (58) Berth light キャビン用照明器具 TC 1x7 W; IP 20



1927 (85) Illuminated sign, recessed 誘導灯、埋め込み TC 1x7 W; IP 20



0075120000 (51) Table luminaire 卓上用照明器具 E27 1x75 W; Ø 310; ↓ 460 mm



0075140000 (51) Table luminaire 卓上用照明器具 E14 3x40 W; Ø 350; ‡ 450 mm



0075093000 (51) Table luminaire 卓上用照明器具 E14 3x60 W; Ø 350; ‡ 460 mm





0075170000 (51) Wall luminaire 壁面用照明器具 TC 1x9 W; ↓ 140; -- 380 mm



0075171000 (51) Wall luminaire 壁面用照明器具 TC 1x9 W; Ø 140; -- 380 mm



0840 / 0850 / 0860 / 0870 (22-27) 0845 / 0855 / 0865 (22-27) Deco-line downlights / デコ・シリーズ・ダウンライト TC / TC-SEL / TC-D / TC-DEL; 1x 10 / 13 / 18 W; 2x 7 / 10 / 13 W; IP 22 / IP 44 / IP X5



0075230000 (51) Wall luminaire 壁面用照明器具 E27 1x60 W; ‡ 157; ↔ 317; ~ 156 mm



0075100000 (51) Wall luminaire 壁面用照明器具 E27 1x60 W; ‡ 310; ↔ 320; ~ 180mm



0075225000 (51) Wall luminaire 壁面用照明器具 TC-D 1x18 W; ‡ 300; ↔ 170; ~ 100 mm



1090149700 (49) Wall luminaire 壁面用照明器具 E14 1x40 W; ↔ 200;--240 mm





aqua signal dimming system ASD

ASD(アクア・シグナル調光システム)

Light for Ships / 船の照明 〇月11 87







Dimming System ASD

Various sizes of dimming system permit convenient dimming and light control of individual rooms up to complex projects.

The lighting is controlled at functionally different wall stations in various colours, sizes and designs; customised designs are also possible.

Using these operating elements, it is possible to call up any programmed lighting scenario; an alternative option is autonomous control by the ASD control centre.

On ships which continually cross global time zones, the ASD control centre is linked to the ship's clock. As a result, all programmed lighting systems are controlled to the current local time. The dimming system is compatible with the entire range of aqua signal luminaires as well as selected products of other manufacturers. If desired, systems from other companies can be examined individually for compatibility, and then integrated.

The comprehensive 24-month warranty (extendable to 8 years) demonstrates our confidence in the reliability of this system. Our worldwide service and speedy expansion capabilities are unique in the trade.

In addition, the logical and consistent system concept permits the efficient and rapid calculation of prices at an early stage of the project. Technical Details:

- The system complies with all the requirements and standards applying to modern cruise liners,

as well as the technical standards of Lloyd's Register and Section 6 of the Rules for the Classification of Ships, together with all national requirements for shore and sea operations in Europe and the USA.

- Certificates awarded by all the major standardisation institutes
- Power connection: 100 V, 120 V and 230 V AC, 50/60 Hz, 1/2/3-phase, star or delta, various emergency lighting systems etc.
- Mains filter for uniform light quality, even under poor voltage conditions.
- Simple connection to other systems via the interfaces DMX512 (theatre systems), RS232, AV, digital I/O, analog 1–10 V, DSI etc.

Useful Tip: For your convenience, simply photocopy the page after next, fill it in and then send a copy of your enquiry to us.

ASD調光システム

調光システムの各種大きさにより一部屋ずつ または複雑なプロジェクトの快適な調光および ライト・コントロールが可能です。
各種カラー、サイズ、デザインの壁面操作パネル によって操作が行われます。個別のデザインも 承っております。この操作パネルを使えばプロ グラムされたどの照明シチュエーションでも起動 するすることが可能です。ASDコントロール・ センターによる自動操作はオプション。
世界の時間帯を通過する船ではASDコント ロール・センターと船内の時計が連結されています。それによりプログラミングされた全ての 照明システムが現地時刻に合わせて制御され

ます。調光システムはアクア・シグナルの全ての 照明器具および他社の一部商品にもご利用頂け ます。他社の商品は利用可能かどうか確認の上 組込むことができます。

24ヶ月にわたる全面保証(8年まで延長可能)を させて頂くということがシステムの信頼性に 対する当社の自信の証左です。世界中でサービス を提供し短期間でシステムを拡張ができることが 当社独自の特徴です。考え抜かれたシステムの おかげで早い段階での効果的、かつ迅速な 見積もりが可能です。

技術的詳細:

- このシステムはモダンなクルージング船に関する 全ての要求および規格ならびにロイド・レジス ター規格技術的基準および船級規定第6章さらに ヨーロッパとアメリカ合衆国の陸上交通と海上 交通に関する全ての規定に対応しております。
- あらゆる重要な規格協会の認可証で表彰され ました。
- 供給網への接続:100V、120Vおよび230VAC、 50/60Hz、1/2/3相、星または三角、各種非常用 照明システム。
- 電圧の状態が悪くても照明の質を保つための供給 電圧フィルター
- DMX512(シアター・システム)、RS232、AV、 デジタルI/O、アナログ1..10V、DSI等の接点に より簡単に他社システムに接続いただけます。

お願い

次の次のページをコピーしご記入いただいた後、 当社までお送りくだされば簡単にお問い合わせ 頂けます。

ASD

SYSTEM / システム	ASD 3000	ASD 4000	ASD 5000	ASD 6000	ASD Works interactive
Application Examples 使用例	High Class Cabins, Conference Rooms 豪華キャビン、会議室	Local public areas like Restau- rants, Shops, Cinemas, etc. レストラン、映画館など の周辺公共施設	Central public areas Like Atrium, Yachts, Commercial spaces アトリウム、ショップ、 豪華ヨット等の中央 公共施設	Cruise vessels, public buildings クルージング船、ホテル、 建物など	Extra ordinary projects with dynamic scenes ダイナミックなシーンを含む 変わったプロジェクト
Number of standard areas 操作可能な分野/部屋	1 per System システム毎に1	1 per System システム毎に1	32 per System システム毎に32	32 per System (extendable) システム毎に32(拡張可能)	Free programmable 自由なプログラミング可能
Maximum Number of Zones 最高区分数 (照明範囲)	2 - 6 per Control Unit; 48 per System 操作ユニット毎に2-6、 システム毎に48	2 - 24 per Control Unit; 64 per System 操作ユニット毎に2-6、 システム毎に64	128 per System システム毎に128	512 per System システム毎に512	4096 (16 Processors) 4096(16プロセッサー)
Maximum Number of Scenes ライト・シーンの最高数	16 + "Off" per Control Unit 操作ユニット毎に16+「off」	16 + "Off" per Control Unit 操作ユニット毎に16+「off」	272 per System in 16 areas 16部屋/分野でシステム毎に272	544 per System in 16 areas 16部屋/分野でシステム毎に544	Free programmable 自由なプログラミング可能
Number of Wallstations 操作場所の数	16 per System システム毎に16	16 per System システム毎に16	32 per System システム毎に32	384 per System システム毎に384	32 per Processor + 8 System ASD 3000 プロセッサー+8 ASD システム3000毎に32
Interfaces インター・フェイス	1-10 V, DSI, DMX512, RS232, AV, Time, Daylight, Dig. I/O 1-10 V、DSI、DMX512, RS232 AV、時間、自然光、Dig. I/O	1-10 V, DSI, DMX512, RS232, AV, Time, Daylight, Dig. I / O 1-10 V、DSI、DMX512, RS232 AV、時間、自然光、Dig. I / 0	1-10 V, DSI, DMX512, RS232, AV, Time, Daylight, Dig. I / 0 1-10 V, DSI、DMX512, RS232 AV、時間、自然光、Dig. I / 0	1-10 V, DSI, DMX512, RS232, AV, Time, Daylight, Dig. I / 0 1-10 V、DSI、DMX512、RS232. AV、時間、自然光、Dig. I / 0	1-10 V, DSI, DMX512, RS232, AV, Time, Daylight, Dig. I / 0 1-10 V、DSI、DMX512、RS232, AV、時間、自然光、Dig. I / 0

Example of wallstations (available in different dimensions and surface finishes) 操作パネルの商品例(各種寸法や表面仕上げも納品可)





