



Operator's Manual

Mini LED - 23W

DWTEK Co., Ltd

No.22, Dong Ying Rd., East District, Taichung City 401, TAIWAN

T: +886-4-3502-4890 | E: info@dwtek.com.tw

F: +886-4-2211-2890 | W: www.dwtekmarine.com

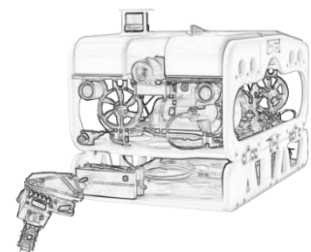




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1 Introduction








1.1 General

The lamp housing is constructed from hard anodized Aluminum-6061 T6 and is designed to operate at depth of 2000M. The front port is manufactured from optical quality high strength Acrylic.

The 23W LED is designed for in-water operation. Running the lamp in air for long period of time is not recommended and will reduce lamp lifetime. If the internal temperature exceeds 60°C, thermal protection would automatically activate and the output power will reduce below 10% of normal output until the internal temperature returns to 60°C.

When the 23W LED lamp is operated in the air, the housing may reach temperature of 60°C that may cause burns if the housing is handled without protective glove.

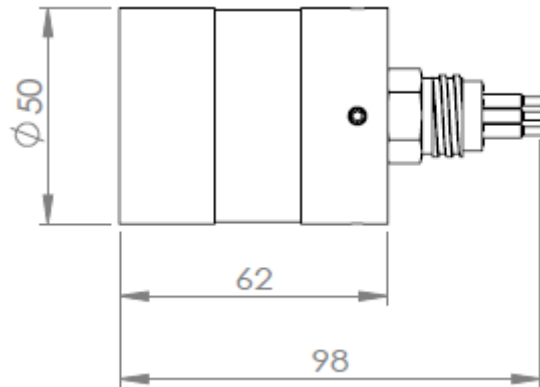
1.2 Precautions

	<p>The “DANGER” symbol indicates a hazardous situation which, if not avoided, will result in death or serious injury. Carefully read the message that follows to prevent serious injury or death.</p>
	<p>The “WARNING” symbol indicates a hazardous situation which, if not avoided, could result in death or serious injury. Carefully read the message that follows to prevent serious injury or death.</p>
	<p>The “CAUTION” symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury, or equipment damage. Carefully read the message that follows to prevent minor or moderate injury.</p>
	<p>The “NOTICE” symbol alerts to a situation that is not related to personal injury but may cause equipment damage</p>
	<p>Do not put hands near it when machine operating.</p>
	<p>Do not wear electrically conductive jewelry, clothing, or other items while working on the electrical system.</p>
	<p>An electric shock could be fatal. Ensure power to the Thruster is OFF” before opening electrical panels.</p>

2 Specifications

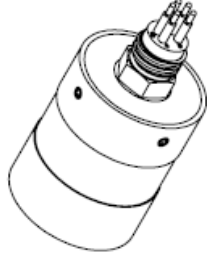
2.1 Mini LED (23W LED)

