



Operator's Manual

Underwater Camera – DWCA 4KF

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

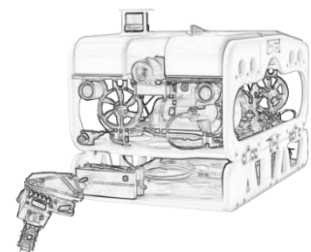




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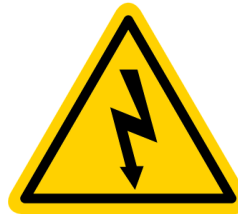


1 Introduction

1.1 General

The DWCA 4KF camera 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.

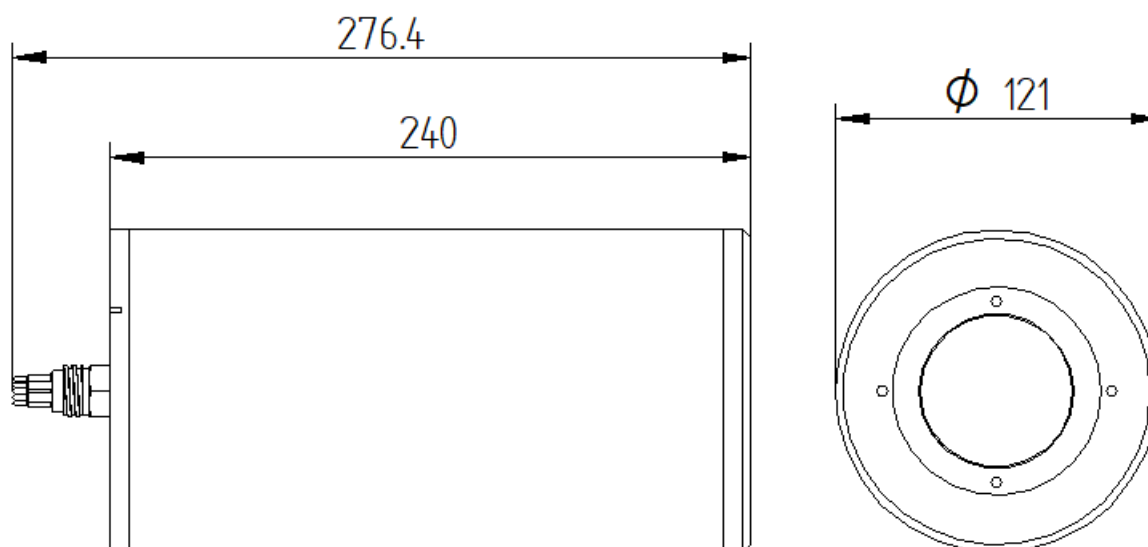
1.2 Precautions

	<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 Underwater Camera (DWCA 4KF)

2.1.1 Standard



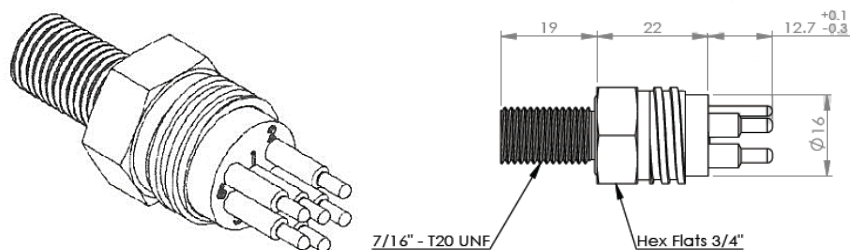
DWCA 4KF Camera	
ELECTRICAL	
Image Sensor	1/2.5-type Exmor R CMOS Sensor (8510K pixels)
Output Pixels (H × V)	3840x2160(QFHD) 、 1920x1080 (Full HD) 、 1280x720 (HD) 、 720x480/576 (SD)
Auto ICR	Yes
White Balance	Auto 、 ATW 、 Indoor 、 Outdoor 、 One Push WB 、 Manual WB 、 Outdoor Auto 、 Sodium Vapor Lamp (Fix/Auto/Outdoor Auto)
Super Resolution Zoom	QFHD: 1.5x (max. 30x with optical zoom) Full HD/HD: 2.0x (max. 40x with optical zoom)
Exposure Control	0 dB to ± 10.5 dB, 15 steps
Gamma	Standard / Straight gamma
Power Input	12~30 VDC
Video Output	Fiber
Aperture Control	16 steps
Communication	Sony VISCA
S/N Ratio	50dB
Gain	Auto / Manual (0 dB to 48.0 dB), 0 to 16 steps
Electronic Shutter	1 / 1 to 1 / 10000 s, 28 steps
Mini Illumination	0.4 lx (Shutter Speed:1/30 s) 0.06 lx (Shutter Speed:1/4 s or 1/3 s)