	N Suctor / Dimension	lo	•		. :-	N 14 -			Enq Date	uiry / A	Anfra	ge					
	J System / Dimmsys	tem	aq	ua	SIĮ	gna	II A9D		Datur	n							
Firma Adress	Name																
Anschrift Phone	Fay								e-mai	il							
Telefon	Fax								e-mai	il							
information	Bezeichnung																
Allgemeine Angaben zum				_				ā.									
Projekt	Hauptnetz 100 V 120 V	230 V	/	<u> </u>	i0 Hz		60 Hz	Sta Ste	rn .	Dent	a eck		PE		Schirm		
	others andere														Neutral Nulleiter	y Ja	es no nein
	Circuit braker 1-pole 1-polig	2-pole	ly I Ty	rpe rp													
	Emergency sypply 24 V 100 V	120	, L	23	0 V		50 Hz	60 Hz	Sta Ste	ir L	Del Dre	lta eieck		PE	Shi	eld hirm	
	others andere													8	Neutral Nulleiter	y y	es no nein
	Circuit braker 1-pole 1-polig	2-pole 2-polig	Ty I Ty	rpe r <mark>p</mark>													
	Switch over shore supply Umschaltung auf Landnetz ja	no nein															
	Classification society Klassifikationsgesellschaften				/	E		NA [AB	s	other ande	rs re					
	further required weitere Vor	irements schriften															
B) General informations ref.	Quantity of dimming areas Anzahl Dimmbereiche		P St	cs. a	ttach eigefi	ed drav ügte Pl	vings äne			Pcs. a Stck. b	ttache eigefü	d spec gte Sp	cificati pezifik	ons atione	n		Pcs. Stck.
Generelle Angaben zum	Remarks Bemerkungen																
Dimmsystem	Available space for dimming cabinet Raummaße für Einbau des Dimmschrankes	Н					mm B					m	m L				mm
	IP-Grade IP-Schutzart		Cable e Kabele	entry inführ	ung					Main Vorsi	input cherur	breake	er [insional ins	de dimm Dimmsch	cabinet rank	outside außerhalb
	Special features Besonderheiten														× _		
C) Specification	Dimming area Dimmbereich / -raum																
a separate form)	Dimming zone/ dimming group 1) Dimmzone / Dimmgruppe	s	Ligh Bed	nting c ienste	ontro l <mark>len</mark>	ls <mark>2)</mark>			()	Type of Art der	f load Last	+ sup + Vers	ply <mark>orgu</mark> r	ıg	Quantit Menge	y lamps Leuchter	+ load 1 + Last
Spezifikation (pro Dimmbereich /-raum bitte		skrei		st	ter	5.	olour Iber- ront-		nent.		12						
jeweils getrennt auf 1 Blatt) 1) Enter name		ng cir	- 5	butto	tiomet	t butto	nish und C der F	e ity	equipi	,	uptne	jency tnetz	ing	ning	ity	e load VA	oad nt VA
2) Only one type of control each zone 3) Please use short form: IR = Infrared		Lighti Beleu	Switcl Schalt	Push- Taster	Poten	Prese	Fronty and fi Farbe fläche platte	Quant	Extra	Type	Mains Im Ha	Emer(Dimm	Switc	Quant	Single	Total I Gesan
TS = Daylight sensor KS = Partition control ZR = Central processor	01																
ZB = Central wheelhouse control US = Local day time control SO = Custom solutions please list separate	02																
4) A) Incandescent tamps B1) LV-halogen, magnetic transformer B2) LV-halogen, electronic transformer	03																
B3) LV-Halogen, electronic transformer phase forward control	04																
D1) Fluorescent + compact fluorescent, dimmable 1 - 10 V	05																
dimmable DSI D3) Fluorescent + compact fluorescent, electronic ballact (not dimmable)	06														1		
E1) Neon, magnetic transformer E2) Neon, electronic transformer phase reverse control	07														1		
E3) Neon, electronic transformer phase forward control F) High pressure metal halide lamp (not dimmable)	08																
G1) Fibre optic, light source LV-halogen, magnetic transformer G2) Fibre optic, light source LV-halogen,	09																
electronic transformer phase reverse control G3) Fibre optic, light source high pressure metal halide lamp (not dimmable)	10																
 G4) Fibre optic, light source high pressure metal halide lamp, DMX control H) Others e.g. sockets (specify kind / type) 	11																
1) bitte Namen eintragen 2) pro Dimmzone nur 1 Bedienart möglich	12																
IR = Infrarot TS = Tageslichtsensorik	13																
ZB = Zentralrechner ZB = Zentrals Brückenpult	14																
 S0 = Sonderwunsch bitte extra aufführen 4) A) Allgebrauchsglühlampen B1) NV Halogen, Trafo magnetisch 	15																
B2) NV Halogen, Trafo elektronisch dimmbar <u>Phasenabschnitt</u> B3) NV Halogen, Trafo elektronisch	16																
dimmbar <u>Phasenanschnitt</u> C) HV Halogen D1) Leuchtstoff / Kompaktleuchtstoff.	17										F						
EVG dimmbar 1 - 10 V D2) Leuchtstoff / Kompaktleuchtstoff, EVG dimmbar DSI	18					iF					h		F				
D3) Leuchtstoff / Kompaktleuchtstoff, EVG (nicht dimmbar) E1) Neon, Vorschaltgerät magnetisch	19										F						
E2) Neon, Vorschaltgerät elektronisch dimmbar <u>Phasenabschnitt</u> E3) Neon, Vorschaltgerät elektronisch	20																
dimmbar <u>Phasenanschnitt</u> F) Hochdruck Metallhalogen (nicht dimmbar) G1) Lichtleitertechnik, Projektor NV Halogen,	Extend list if necessary													Total			
Irato magnetisch G2) Lichtleitertechnik, Projektor NV Halogen, Trato elektronisch dimmbar <u>Phasenabschnitt</u>	Liste ini bedaristali erweitern												G	esamt			
 G3) Lichtleitertechnik, Projektor Hochdruck-Metall- halogen (nicht dimmbar) G4) Lichtleitertechnik, Projektor Hochdruck-Metall- biogen DMM instrument 	l egend / Legende: Please fill un in blo	ck letters			ase tir	k											
naiogen DMX gesteuert H) sonstige z.B. Steckdosen (bitte Art angeben)	Bitte in Blockschrif	tausfüllen		Bitt	e anki	reuzen											



Technical information + light sources

仕様とランプ

Light for Ships / 船の照明 〇月111 91







94 〇二四二 Light for Ships / 船の照明





96 Grand Light for Ships / 船の照明





















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<u>cd</u> kLm

<u>cd</u> kLm

· 80



<u>cd</u> kLm

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<u>cd</u> klm

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Lighting quantities and efficiency

Technical ligh	ting quai	ntities and u	nits (accor	ding to DIN 503	1 Page 3)
Quan ⁻ Name	tity Symbol	Un Name	it Symbol	Correlation	Explanation
Luminous flux	Φ	Lumen	lm		Given luminous efficiency from a light source.
Quantity of light	Q	Lumen hour	lm · h	$Q = \Phi \cdot t$	Product of the luminous flux Φ and its duration t.
Luminous intensity	I	Candela	cd	$ =\frac{\Phi}{\omega}$	The quotient of the lumi- nous flux Φ transmitted by a light source in a defined solid angle ω and the illu- minated solid angle ω .
Luminance	L	Candela per square metre	d m ²	$L(\varepsilon) = \frac{I(\varepsilon)}{A \cdot \cos \varepsilon}$	For luminous planes: Quoti- ent of the luminous intensity I of one light
		Stilb	sb	$1 \text{ sb} = 10^4 \frac{\text{cd}}{\text{m}^2}$	source in the direction ε and the quantity of the luminous plane seen from this angle.
		Candela per sqare metre	<u>cd</u> m ²	$L = \frac{P \cdot E}{\pi}$	For illuminated planes: Product of illuminance E and reflection degree p;
		Apostilb	asb	L = p · E	valid only for totally diffuse reflecting surfaces. 1 sb = $\pi \cdot 10^4$ asb
Illuminance	E	Lux	Ix	$E = \frac{\Phi}{A}$	Quotient of the luminous flux Φ to a surface and the area of that surface A.

Technical lighting officiancy (according to DIN 5021 Page 4)						
Quantity Name Symbol		Correlation	Explanation			
Luminous efficiency of a light source	η	$\eta = \frac{\Phi}{P}$	The luminous efficiency η of a light source is the quotient of the luminous flux emitted Φ and the electrical power P required to produce it. Unit: Im/W			
Optical efficiency of a luminaire	ηι	$\eta_{L} = \frac{\Phi_{L}}{\Phi_{0}}$	Quotient of the luminaire's luminous flux Φ_L and the sum of the lamps luminous fluxes Φ_O . For temperature-dependent lamps such as fluorescent lamps, the optical efficiency is the highest level of efficiency and no factors effecting the luminous flux such as ambient temperature have been taken in consideration. It indicates only the optical properties of a luminaire and is not to be used for technical lighting calculations.			
Light output ratio	ηιε	$\eta_{\text{LB}} = \frac{\Phi_{\text{L}}(t_{\text{U}})}{\Phi_{0}}$	Quotient of the luminaire's luminous flux Φ_L emitted of a luminaire's ambient temperature to 25° C, and the sum of the lamps luminous fluxes Φ_0 at a lamps ambient temps. of 25° C. The light output ratio is affected by the luminous flux/ temperature behaviour of the lamps and is, in general, less than the optical efficiency of the luminaire. It takes into account optical and ther- mal properties under working conditions. Only the light output ratio should be used for technical lighting calculations.			
Utilization	η	$\eta_{R} = \frac{\Phi_{N}}{\Phi_{L}}$	Quotient of the luminous flux Φ_N , emitted to the effected area, and the total luminous flux Φ_L radiated to the room from the luminaires.			
Utilization factor	η	$\begin{split} \eta_{B} = & \frac{\Phi_{N}}{\Phi_{O}} \\ \eta_{B} = & \eta_{R} \cdot \eta_{LB} \end{split}$	Quotient of the luminous flux Φ_N , emitted to the effected area, and the sum of the luminous flux Φ_0 of all lamps installed in the luminaires. It is the product of the area effectivity factor η_R and the light output η_{LB} .			