2.1.1 Standard

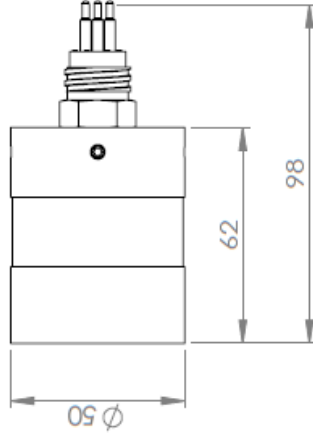
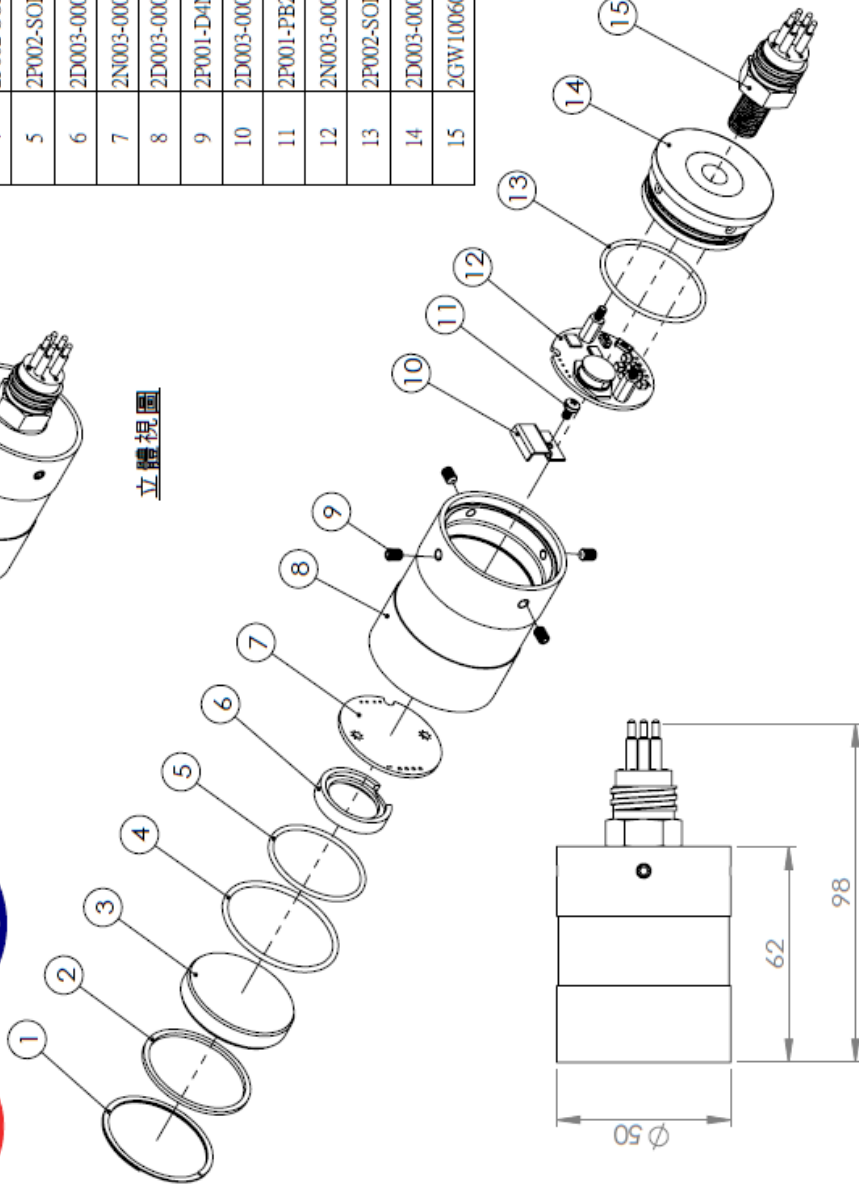


DWTEK-23W	
Input	12~28 VDC ; 23W
Lumens in Integrating Sphere	> 1200 Lumens @ 23W
Luminous Efficacy	52 lm/W
Current Draw	0.98 A @ 24 VDC
Dimming	0-5V analog / 0-100% PWM (Isolation Inside for Opt.)
Color Temp.	6,000~6,500°K
Beam Pattern	-
Body Material	Hard Anodized 6061-T6 Aluminum
Window Material	Acrylic
Depth Rating	2,000 m
Testing Rating	200 Bar
Operation Temp.	-10°C ~ 40°C
LED Lifespan	50,000 hrs
Weight	320 g (in Air) ; 140 g (in Water)
Connector	MCBH 5M / MCBH 3M(Optional) / Pigtail(Optional)

ITEM No.	PART No.	TITLE	DESCRIPTION	數量
1	2D003-00021	SS Spiral Retainer ring	ID39.2 x OD43xW0.5x2	1
2	2D003-00022	Teflon ring	23W LED Teflon ring	1
3	2D003-00019	Acrylic Window	42 X 8	1
4	2P002-SOR-S42N70	S-42	ID41.5 xOD45.5xW2	1
5	2P002-SOR-AS028N70	AS-028	ID34.65 x W1.78	1
6	2D003-00018	LED REFLECTOR	Ø20xØ28x5.5L	1
7	2N003-00006	LED Driver	Ø40x1.62L	1
8	2D003-00017	LED Body	Ø50x62L	1
9	2P001-D4NM4-0706	Socket Grub Screw	PEEK M4*P0.7*6	4
10	2D003-00023	H.S Mounting Plate	16.79x14.5x4.3(T=0.8)	1
11	2P001-PB22M3-0505	SS Cross Recess Pan Head Screw	SUS304 M3xP0.5x5	1
12	2N003-00001	LED Driver	Ø40x1.62L	1
13	2P002-SOR-AS029N70	AS-029	ID37.82 xOD41.38xW1.78	1
14	2D003-00020	LED LID	23W LED LID	1
15	2GW100605M-00001	Mini Bulkhead Connector	Male 5 Pin	1