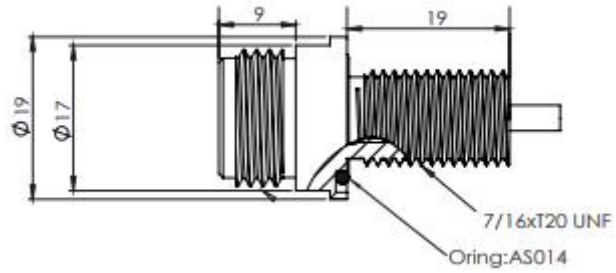
MECHANICAL	
Dimension	274.6mm(L)/121mm(D)
Weight in Air	3.4 kg
Weight in Water	3.38kg
Standard Housing	Hard Anodized 6061-T6 Aluminum
Window Material	Acrylic
Pan/tilt	N/A
Connector	MCBH6M+MSS-OP-BCR
OPTICS	
Lens	20x optical zoom f = 4.4 mm to 88mm, F2.0 to F3.8
Focus	Auto /Manual
Angle Of View	Approx. 70.2° to 4.1° (Image stabilizer OFF) Approx. 60.0° to 3.5° (Image stabilizer ON)
Digital Zoom	12x (240x with optical zoom)
ENVIRONMENTAL	
Depth Rating	2000m
Testing Depth	200Bar
Operation Temp.	-5 °C to +60 °C (23 °F to 140 °F)

2.2 Connector

2.2.1 Micro Circular



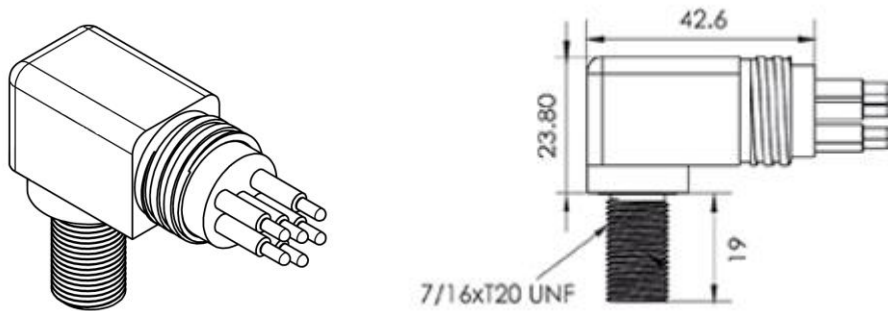
2GW100606M-00001 (MCBH6MBR)	
Operation Specification	
Max. voltage	300 VDC
Current rating @contact	Contact 2,3,4: 10A
	Contact 5,6,8: 5A
	Contact 10,12,16: 5A
Max. current @connector	Contact 2,3,4,5,6,8: 20A
	Contact 10,12,16: 30A
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 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



2GFP80101M-LC-00004 (MSSBH01M-LC)

Operation Specification	
Insertion loss	< 0.3 dB
Typically	< 0.5 dB
Wet mating	N/A
Depth rating	600 bar
Temperature rating	- 40 to 60°C
Material Specification	
Connector body	Stainless steel 316
Bulkhead body	Stainless steel 316
Locking sleeve	Copper
O - rings	NBR

2.2.2 Customization (Option)



2GW100706M-00001 (MCBHRA6M)	
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.	2GW100606M-00001
Title	Micro Circular Bulkhead
Service Check	Regularly
Tool	None

DWCA 4KF Camera function with MCBH6MBR 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


DWCA 4KF Camera Electrical

	Nominal	Max	Min
Input Voltage	24 VDC	30 VDC	12 VDC
Input Current	0.3 A	0.24 A	0.6 A

Procedure of electronic Connection:

1. Cable Black /Pin1 to GND
2. Cable White /Pin2 to PE
3. Cable Red /Pin3 to +24 VDC
4. Cable Green /Pin4 to TX
5. Cable Orange/Pin5 to RX
6. Cable Bule /Pin6 to Signal GND

3.2 Pin Assignment

Num of Pin	Cable Code	Assignment	Bulkhead Top View (Male)
1	Black	GND	
2	White	PE	
3	Red	+24 VDC	
4	Green	TX	
5	Orange	RX	
6	Blue	Signal GND	

Make sure all the connection is correct, and then follow the instruction listed as below to power the DWCA 4KF Camera

1. Deliver +24 VDC to Red
2. Deliver GND to Black
3. RS232 control signal to Green and Orange



3.3 Maintenance and Removal

1. The DWCA 4KF Camera has been designed from the outset with a view towards simple straight forward operation and maintenance. All the DWCA 4KF Camera 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 DWCA 4KF Camera are removed for maintenance, the O-ring seals should have damage check and be lightly greased and cleaned before the DWCA 4KF Camera 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 DWCA 4KF Camera, please follow below steps.

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

DWCA 4KF Camera FIELD & DEPOT REPAIR PROCEDURES LISTED BELOW SHALL BE CARED.



Warning!!

Make sure to switch off DWCA 4KF Camera power the system is on the surface.



Caution!!

The DWCA 4KF Camera is designed as a simple maintenance unit. After each dive, please always wash with fresh water.

4 Trouble shooting

4.1 DWCA 4KF Camera Trouble shooting

If DWCA 4KF Camera performed:

I. No video signals.

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 GND, and Red is connected to +24 VDC.
2. Make sure that the DWCA 4KF Camera 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.	2D002-00012
Title	PC Len
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