Cable entries









① **PG 16 plastic DIN 46320** for use on luminaires up to protection degree IP 55. Cable diameters 11 to 15 mm. Standard sealing ring and earthing insert for cable diameters 12 mm to 14 mm. Other diameter requirements should be stated when ordering.

PG 16 brass DIN 46320 for use on luminaires up to protection degree IP 67. Cable diameters 11 mm to 15 mm. Standard sealing ring and earthing insert for cable diameters 12 mm to 14 mm. Other diameter requirements should be stated when ordering.

③ M 24x1,5 without earthing inserts, similar to DIN 89280 for cable MGG (without protective cover). Possible cable diameters 8 mm to 17 mm. Standard sealing ring for cable diameter of 12 mm. Other diameter requirements should be stated when ordering.

④ M 24x1,25 with earthing insert, similar to DIN 89280 for cable MGCG (with protective cover). Possible cable diameters 8 mm to 17 mm. Standard sealing ring and earthing insert for cable diameter of 12 mm. Other diameter requirements should be stated when ordering.









(5) Cable inlet nylon white for use in inside luminaires up to protection degree IP 30. Cable diameter up to 11 / 12.7 mm.

(6) **Cable inlet rubber grey** for cable diameter up to max. 18 mm, also for use as blind plug for protection degree up to IP 44.

⑦ Cable inlet rubber grey with blind socket of polycarbonate black for use as blind plug up to protection degree IP 67

8 Connection Box

The connection boxes available for most technical luminaires can be supplied with 1 or 2 cable entries on the end or on the side. A diagram of the cable entry required should accompany the order.



Mountings for technical luminaires

If required, aqua signal luminaires can be supplied with various mountings, suitable for a number of different installation methods. When ordered, the shown parts are mounted, welded or added unassembled. Shown are examples only. Others on request.



Plastic components

Depending upon the application, a variety of high quality plastics is used in the production of aqua signal products. Physical characteristics are shown in the table below and the material used is specified in the individual data sheet.

	Polymethylmetacrylate	Polycarbonate	Polyethersulfon	
	① PMMA	② PC	③ PES	
Trade name	Acrylic Plexiglas®	Makrolon Lexan®	Ultrason Victex	
Temperature range	-50°C up to +85°C	-150°C up to +130°C	-100°C up to +200°C	
Mechanical properties	Good under normal conditions of use	Especially tough (shock resistant)	Good under normal conditions of use	
Transmissivity - colourless	92 %	82 %	80 %	
Transmissivity - white / opal	46 % - 65 %	46 % - 65 %	_	
Combustibility ⁽⁾ according to UL	94 - HB	94 V - 2 94 V - 0	94 V - 0	
Chemical - general resistance - solvent	good not to be used	good not to be used	good not to be used	

Technical Luminaires (3²⁾ 1 2 Accommodation luminaires ① (2)3) Navigation lights 1 2

1) No gases which could endanger life are given off when burning

2) Luminaire 10752.... and on request 3) Possible, on request, for many types

Protection degrees

The following protection degrees define the protection of electrical appliances against accidental contact, foreign matters and water as laid down in IEC Publication 529 and DIN 40050.

IP 6 7 Example: h0.3 Ident. mark 1. Ident. number (see table 1) 2. Ident. number (see table 2) Immersion depth in metres

0 No special protection 1 Protection against penetration of solid foreign matters diameter > 50 mm, no protection against intentional contact e.g. by hand, body contact, however, is prevented. 2 Protection against penetration of solid foreign matters with outside diameter of more than 12 mm, finger contact or similar is prevented. 3 Protection against penetration of solid foreign matters with outside diameter of more than 2.5 mm. Prevents insertion of tools, wires or similar matters larger than 2.5 mm. 4 Protection against penetration of solid foreign matters with outside diameter of more than 1 mm. Prevents insertion to tools, wires or similar matters larger than 2.5 mm.	1. Ident No.		1. Ident No. Protection level (contact and foreign matters)	
1 Protection against penetration of solid foreign matters diameter > 50 mm, no protection against intentional contact e.g. by hand, body contact, however, is prevented. 2 Protection against penetration of solid foreign matters with outside diameter of more than 12 mm, finger contact or similar is prevented. 3 Protection against penetration of solid foreign matters with outside diameter of more than 2.5 mm. Prevents insertion of tools, wires or similar matters larger than 2.5 mm. 4 Protection against penetration of solid foreign matters with outside diameter of more than 1 mm. Prevents insertion of tools wires or similar matters larger than 2.5 mm.		0	0 No special protection	
2 Protection against penetration of solid foreign matters with outside diameter of more than 12 mm, finger contact or similar is prevented. 3 Protection against penetration of solid foreign matters with outside diameter of more than 2.5 mm. Prevents insertion of tools, wires or similar matters larger than 2.5 mm. 4 Protection against penetration of solid foreign matters with outside diameter of more than 1 mm. Prevents insertion of tools, wires or similar matters larger than the second form that the second form of the second form of the second insertion of tools wires or similar matters larger than the second form of the	1	 Protection against penetration of solid foreign matter diameter > 50 mm, no protection against intentiona contact e.g. by hand, body contact, however, is prevented. 	ers,	
 3 Protection against penetration of solid foreign matters with outside diameter of more than 2.5 mm. Prevents insertion of tools, wires or similar matters larger than 2.5 mm. 4 Protection against penetration of solid foreign matters with outside diameter of more than 1 mm. Prevents insertion of tools, wires or similar matters larger than 	Table 1	2	2 Protection against penetration of solid foreign matter with outside diameter of more than 12 mm, finger contact or similar is prevented.	ers
4 Protection against penetration of solid foreign matters with outside diameter of more than 1 mm. Prevents insertion of tools, wires or similar matters larger than		3	3 Protection against penetration of solid foreign matter with outside diameter of more than 2.5 mm. Preven insertion of tools, wires or similar matters larger that 2.5 mm.	ers ts an
1 mm.		4	Protection against penetration of solid foreign matter with outside diameter of more than 1 mm. Prevents insertion of tools, wires or similar matters larger tha 1 mm.	ers an
5 Protection against damaging dust accumulation. The penetration of dust is not totally prevented but is not permitted to penetrate to such a degree that the effectiveness of the equipment is affected. Complete contact protection.		5	5 Protection against damaging dust accumulation. Th penetration of dust is not totally prevented but is no permitted to penetrate to such a degree that the effectiveness of the equipment is affected. Complete contact protection.	e t
6 Protection against penetration of dust. Complete contact protection.		6	6 Protection against penetration of dust. Complete contact protection.	

2. Ident No.		ent No.	Protection level (water)
		0	No special protection
	1	Protection against vertical falling drip water, shall have no harmful effect.	
		2	Protection against vertical falling drip water; when fixture is shifted up to 15° from its normal operating condition there shall be no harmful effect (flanking drip water).
		3	Protection against spray water falling at any angle up to 60° against perpendicular. It shall have no harmful effect (spray water).
		4	Protection against water splashed against the fixture from any direction, shall have no harmful effect (splash water).
	Table 2	5	Protection against water projected by a nozzle against the fixture from any direction, shall have no harmful effect (hosed water).
		6	Protection against green water or strong jet stream, water must not enter the fix-ture in harmful quantities (overflooding).
		7	Protection against water when fixture is submerged under defined conditions of time pressure. Water shall not enter fixture in harmful quantities (submerging).
		8	The equipment is suitable for continuous submersion in water under conditions specified by the manufacturer

ntroduction to the principles of explosion protected electrical equipment to EN 50014...50028

Classification of electrical apparatus into explosion groups and temperature classes

It would be uneconomical and sometimes not even possible to always construct all explosion protected electrical equipment to the maximum requirements, independent of its respective application. It is therefore divided into groups and temperature classes. The European Standards differentiate - as the IEC

Recommendations - between two groups of equipment:

Group I: electrical equipment for mining Group II: electrical equipment for all remaining hazardous areas.

For electrical apparatus of Group II there can be further classification into explosion groups and temperatures classes. This is to be explained in the following:

Explosion groups:

Ignitibility and explosion characteristics of an explosive mixture are properties typical of the material. The requirements for the construction of explosion protected electrical apparatus can be graduated depending on the gases and vapours existing in the planned application. This refers on one hand to the required joint dimensions of the flameproof encapsulation, on the other hand the max. permissible current and voltage values in intrinsically safe circuits vary for each gas mixture.

The gases and vapours are therefore classified in several explosion groups. Classification criteria are the "Maximum Experimental Safe Gap" (MESG) or the "Minimum Ignition Current" (MIC), which are determined according to a stipulated testing order. On the electrical apparatus it is stated accordingly for which explosion group it is suitable.

The danger of gas increases from explosion group II A to II C according to EN (from Group D to Group A according to the NEC classification). The requirements for electrical apparatus for these explosion groups increase accordingly. Electrical apparatus certified for II C for example are of course suitable for all other explosion groups.