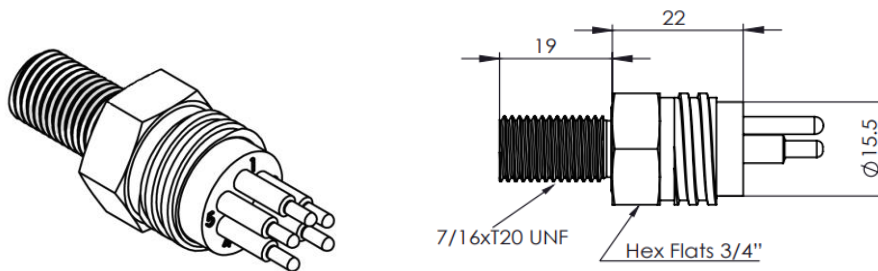
立體視圖



CATEGORY : 23W-LED				
TITLE : Mini standard 23W LED				
Revisions	Issue	Date	DESIGN	Date
210901新舊碼變更及修改生產製程與BOM相符。	△1	2021/11/23	DS	2015/6/3
221012 類別說明及圖紙版次更新	△2	2022.10.26	DRAWING	2022/10/26
			TSUI HWA	
			CHECKED	2022/10/26
			CJH	
			APPROV.	2022/10/26
			DS	
DWTEK CO., LTD			PART No. : B00017	
No. 22 Dong Ying Rd., Taichung City Taiwan R.O.C			DWG No. : 2B00300004-00001	
Phone: 886 4 35024890			SIZE : A4	
Fax: 886 4 22112890			ISSUE : 2	
E-mail: info@dwitek.com.tw			PAGE 1 OF 1	

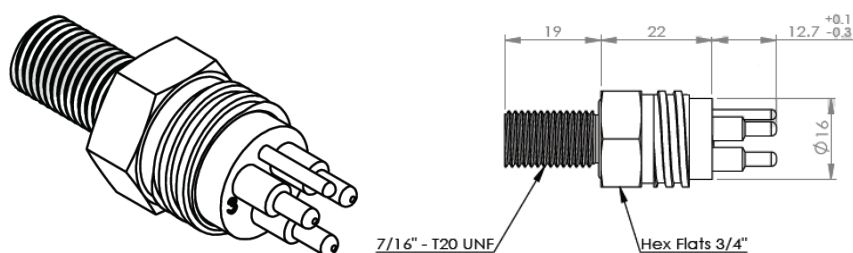
2.2 Connector

2.2.1 Micro Circular



2GW100605M-00001 (MCBH05MBR)	
Operation Specification	
Max. voltage	300 VDC
Current rating @contact	Contact 2,3,4: 10A
	Contact 5,6,8: 5A
	Contact 10,12,16: 5A
Max. current @connector	Contact 2,3,4,5,6,8: 20A
	Contact 10,12,16: 30A
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 times
Depth rating	600 bar (300 bar for peek)
Temperature rating	- 40 to 60°C
Material Specification	
Connector body	Chloroprene rubber
Bulkhead body	Brass (BR), stainless steel 316 (SS), anodized aluminum (AL), titanium (TI)
Contact	Gold plated brass
Socket	Beryllium copper
Location pin	Stainless steel 316
Bulkhead leads	Contact 2,3,4: AWG 18 PTFE, 30cm (AWG 20 PTFE optional)
	Contact 5,6,8: AWG 20 PTFE, 30cm (AWG 22 PTFE optional)
	Contact 10,12,16: AWG 20 PTFE, 30cm
O - rings	NBR 2-014

2.2.2 Customization (Option)



2GW100603M-00001SS (MCBH03MSS)	
Operation Specification	
Max. voltage	300 VDC
Current rating @contact	Contact 2,3,4: 10A
	Contact 5,6,8: 5A
	Contact 10,12,16: 5A
Max. current @connector	Contact 2,3,4,5,6,8: 20A
	Contact 10,12,16: 30A
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 times
Depth rating	600 bar (300 bar for peek)
Temperature rating	- 40 to 60°C
Material Specification	
Connector body	Chloroprene rubber
Bulkhead body	Brass (BR), stainless steel 316 (SS), anodized aluminum (AL), titanium (TI)
Contact	Gold plated brass
Socket	Beryllium copper
Location pin	Stainless steel 316
Bulkhead leads	Contact 2,3,4: AWG 18 PTFE, 30cm (AWG 20 PTFE optional)
	Contact 5,6,8: AWG 20 PTFE, 30cm (AWG 22 PTFE optional)
	Contact 10,12,16: AWG 20 PTFE, 30cm
O - rings	NBR 2-014

2.3 General

Part No.	2GW100605M-00001 、 2GW100603M-00001SS
Title	Micro Circular Bulkhead
Service Check	Regularly
Tool	None

23W LED function with MCBH5MBR connector.

2.4 Indications for Replacement

Replace if connector is damaged, deformed or no longer watertight.

2.5 Installation Procedures

For greasing and mating above water (dry mate)

1. Connectors must be greased with Molykote 44 Medium before each mating.
2. A layer of grease corresponding to minimum 1/10 of socket depth should be applied to the female connector.
3. The inner edge of all sockets should be completely covered, and a thin transparent layer of grease should be left visible on the face of the connector.
4. After greasing, fully mate the male and female connector in order to secure optimal distribution of grease on pins and in sockets.
5. To confirm that grease has been sufficiently applied, de-mate and check for grease on each male pin, then re-mate the connector.

For Cleaning

1. General cleaning and removal of any accumulated sand or mud on a connector should be performed with spray based contact cleaner, Isopropyl Alcohol.
2. New grease must be applied again before mating.

Caution!!



It always recommends applying dummy plug for watertight protection when storage and operation.

Warning!!



Only the qualified specialist is allowed to proceed the connector replacement.



3 Installation

3.1 Installation Guide

LED Electrical and Control Signal

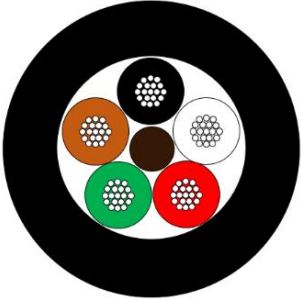
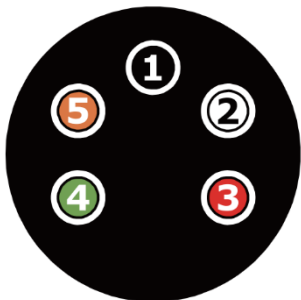
	Nominal	Max	Min
Input Voltage	24 VDC	28 VDC	12 VDC
Input Current	0.98A	0.83A	1.92A
No Dimming	-	-	-
Dimming 0-5V	-	5V	0V
Dimming PWM (Option)	50%	100%	0%
Dimming PWM (Customization)	45Hz (1100us~1190us)		

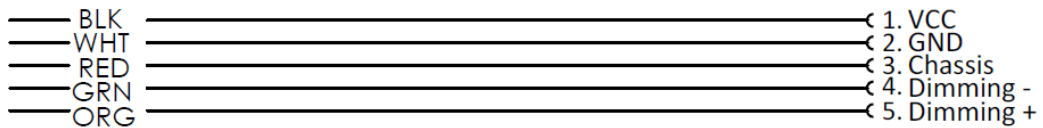
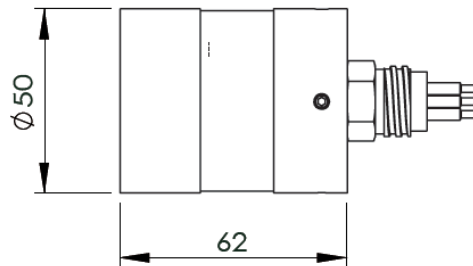
Procedure of electronic Connection:


1. Cable Black /Pin1 to +24 VDC
2. Cable White /Pin2 to GND
3. Cable Red /Pin3 to Chassis
4. Cable Green /Pin4 to Dimming—
5. Cable Orang /Pin5 to Dimming+

3.2 Pin/Cable Assignment

3.2.1 Dimming 0-5V Mode

Cable Top View	Num of Pin	Cable Code	Assignment	Bulkhead Top View (Male)
	1	Black	VCC	
	2	White	GND	
	3	Red	Chassis	
	4	Green	Dimming -	
	5	Orange	Dimming +	