Temperature classes

The ignition temperature, i.e. the temperature, at which an ignition could occur for example due to a hot surface of the apparatus, is dependent on the type of existing gases or vapours. This ignition temperature is influenced by several factors and is thus dependent on the stipulated testing order. Depending on the measuring system the results can thus differ in the various countries. Further information regarding materials, not stated can be found in the respective guidelines and literature.



The max. temperature of the exposed surface of electrical apparatus must always be lower than the ignition temperature of the gas or vapour mixture, where it is to be used.

In order to be able to mark and select electrical apparatus simply in regard to its max. surface temperature, there are several temperature classes. The gases can be classified to the temperature classes according to their ignition temperature, whereby the max. surface temperature of the respective class must be lower than the ignition temperature of the corresponding gases.

Apparatus of course, meeting a higher temperature class (e.q. T 5) can be used for applications requiring a lower temperature class (e.g. T2 or T3).

Safety characteristics of flammable gases and vapours*

140

485

330

540

305

630

380

220

555

95

605

430

440

515

460

425

510

425

440

170

235

560

270

455

625

365

340

240

405

540

360

595

470

425

535

The explosion group for this medium has not yet been defined

595 (650)

220 up to 300

220 up to 300

Ignition temperature °C

Medium

Acetaldehyde

Acetic anhydride

Acetic acid

Acetone Acetylene

Ammonia

Benzine

Benzol

Amylacetate

Carbon disulphide

Carbon monoxide

1,2-Dichloretane

Cyclohexene

Diesel fuel

Ethvlacetate

Ethylalcohol

Ethylchloride

Ethylenoxid

Ethyl glycol

Hydrogen aeroxid

Hydrogen disulphide

Ethylether

Fuel oil

Methane

Methanol

n-Butane

n-Hexane

Naphtaline

Oleic acid

Phenol

Propane

Tetraline

Toluole

*Appendix B, VDE 0165/9.83

 Also Explosion group II B + CS₂
 Also Explosion group II B + H₂ (3) Also Explosion group II B + C₂⁻H,

Methyl chloride

n-Buthylalcohol

n-Propylalcohol

Ethylene

Ethane

Temperature class	Max. surface temperature	Ignition temperature of combustible material
T1	450° C	> 450° C
T2	300° C	> 300° C
T3	200° C	> 200° C
T4	135° C	> 135° C
T5	100° C	> 100° C
T6	85° C	> 85° C

Classification of maximum surface temperature for Group II electrical apparatus

T4

T6

T4

Explosion group

II C (3)

II C (1)

II C (2)

II A

)

II A

)

II A

II A

)

II A

II B

Temperature class

T2

T3

T3

T3

T3

T1

Marking of explosion protected electrical apparatus

In adition to the general data (manufacturer, type, serial no., electrical data), data concerning the explosion protection is to be added. The European Standards call for the following marking, adapting to the IEC Recommendation:

Example:	Ex EEx	d	II B	Т3
Approved mark for apparatus certified by an EC test authority —				
Symbol for apparatus built in accordance with a European Standard				
Flameproof enclosure (type of protection) —				
Apparatus group ——				
Temperature class —				

A test certificate number may be followed by an indification letter. In accordance with the older but still allowable practice to VDE 0171/2.61, the meaning of these letters is as follows:

- The test certificate contains special conditions; B: the approval authority requires an additional marking plate on the apparatus: "Comply with the test certificate".
- S: Apparatus with intrinsically safe circuits: The intrinsically safe parts of circuits may pass into hazardous locations but the apparatus itself must be installed in a safe area.
- U: An incomplete piece of explosion protected apparatus; (e.g. lampholders, contact blocks, terminals, impregnation materials etc.). A manufacturing licence is not applicable.

Whereas, in accordance with EN 50014...50020, we have:

- Certificates of conformity for apparatus built in X: accordance with the new European Standards include, for special conditions, the lettersymbol X at the end of the certificate number instead of the previous B, S and U. The applicable special conditions at the lettersymbol X must be ascertained from contents of the certificate, whereby, "associated electrical apparatus" in type of protection "intrinsic safety" will be identified with rectangular brackets, e.g. [EEx ib] II C.
- U: An incomplete piece of explosion protected apparatus; (e.g. lampholders, contact blocks, terminals, impregnation materials etc.).

Technical modifications reserved without prior notice / 技術htsの理由症は内容でのもおかがあります。



Marking of explosion protected electrical apparatus

The following table shows the apparatus' charac-2.61, in comparison to the European Standard teristics according to the previous VDE 0170/0171/ respectively VDE 0170/0171/ 5.78: Identification to VDE 0170/0171/2.61 Identification to EN 50014...50028 (Sch) FF_Y I Mining industry apparatus (Ex) Explosion protected apparatus FFx II Type of protection Type of protection Oil immersion 0 0 Pressurized apparatus (air purging) р Powder filling (previously s) q Flameproof enclosure d d Increased safety е е Intrinsic safety Special protection (previously s) m Type of protection n Separation according to gases and vapours Explosion class Apparatus group Flameproof enclosures Intrinsic safety Maximum experimental Minimum ignition current safe gap ratio rel. to Methane1) > 0.9 mm > 0.8 1 A ≥ 0.5 mm...0.9 mm ≥ 0.45...0.8 2 В < 0.5 mm < 0.45 3a...3n Ċ Ignition temperature of gas or vapour [°C] Ignition group Temperature class Ignition max. Ignition max. surface surface temperature temperature temperature °C temperature °C G1 > 450 T1 > 450 450 360 G2 > 300...450 T2 > 300 240 300 T3 > 200 G3 > 200...300200 160 G4 > 135 200110 T4 > 135135 G5 > 100...135 80 T5 > 100 100 T6 > 8585

EC Directive 94/9/EC (ATEX 100a)

The EC Directive 94/9/EC was issued in 1994 to further standardize explosion protection and make corresponding adjustments in line with a new directive concept. It specifies the requirements for explosion protected equipment and protective systems by prescribing essential health and safety requirements. It guarantees the free trade within the European Community, as agreed in Article 100a of the Treaty established between the European Community member states. This is also where the term ATEX 100a, generally used among the experts, comes from.

The directive applies to all industrial potentially explosive areas including mining and also covers dust explosion protection. The scope covers all electrical and mechanical equipment and protective systems. In addition to the basic health and safety requirements, the classification of the equipment and protective systems according to categories has also been re-organized, as well as the certification and marking of these.

¹⁾ Definition - see EN 50014 Appendix A

Technical regulations for explosion protection

Definitions

- Electrical installations to ElexV are single or interconnected devices, producing, transforming, storing, transmitting, distribution, measuring, controlling or using electrical energy.
- Hazardous locations to ElexV are locations where potentially explosive atmospheres can occur due to the local and operational conditions.
- Potentially explosive atmospheres are mixtures consisting of air and flammable gases, vapours, mists or dusts under atmospheric conditions, enabling a combustion to continue on its own from the ignition source, after the ignition having taken place (explosion).
- Hazardous locations are classified into zones according to the probiality of a potentially explosive atmosphere occurring.

Classification of zones

When evaluating the danger of explosion, i.e. when defining the hazardous locations, the Code of Practice for the prevention of danger due to explosive atmospheres, with collected samples produced by the chemical industries trade association is to be taken into consideration. If there are special cases or doubts regarding the classification of hazardous locations the inspecting authorities, e.g. factory inspectorate will make the decision. If any doubts arise regarding the classification, the extent of the protective measures in the hazardous area must comply with the highest probability of a potentially explosive atmosphere occurring. In Zones 0 and 1 only explosion protected electrical apparatus complying with the ElexV may be used. In Zone 0 only apparatus, specifically certified for this purpose, may be installed. In Zone 2, apparatus certified for Zones 0 and 1 may also be used. Electrical apparatus, meeting special requirements of VDE 0165/9.83, Appendix A can also be installed in Zone 2

Classification of areas, which are hazardous due to flammable gases, vapours or mists.

Zone	🕽 explosive gas atmosphere
= contir	uously of for long periods

Zone 0 covers areas, in which an explosive gas atmosphere is present continuously or for long periods. This usually applies to the inside of containers or apparatus (vaporizers, reactors etc.), if requirements of Zone 0 are met.

Zone 1 explosive gas atmosphere = occasionally

Zone 1 covers areas, in which an explosive gas atmosphere can be expected to be present occasionally.

This can apply to

- areas surrounding Zone 0
- areas surrounding charging doors areas surrounding fitting and draining facilities
- areas, where fragile apparatus, glass, ceramic or similar tubes are installed
- areas surrounding insufficiently tight cable glands, e.g. on pumps or valves, the inside of equipment such as vaporizers, reactors.

Zone 2 explosive gas atmosphere = for a short period only

Zone 2 covers areas, in which an explosive gas atmosphere can only be expected very occasionally and if it does occur it will exist for a short period only. This applies to

- areas surrounding zone 0 and 1
- areas around flanged connections with customary flat gaskets, when using pipes in closed areas.
- Rooms, where flammable materials are being distributed in pipes with welded or brazed connections, are not hazardous areas.