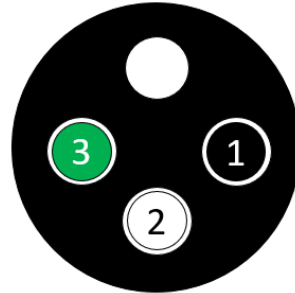
 DWTEK CO., LTD No. 22 Dong Ying Rd. Taichung City Taiwan R.O.C Phone: 886 4 35024890 Fax: 886 4 22112890 E-mail: info@dwtek.com.tw	CATEGORY :
	23W- LED
	PART No. :
	2B0030004-00001

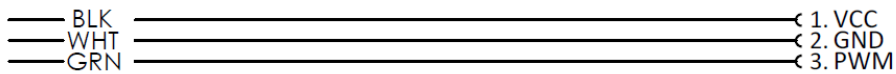
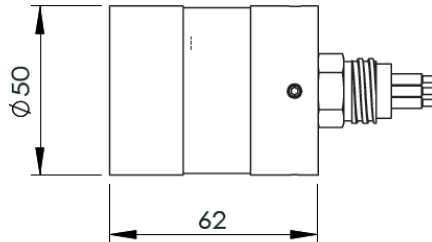
V1.0


Make sure all the connection is correct, and then follow the instruction listed as below to power the 23W LED.

1. Deliver +24 VDC to BLACK
2. Deliver Chassis to RED
3. Deliver GND to WHITE
4. Adjust 0-5V control signal to GREEN and ORANG

3.2.2 Customization (Option)

Num of Pin	Cable Code	Assignment	Bulkhead Top View (Male)
1	Black	VCC	
2	White	GND	
3	Green	PWM	



 DWTEK CO., LTD No. 22 Deng Ying Rd. Taichung City Taiwan R.O.C Phone: 886 4 35024890 Fax: 886 4 22112890 E-mail: info@dwtek.com.tw	CATEGORY :
	23W- LED
	PART No. :
	2B0030004-00003

V1.0

Make sure all the connection is correct, and then follow the instruction listed as below to power the 23W LED.

1. Deliver +24 VDC to BLACK
2. Deliver GND to WHITE
3. Adjust PWM control signal to GREEN



Note!!

PWM control signal is 45Hz (1100us~1190us) or Normal.



3.3 Maintenance and Removal

1. The lamp has been designed from the outset with a view towards simple straight forward operation and maintenance. All the lamp main parts are replaceable with instruction. Please contact DWTEK for details. If the connector requires for replacement, it is suggested that a thread lock compound be used to hold the connector firm.
2. If any parts of the lamp are removed for maintenance, the O-ring seals should have damage check and be lightly greased and cleaned before the lamp is reassembled.
3. Care should be taken not to scratch the front window when cleaning it with soft cloth and soapy water.

To remove the LED, please follow below steps.

1. Disconnect the cable.
2. Install the protection dummy on the bulkhead connector

LED FIELD & DEPOT REPAIR PROCEDURES LISTED BELOW SHALL BE CARED.



Warning!!

Make sure to switch off LED power the system is on the surface.



Caution!!

The LED is designed as a simple maintenance unit. After each dive, please always wash with fresh water.



4 Trouble shooting

4.1 LED Trouble shooting

If 23W LED performed:

I. No light up.

please proceed the initial detection procedure which mainly caused by one type of case as below:

I. Power output.

4.2 Detection Procedure

1. Use a multimeter to confirm that the voltage has a normal output, and the cable BLACK is connected to VCC, and WHITE is connected to GND.
2. Make sure that the LED is unobserved and in safe and well-protected condition.
3. It is recommended to use a power supply with a current consumption display to check the power consumption. If there is no power consumption, please contact the original factory and send it back for testing.



Caution!!

If the current goes higher with short circuit, the PCB need to be examined and replaced.



5 Maintenance

5.1 Acrylic

5.1.1 General

Part No.	2D003-00019
Title	Acrylic window
Service Check	Dirty
Tool	Alcohol 、 Clean Paper

1. When cleaning the acrylic, use a soft cloth dampened with water to wipe it. Do not use pickle cloth or coarse cloth to avoid scratching the acrylic. Acrylic can be cleaned with rubbing alcohol and cleaning paper.
2. It is recommended to spray it on a soft cloth before wiping.
3. Do not use high-concentration alcohol to avoid fogging or cracking of the acrylic