Zone classification for areas, which are hazardous due to combustible dusts:

Zone 10 covers areas, where a potentially explosive atmosphere is present frequenty for a long time. This usually applies only to the interior of equipment (mills, dryers, mixers, conveyors, silos etc.), if dust can create potentially explosive mixtures frequently or for a long time.

Zone 11 covers areas, where occasional disturbance of dust deposits can create potentially explosive atmospheres for short periods. This applies to areas surrounding equipment containing dust, which could emerge, thus possibly causing dangerous dust deposits (e.g. mills).

Zone classification for medical rooms:

Zone G, also called "closed medical gas systems", covers rooms not totally closed, where potentially explosive mixtures (exept potentially explosive atmosphere) are produced, carried or used in small quantities constantly or occasionally. **Zone M**, also called "medical environment", covers the part of a location, where a potentially explosive atmosphere can occur only for short periods due to the use of analgesic or desinfecting agents or medical stain cleaners.

Types of protection

The basis principle of explosion protection is the same worldwide. It is the prevention of flammable materials (gas, vapour, mist or dust) in dangerous quantities air (oxygen) and sources of ignition, occuring at the same time. Areas, where the occurance of explosive mixtures of flammable

materials and air cannot be prevented by applying primary explosion protection, special measures for the prevention of ignition sources are to be taken. Special construction and installation inquirements therefore apply to all electrical apparatus in hazardous locations.

According to construction requirements VDE 0170/ 0170 Part 1, DIN EN 50014, the manufacture of explosion protected apparatus is permitted in various types of protection. The following table shows the types of protection of European Standards and describes the customary applications.

Type of protection to IEC or European Standard		Basic principle	Schematic	Applications	
flameproof enclosure	d	A type of protection in which the parts, which can ignite an explosive atmosphere are placed in an enclosure, which can withstand the pressure developed during an internal explosion of an explosive mixture and which prevents the transmission of the explosion to the explosive atmospheres surrounding the enclosure.	gap -s	Switchgear, control and indicating equipment, control boards, motors, transformers, light fittings and other spark-producing parts	
increased safety	e	A type of protection in which measures are applied so as to prevent with a higher degree of security the possibility of excessive temperatures and of the occurance of arcs or sparks in the interior and on the external parts of electrical apparatus, which does not produce therm in normal service.		Terminal and connection boxes, control boxes housing Ex-modules (of a different type of protection) squirrel cage motors, light fittings	
pressurized apparatus	p	A type of protection in which the entry of a surrounding atmosphere into the enclosure of the electrical apparatus is pre-vented by maintaining inside the said enclosure a protective gas (air, inert or other suitable gas) at a higher pressure than that of the surrounding atmosphere. The overpressure is maintained either with or without continuous flow of the protective gas.	Q Mu P	As above, but especially for large equipment and complete rooms	
intrinsic safety	i	A type of protection in which the electrical apparatus contains intrinsically safe circuits, which are incapable of causing an explosion in the surrounding atmosphere. A circuit or part of a circuit is intrinsically safe, when no spark or any thermal effect in this circuit, produced in the test conditions prescribed in the standard (which include normal operation and specific fault conditions) is capable of causing ignition.		Measurement and control equipment	
oil immersion	0	A type of protection in which the electrical apparatus or parts of the electrical apparatus are immersed in oil in such away that an explosive atmosphere, which maybe above the oil or outside the enclosure cannot be ignited.		Transformers (only used rarely now)	
powderfilling	q	A type of protection in which the enclosure of electrical apparatus is filled with a material in a finely granulated state so that, in the intended conditions of service, any arc occuring within the enclosure of an electrical apparatus will not ignite the surrounding atmosphere. No ignition shall be caused either by flame or by excessive temperature of the surfaces of the enclosure.	ML Th	Transformers, capacitors, heater strip connection boxes electronic assemblies	
moulding	m	A type of protection in which the parts which can ignite an explosive atmosphere are enclosed in a ream sufficiently resistant to environmental influences in such a way that the explosive atmosphere cannot be ignited by either sparking or heating, which may occur within the encapsulation.	explosive atmosphere	only small capacity switchgear, control gear, indicating equipment, sensors	
Type of protection	n	Electrical apparatus is not capable of igniting a potentially explosive atmosphere (under normal operation and under defined abnormal operating conditions).	Zone 2 This type of protection includes several methods of ignition protection.	All electrical apparatus for Zone 2, less suitable for switchgear and control gear.	



Light sources



Traditional incandescent lamps

In general there are no problems with incandescent lamps in lighting systems. They are economical to install since they require just a lampholder and two terminals. Their operating position is not critical. They are almost independent on ambient temperature and can easily be dimmed by phase control or phase reverse control. Luminaires for incandescent lamps may as a standard be operated on 115 V or 230 V by simply changing the lamps. The average lifetime is 1000 hours and thus not very high.

Incandescent lamps for navigation lights are a special case. They were developed precisely for application within an optical system and thus differ in many aspects from standard lamps:

- They have a special lampbase to make sure only these especially approved lamps are used in navigation and signalling lights. Moreover the particular base ensures the lighting filament being always in the correct position in relationship to lens and screening.
- Their maximum light efficiency / minimum power consumption ratio is set to its best.
- Their lighting filament is suspended in a very special way to prevent screening the filament in signalling lights.
- Their production process is particularly sophisticated for smallest tolerances with the filament and its suspension.
- They are approved by the responsible authorities of almost all important countries in the world.



Halogen lamps

Traditional incandescent lamps lose part of their light intensity in the course of time since tungsten evaporates from the filament and condenses on the inside surface of the bulb forming a dark layer. In modern halogen lamps they prevent this effect by adding halogenes to the filling gas. Within the so-called halogen cycle the halogenes combine with the evaporated tungsten. This gaseous combination drifting with the heat flow towards the hot filament the tungsten will leave the combination and re-join the filament. The released halogenes are again available for the cycle. Further advantages of halogen lamps:

- equally bright light throughout life time
- nice, brilliant light for fresh colours and attractive glamour effects
- increased light output with same power consumption improves the economy by about 25 % compared with traditional incandescent lamps
- small dimensions



Halogen low voltage incandescent lamps (12 V)

are important elements of modern lighting architecture. Their small, solid filament in conjunction with respective reflectors produce narrow beams. There are many types available. They include those with cold light reflector to reduce the temperature load on the illuminated object. Lifetime of these lamps - depending on the type - is up to 4000 hours.

Halogen low voltage incandescent lamps must be powered through either conventional or electronic transformers. There is no problem in dimming them.



Halogen high voltage incandescent lamps are still rather new light sources. They are available as standard with bases E14 and E27. They don't need a transformer and may replace traditional incandescent lamps without any modifications. Their lifetime is about 2000 hours.



Fluorescent lamps

Their advantage is their excellent economy. Their light efficiency per watt of invested power (lumen per watt) is very high. The elongated shape results in a low luminous density on their surface and thus in little glare. Lifetime is about 8000 hours if operated with conventional ballast respectively about 12,000 with electronic ballast. Fluorescent lamps may be dimmed down to 1 % of their rated luminous flux without any problems if operated by dimmable electronic ballasts.



Tubular compact fluorescent lamps (TC-lamps)

The industry succeeded in reducing the dimensions of fluorescent lamps to almost those of traditional incandescent lamps by bending the tube and splitting it into a bunch. Compact fluorescent lamps are available in different shapes and with different outputs.

They may be classified in three groups:

- those with E14 or E27 base and internal electronic ballast to directly replace traditional incandescent lamps,
- those with 2 connection pins for operation with conventional ballast with the starter being included in the lamp base.
- and those with 4 connection pins for operation with electronic ballast. Controllable electronic ballasts enable dimming down to 10 % of the rated luminous flux.



Electrodeless fluorescent lamps

In traditional fluorescent lamps the electrical discharge required to create light takes place between two electrodes the wear and tear of which determines the life time of the lamp. The way of operation of the electrodeless fluorescent is totally different. Its discharge has neither beginning nor end. The closed circle enables a discharge process that needs no electrodes. The required energy is induced from outside by magnetic fields. A very decisive fact for long lifetime!

The electrodeless fluorescent lamp features sensational data:

- 12000 lumen luminous flux in the 150 watt version. Colour response 80 (very good)
- 8000 lumen luminous flux in the 100 watt version. Colour response 80 (very good)
- Extremely long life time of 60,000 hours and this does not mean the lamp will be defective by then but just that the luminous flux will have diminished by 30 %.

aqua signal has succeeded in even improving the outstanding properties of the electrodeless fluorescent lamp. An optional device extends the admissable temperature range to -50° until +50° C without noteworthy loss of luminous flux.



Neon lamps

There is no other light source that offers to the user such a vast variety of application facilities. Neon lamps are produced by hand to customers requirements and are available in each feasible shape.

Neon lamps are cold cathode lamps which means their lifetime is not limited by wear and tear of the filament. This results in a life expectancy of 60,000 hours. They need a high operating voltage which depends on the lamp's diameter and gas filling. With a diameter of 10 mm it is about 500 V per meter and with a diameter of 18 mm about 280 V per meter with discharge in blue. It is by about 50 % higher with discharge in red.

Neon lamps with blue discharge may be dimmed down from 100 to 5 % by means of the excellently adapted electronic ballasts from agua signal.



LED (light emitting diode)

An LED is an electronic semi-conductor producing light under the influence of electricity. This does not happen by heating a filament or by gas discharge but is a result of effects inside the semiconductor. An LED supplies light only within a narrow window of the spectrum i.e. of a precisely defined colour.

Two processes have been developed to produce



Light sources

white shining LEDs. One combines several LEDs of different colours in a common housing thus mixing the colour fractions into white. The other one provides an inside layer in a blue LED transforming part of the blue light into other colours thus providing all fractions of the spectrum that again add up to white light. It is the long lifetime of more than 100,000 hours, little heat production, and mechanical robustness compared with conventional incandescent lamps that disclosed new application fields to the LED.



High pressure sodium vapour lamps with instant ignition

have bases at both ends and need a special ignitor. In hot condition the lamp requires about 10 seconds to ignite which is of particular importance for hazardous areas.



High pressure mercury vapour lamps

These lamps don't need an ignitor but a ballast. There are types with E27 and with E40 base. The high pressure mercury vapour lamps contain a quartz burner as discharge tube. This tube is positioned inside a glass bulb on the inner surface of which there is a fluorescent layer. Having been switched on the burner slowly gets hot thus making more and more mercury evaporate. The more mercury evaporated the brighter the light output. All mercury evaporated means the lamp features its rated luminous flux. The average lifetime of this lamp is about 6000 hours.

Its disadvantage is that it reacts to shortest interruptions of power supply and to severe voltage fluctuations by extinguishing and then needing several minutes to re-ignite.



Low pressure sodium vapour lamps

have the best efficiency of all conventional light sources i.e. the highest light gain but a restricted colour response. They are suitable for all applications where recognition of colours is of no importance. Monochromatic yellow light enables contrasty seeing also in smoke and fog. You need a ballast. The average lifetime is about 6000 hours.



High pressure sodium vapour lamps

offer much light output because of their high efficiency despite of their small dimensions. They are little sensitive to vibration and have proved as outdoor floodlights on board of ships. You need a ballast and an ignitor. The average lifetime is about 6000 hours.

Metal vapour lamps

are similar to high pressure mercury vapour lamps concerning design and operation. Light output and colour response have been improved by adding some halogen combinations. Depending on the type they may operate with or without ignitor. There is a special version with one base at each end of the bulb enabling instant re-igniting in hot condition by means of a high voltage puls.

Ignitors

Metal vapour halogen lamps and high pressure sodium vapour lamps require a voltage of between 800 and 5000 V to start working. There are two different igniting device systems. One is based on additional voltage load and the other one on pulsation technique. aqua signal has decided in favour of the modern extra voltage load system. Its big advantage is that the ignitor produces the ignition voltage without loading it on the ballast. This is of particular importance towards the end of the lamp's lifetime when the ignitor tries again and again to re-start the exhausted lamp. Moreover the extra voltage load technique offers reproducible ignition properties independent on the ballast.

aqua signal's ignitors for high pressure discharge lamps have currently been improved to adapt them to the extremely rough operating conditions our floodlights have to meet with. They may be called unique since they not only ignite the lamps tenderly but also supervise ignition process and operation and recognize lamp failures due to ageing in which case they carefully switch the lamp off.









C) Single wiring h.p.f.c. in parallel





E) Capacitive wiring in series I.p.f.








Starting of fluorescent lamps

Glow starters

require least complex wiring. It is their purpose to pre-heat the electrodes and - in conjunction with the ballast - to create a voltage puls to reliably ignite the fluorescent lamp. This may require repeated attempts. With the lamp in operation the starter ought to need no more power but be ready for operation again the moment the lamp is switched off.

Electronic starters

Their pre-heating time is automatically set depending on the ambient temperature. To prevent wear and tear with the electrodes the starter supervises the fluorescent lamp and reacts instantly to voltage fluctuations, low ambient temperatures, and ageing of the lamp. Its internal cut-off circuit automatically switches the lamp off in case of failure. Interruption of supply or replacement of the lamp deactivate the safety stop. The electronic starter may directly replace a conventional one. It increases the lamp's lifetime and makes it start without any flicker. **Rapid start**

This is a totally different ignition principle than the starter/ballast one. It needs no starter. Here it is not a high voltage puls that strikes through the gas filled distance but ignition takes place by a constant, permanently available and much lower voltage.

Starterless operation, however, requires special lamps. In most cases they are of a diameter of 38 mm with the inner surface of their glass bulbs either fitted with ignition support stripes or with a silicone layer (rapid start lamps).

120 V mains first require transformation to higher level. This facilitates starterless wiring since two more heating coils to heat the lamp's filament are just little extra. For this reason this way of operation is widely spread in Canada and the USA.

Start by means of electronic ballasts

Here there are basically two different versions of ignition

- Cold start version: Ignition of the fluorescent lamp takes place immediately upon switching on the ignition voltage of maximum 1500 V. Ignition time is less than 0.2 seconds. However, this way stresses the electrodes more than if they were pre-heated so that the number of starts is limited to about 10,000 per lamp. For this reason this type of electronic ballast is only recommended for circuits that are being switched less than five times a day.

Warm start version: After a defined pre-heating time for the lamp's electrodes of about 1 second the lamp will be started by means of a determined voltage. This especially tender starting procedure enables more than 40,000 ignitions without doing any harm to the lamp's lifetime.

Power factor correction with fluorescent lamps

If the power factor of fluorescent lamp systems is not corrected there may - depending on the $\cos \phi$ be current flows of more than double the amperage as in well corrected systems.

Example: 2 x 18 W luminaire on 230 V / 50 Hz: not corrected

- $\cos \alpha 0.34 >>$ mains current = 0.75 A
- corrected as per aqua signal's standard
- cos φ 0.90 >> mains current = 0.28 A

The increased current flows permanently from the generator to the luminaires and back for which reason it is also called dielectric or reactance current. It contributes not the least to the improvement of the lighting system but just stresses generator, transformers, mains, and fuses with the consequence that all these components have to be overrated or - in other words - you can operate just 13 uncorrected luminaires on a main fused 10 A or 35 luminaires if they are properly power factor corrected.

Inductive ballasts

The most simple wiring is the inductive wiring with ballast and fluorescent lamp in series. Depending on the lamp's rated performance and main voltage its $\cos \phi$ is between 0.35 and 0.52 ind.

Capacitive ballasts

Capacitive wiring is ballast, fluorescent lamp, and capacitor in series. Its $\cos \phi$ is almost as bad as that of the inductive wiring just with the difference that it is capacitive. Depending on the lamp's rated performance and mains voltage here, too, it is between 0.35 and 0.52 cap.

Duo wiring

If you now combine the performances of both ballasts the way that in a twin lamp luminaire one lamp runs inductively and the other one capacitively then both properties cancel each other out. The result is an excellently power factor corrected luminaire with a $\cos \varphi$ of 0.9. This type of wiring is known as duo wiring.

If single lamp luminaires are provided equal numbers of inductive and capacitive luminaires ought to be installed alternately and fed by the same main to obtain a good power factor. The duo wiring not just compensates the reactance current of two fluorescent lamps but also offers light technical advantages like avoiding the stroboscope effect. Another big advantage of this type of power factor correction is that it may also be applied with disturbed mains whereby it is almost unimportant if the disturbances are of high or low frequent nature.

Power factor correction in parallel

Another way of p.f.c. is to install a capacitor in parallel with the supply directly between the lamp's terminals. The capacitor has to be selected to have a cos $\phi > 0.9$.

This way of p.f.c. must not be applied with disturbed mains because the capacitor in parallel short-circuits all high frequent voltages. This may result in a current sufficiently high to make the main fuses blow. Maybe the capacitor gets hot or even bursts.

Electronic ballasts

Using electronic ballasts you need no p.f.c. since

all electronic ballasts for rated lamp performance > 25 W have a $\cos \phi > 0.9$.

Electronic ballasts of good quality may be applied with disturbed mains unrestrictedly. aqua signal uses to test the reliability of their electronic ballasts with disturbed mains.



Electronic ballasts

There is a comprehensive range of electronic ballasts available for the various types of fluorescent lamps. Electronic ballasts operate the fluorescent lamps with high frequency voltages and currents (20 - 50 kHz). An internally produced ignition voltage starts the lamps. Contrary to conventional ballasts power factor correction is not necessary because the power factor anyway is > 0.95.

Electronic ballasts fulfill their purpose like conventional ballasts but on top they offer several additional advantages:

- Until 25 % less power consumption compared with conventional operation
- 50 % longer lifetime of the lamps because of tender start and operation
- thus longer lamp change intervals meaning much less maintenance cost
- less stress to the air-condition plant because of less idle current flow

- constant luminous flux with mains voltage fluctuating from 220 to 230 V \pm 10 %
- suitable for 50 Hz and 60 Hz mains
- operation admissable under DC i. e. applicable for safety and emergency lighting
- unaffected by disturbed supply
- minimized reduction of luminous flux over the entire lifetime of fluorescent lamps because of high frequency operation
- neither flicker nor noise when being switched on or during operation
- no stroboscopic effects e.q. near rotating machines
- wide range of admissible ambient temperatures from -25 to +60° C
- safety cut-off with defective lamp and automatic re-start after lamp change or mains break-down
- little weight
- small dimensions
- little wiring cost (no starter required)



Light intensity control

Controlling the light intensity does not only produce lighting effects but also serves to switch or control the illumination according to the actual requirements and to daylight intensity. agua signal offers an extensive range of dimmable electronic ballasts. They enable via a 1 - 10 V dimmer contact connecting control equipment capable of dimming conventional fluorescent lamps from 100 to 1 % and compact fluorescent lamps from 100 to 10 %.

More advantages of light intensity control:

- dimming of fluorescent lamps with all of them operating absolutely synchronously
- up to 60 % power saving by automatic control in dependence on daylight intensity
- ballasts connected to different phases may be dimmed commonly by one controller
- lamp start possible with dimmer being in any random position
- luminous flux independent on disturbances in supply

Description of control contact:

- Control voltage is DC in the range from 10 V (maximum intensity) to 1 V (minimum intensity)
- control voltage input resistant to 230 V AC take care of correct polarity

Controlling of max. 10 single lamps or 5 dual lamps dim EVGs fed by single phase mains 1 x 230 / 240 V



Manual control unit HF DIM MCU The manual control unit HF DIM MCU switches and dims max. 10 single lamps or 5 dual lamps dim EVGs. If more EVGs are connected or if the EVGs are connected to different phases remote-control switches must be applied (see picture).



Controlling via manual control unit plus amplifier / mains 3 x 230 / 240 V





Dimming by means of phase cutting

Phase forward control (cut-on): Conventional dimmers operate by cutting-on the phase. At the beginning of each sinoidal half-wave the nonconducting dimmer blocks the current flows to the lamp. Only after a time-lag which may be set by the user the electronic switch opens and the consumers connected get current. This way the light intensity of connected lamps may be controlled steplessly. Disturbing voltages created by the switching are being damped by suitable filters. Standard phase cut-on dimmers are applicable to all ohmic loads like e.g. 230 V conventional incandescent and halogen lamps. For inductive loads such as conventional transformers or ballasts for fluorescent lamps e.t.c. you need special phase cut-on dimmers.

Phase reverse control (cut-**off**): This means opening the electronic semi-conductor the moment the sinoidal half-wave passes through zero and closing it again after the time tz. This way you modify the effective lamp voltage and thus the light intensity. Phase cut-off dimmers are applicable for ohmic loads like conventional incandescent and halogen lamps as well as for capacitive loads such as electronic transformers. The phase cut-off dimmer works almost noiselessly because of little necessity to filter. aqua signal's special dimmers with their power loss of only 15 W with 10 A rated current are extremely economical and - by the way absolutely short-circuit-proof.



Electronic emergency lighting

aqua signal has developed an electronic emergency lighting system especially for naval purposes which may including the requested batteries be placed inside various types of luminaires for accomodation as well as engine room areas. It is designed for one fluorescent lamp of 18/20 or 36/40 W each. During emergency operation the luminous flux is 50 - 60 % and thus extremely high. It is sufficient to continue all activities. aqua signal favours this decentralized emergency lighting system which offers - compared with a centralized one - several advantages:

 Each emergency luminaire works self-sufficiently. The advantage is that with a defective battery just one emergency luminaire will fail but not the whole circuit.

- No additional wiring cost.
- Mains fuses need not be suitable for DC.

Conventional emergency lighting systems react to mains collaps. aqua signal has developed a special type reacting to switch position. The result is that the emergency lamp will start working if mains fail whilst the switch controlling the luminaire is ON. However, with the switch being in OFF position when the mains fail the emergency lamp will stay off, too. This arrangement has well proved e.g. for bridges.

Emergency current unit

The electronics of the emergency current unit are enclosed in a compact housing. An LED indicates that supply is on and charging current is flowing. aqua signal applies the puls charging technique with constant current that has well proved in practice. It stands for tender charging and great charging acceptance by the battery even with high temperature. The charging time from 0 to 100 % is about 30 hours. To avoid non-reparable damage be done to the batteries there is a deep discharge protection included preventing the batteries from ever being discharged deeply.

During emergency operation the fluorescent lamp works in a frequency that is on one hand higher than the audible range until 20 kHz but that on the other hand guarantees good lamp efficiency.

Batteries

aqua signal exclusively applies high temperature standing nickel/cadmium batteries. Only this type

Electronic emergency lighting

of battery offers several years of service without maintenance even under harsh conditions. The capacity of the batteries is determined to extend to an operating time of 3 hours with 18/20 W and 1.5 hours with 36/40 W lamps. During this period the lamps deliver 50 - 60 % of their rated lumi-

nous flux. However, the ambient temperature is of great influence to the luminous flux which is significantly reduced by low temperatures.



- Low ambient temperatures Lamps with high operating temperatures like conventional incandescent and halogen lamps, high pressure mercury vapour and sodium vapour lamps, and halogen metal vapour lamps are comparatively unsensitive to low ambient temperatures. Luminous flux and lifetime are almost not affected at all. Fluorescent lamps are more sensitive in this respect. The luminous flux is reduced and also the ignition may become a problem. Permanently repeated ignition attempts under low ambient temperature result in a lifetime reduction.

Despite the above described disadvantages luminaires with fluorescent lamps may nevertheless be economically applied in areas with low ambient temperatures provided you know details about the operating area and dispose of knowledge about the thermic behaviour of fluorescent lamps.

The following graph shows the typical development of the luminous flux of a luminaire with fluorescent lamps in dependence on the ambient temperature.

- High ambient temperatures

The maximum admissible ambient temperature for most of aqua signal's types of luminaires is 45°C. This makes sure the lifetime of the installed components and thus the lifetime of the luminaires as a whole will not suffer. The above graph makes evident that also exceeding the ideal temperature level results in a



reduction of the luminous flux. Despite of this a well designed luminaire will offer a luminous flux of more than 80% over a considerable temperature range.

Luminaires for coldrooms

Coldroom luminaires must reply to quite particular requirements. They must offer a sufficiently high light performance, operate economically, and permit long maintenance intervals. Moreover they must be splashwater-protected to prevent water penetration during coldstorages being cleaned. Changing the fluorescent lamp must easily be possible also with low temperature.

For application in coldstorages the following types of fluorescent lamps may be chosen:

- Standard fluorescent lamps
- Thermo fluorescent lamps
- Fluorescent lamps of short design 40W / 590 mm
 Special fluorescent lamps for low temperatures
- 115W

The following graph shows the luminous flux of the above listed fluorescent lamps in dependence on the luminaire's ambient temperature.

aqua signal offers a great number of special luminaires applicable to coldrooms and replying to most different requirements.



New test marks

CE

The **CE mark** is not a certificate of conformity with existing standards granted by a test authority but proves the compliance with the technical requirements defined in the standards referred to in EU rules. The manufacturer must apply it to the product or its package or both of them and it is of no influence to other test marks. The CE marking is being done by the manufacturer under his own responsibility and needs not be certified by any test authority.

EEI Classing

The European Committee for Electronic Standardization (CENELEC) had published a proposal how to standardize the measuring of the total power consumption of ballasts and lamp wirings to make the overall consumption comparable. The union of European associations of manufacturers of luminaires and ballasts (CELMA) has introduced a system for classing ballasts and lamp wirings (EEI = energy efficiency index). This system presents 7 classes per type of lamp to class the total input power of ballasts and lamp wirings. Classes A1, A2, and A3 comprise electronic ballasts (of which A1 is for dimmable ones), classes B1 and B2 cover little loss ballasts, and classes C and D are for conventional ballasts.

Lamp designation	Symbol	Code	Express	ion	Power [Watt]	Beam spread	Part No. (1 set = 10 pcs.)	Socket base	Voltage	Dia. [mm]	Length [mm]	Luminous flux [lm]
種別	記号	品番	解説		消費電力 [W]	ビーム角度	ご注文品番 (標準梱包10個	口金	電圧	直径 [mm]	長さ [mm]	光束 [lm]
				Incandescent la	amps / 白舅	熱ランプ						
All purpose lamps / 万能ランプ		A60	A = 60 =	All purpose lamp / 万能ランプ dia. / 一般の直径	25 40 60 75 100 25 40 60 75 100		9840042600 9840085100 9840042500 9840085200 9840042400 9840085300 9840047100 9840103200 9840103300 9840085400	E27 E27 E27 E27 E27 B22 B22 B22 B22 B22 B22 B22 B22	230 V	60	105	230 430 730 960 1380 230 430 730 960 1380
		IG CO T-3 30	IG = CO = T =	Incandescent lamp, glass bulb / 白熱ランプ、ガラスバルブ Conical form / 円錐型 Tube / 筒型	15 25 15 25 40		9840085800 9840085900 9840086000 9840086100 9840103700	E14 E14 B15 B15 F14	230 V	25	57	90 190 90 190 380
			30 =	dia. / 直径			9840102000 9840103800 9840103900	E27 B15 B22				
				Halogen lamps	/ハロゲン	ハ ランプ		-				
Descendentes	=	QPAR 16	Q = PAR = 16 =	Quarz /石英 Parabolic reflector lamp / ビーム・ランプ dia. / 直径	50	25° 40° 50°	9840117200 9840117300 9840117400	GU10 GU10 GU10	230 V 230 V 230 V	50.7 50.7 50.7	53 53 53	
Pressed glass reflector lamps / プレスド ガラス製		QPAR 20	Q = PAR = 20 =	Quarz / 石英 Parabolic reflector lamp / ビーム・ランプ dia. / 直径	50	10° 30°	9840118800 9840106800	E27 E27	230 V 230 V	64.5 64.5	91 91	
2-4. 327		QPAR 30	Q = PAR = 30 =	Quarz /石英 Parabolic reflector lamp / ビーム・ランプ dia. / 直径	75	10° 30°	9840117500 9840117600	E27 E27	230 V 230 V	97 90.5 97 90.5	90.5 90.5	
	e }	QT-DE12	QT = DE = 12 =	Quarz tubular lamp / 石英水銀灯 double ended / 両口金形 dia. / 直径	200 300 500 750 1000 100 200		9840104900* 9840102100* 9840042100* 9840102300* 9840101100* 9840104700* 9840104800*	R7s	230 V 230 V 230 V 230 V 230 V 230 V 12 V 24 V	12	114.2 114.2 185.7 185.7 64.2 64.2	3400 5600 9900 16900 24200 - 2200
		QT32/c	QT = 32 = c =	Quarz tubular lamp / 石英水銀灯 dia. /直径 clear tubus /クリア・チューブ	60 75 100 150		9840117700 9840117800 9840117900 9840118000	E27	230 V	32	105	820 1100 1500 2500 4200
		QT42	QT = 42 =	Quarz tubular lamp / 石英水銀灯 dia. / 直径	500 1000		9840102400* 9840042000*	E40	230 V	42	210 270	9500 21500
Halogen incandescent lamps / ハロゲン・ランプ		QT 9 QT10	QT = 9 = 10 =	Quarz tubular lamp / 石英水銀灯 dia. / 直径 dia. / 直径	5 10 20		9840104300 9840104400 9840100800	G4	12 V	9	31	60 140 350
		QT12 QT18	QT = 12/18 =	Quarz tubular lamp / 石英水銀灯 dia. / 直径	50 100		9840106300 9840106500	GY 6.35 GY 6.35	12 V 12 V	12 12	44 44	950 2500
	=	QR-CB35	QR = CB = 35 =	Quarz lamp with reflector / ビーム・ランプ Cool beam quarz lamp with reflector and cover lens / 前面レンズ付きクール・ ビーム・ランプ dia. / 直径	10 20 20 35	38° 10° 38° 38°	9840106900 9840107000 9840118100 9840118200	GU 4	12 V	35	40	
	=	QR-CB51	QR = CB = 50 =	Quarz lamp with reflector / ビーム・ランプ Cool beam quarz lamp with reflector and cover lens / 前面レンズ付きクール・ ビーム・ランプ dia. / 直径	20 50	10° 24° 36° 10° 24° 36° 60°	9840105700 9840105800 9840105900 9840106000 9840106100 9840106200 9840106700	GU 5.3	12 V	50	46	
	Tê H	QR-LP111	QR = LP = 111 =	Quarz lamp with reflector / ビーム・ランプ Low pressure /低圧 dia. / 直径	50	4° 8° 24°	9840118300 9840118400 9840118500	G53	12 V	111	61 57 58	

* 1 piece / 1個

Light sources / ランプ



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шч	200	1100	3/		

										Light sour	ces /ランフ
Lamp designation	Symbol	Code	Expression	Power [Watt]	Beam spread	Part No. (1 set = 10 pcs.)	Socket base	Voltage	Dia. [mm]	Length [mm]	Luminous flux [Im]
種別	記号	品番	解説	消費電力 [W]	ビーム角度	ご注文品番 (標準梱包10個	口金)	電圧	直径 [mm]	長さ [mm]	光束 [Im]
			FI	」 uorescent lamps / 蛍							
		TC)	TC = Tubular compact fluorescent lamp / コンパクト型蛍光灯	5 7 9 11		9840104000 9840101900 9840101700 9840101800	G23		27	107 137 167 237	250 400 600 900
Compact fluorescent		TC-D	D = Double ended 4-tube / ツイン形、4本 チューブ・タイプ	10 13 18		9840100600 9840100700 9840101600	G24d-1 G24d-1 G24d-2		27	118 153 173	600 900 1200
amps/ コンパクト形 蛍光灯	- <u>-</u>	TC-SEL	EL = for electronic ballast / 電子安定器用	5 7 9 11		9840105200 9840105100 9840105300 9840106400	2G7		27	85 115 145 215	250 400 600 900
		TC-L	L= Long/スリム	18		9840106600	2G11			225	1200
		T16	T = Tubular fluorescent lamp / 蛍光灯 16 = dia. / 直径	8 white /白 8 warmwhite / ウォーム色		9840042300 9840100900	G5		16	288 288	450 450
Fluorescent	-I <u>6</u>	T16 High Efficient / 高性能	T = Tubular fluorescent lamp / 蛍光灯 16 = dia. / 直径	14 white /白 14 warmwhite / ウォーム色		9840117000 9840117100	G5		16	549 549	1350 1350
lamps / 蛍光灯		T26	26 = dia. / 直径	15 white /白 15 warmwhite / ウォーム色 18 white /白 18 warmwhite / ウォーム色 30 white /白		9840042800 9840100500 9840100100 9840100400 9840100200	G13		26	438 438 590 590 895	960 1000 1100 1150 2000
	:			36 white /白 36 warmwhite / ウォーム色 18 white /白 18 warmwhite / ウォーム色 36 white /白 36 warmwhite / ウォーム色		9840100000 9840101300 9840101000 9840101200 9840101400 9840101500				1200 1200 590 590 1200 1200	2600 2850 1350 1350 3350 3350
Cold room lamps / 冷蔵室用ランプ		T38	38 = dia. / 直径	40 white /白 115 white /白		9840102200 9840102900	G13		38	590 1200	2000 6850
High security lamps / ハイ・ セキュリティ・	-(<u>)</u>	T38 LMT-HS	38 = dia. / 直径 LMT = Low pressure mercury tube / 低圧ランプ、筒型水銀灯	20 white /白 40 white /白 J		9840102700 9840102800	Fa6		38	574 1184	1000 2500
ランプ			HS = High security / 喜安全性								
	1	1	High inter	nsity discharge lam	」 ps / 高圧ラン ⁻	プ		1			
Mercury lamps / 水銀灯		HPM	HPM = High pressure mercury elliptic / 楕円型高圧水銀灯	80		9840100300*	E27		71	155	3800
Sodium lamps /		HPS	HPS = High pressure sodium lamp / 高圧ナトリウム灯	400		9840104500*	FC2		23	206	48000
ナトリウム灯 		HPS	HPS = High pressure sodium lamp / 高圧ナトリウム灯	70 150 250 400 1000		9840104600* 9840102500* 9840102600* 9840073200* 9840103000*	E27 E40 E40 E40 E40 E40		32 47 47 47 66	156 211 257 283 390	6600 15000 28000 48000 130000
Metal halide lamps / 金属ハロゲン・ ランプ		MH	MH = High pressure metal halide lamp / 高圧金属ハロゲン・ ランプ	250 400 1000		9840104100* 9840104200* 9840103100*	E40 E40 E40		47 47 66	225 275 390	17000 30500 82000

* 1 piece / 1 個



iet comparible flu	orecent lamne (兴	业灯化鼓车					
isi companisie nu	orescent famps / 虫。						
Symbol /記号	Norm / 規格	Osram	Philips	Radium	Sylvania	Socket Base /口金	Power / 消費電力
	тс	Dulux S	PL-S	Ralux	CF-S	G23	5/7/9/11W
	TC-SEL	Dulux S/E	PL-S /4P	Ralux/E	CF-SE	2G7	5/7/9/11W
ı ه	TC-D	Dulux D	PL-C	Ralux Duo	CF-D	G24d-1 G24d-2 G24d-3	10 / 13 W 18 W 26 W
	TC-DEL	Dulux D/E	PL-C /4P	Ralux Duo/E	CF-DE	G24q-1 G24q-2 G24q-3	10 / 13 W 18 W 26 W
	тс-т	Dulux T	PL-T	Ralux Trio	CF-T	GX24d-2 GX24d-3	18 W 26 W
	TC-TEL	Dulux TEL	PL-T /4P	Ralux Trio/E	CF-TE	GX24q-2 GX24q-3	13 / 18 W 26 / 32 / 42 W
	TC-F	Dulux F		Ralux Twin	CF-F	2G10	18 / 24 / 36 W
	TC-L	Dulux L	PL-L	Ralux Long	CF-L	2G11	18 / 24 / 34 / 36 / 40 / 55 W
1 8 1	T26 (T8)	L	TL	NL	F	G13	15 / 18 / 30 / 36 / 58 W

T38 (T12)

T16 (T5)

1:

1 <u>)</u>(

L

L

TL

TL

G13

G5

20 / 40 / 65 W

4/6/8/13W

F

F

NL

NL