



Operator's Manual

Underwater Camera - SD camera

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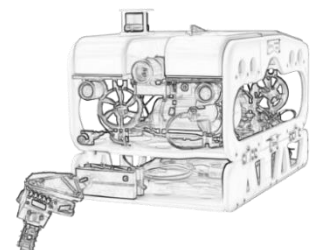




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1 Introduction

1.1 General

The SD 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.

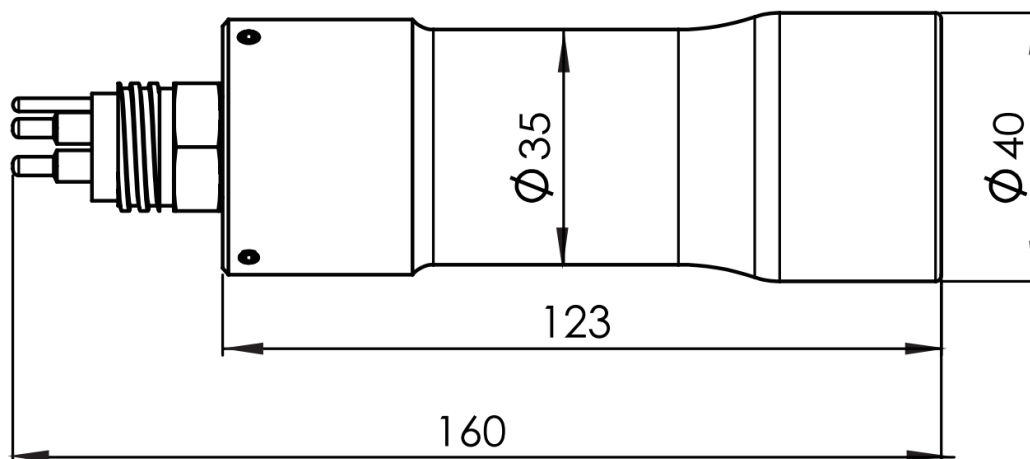
1.2 Precautions

	<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 (SD Camera)

2.1.1 Standard



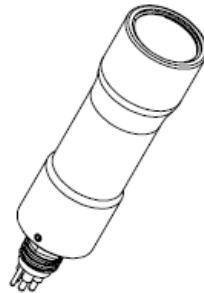
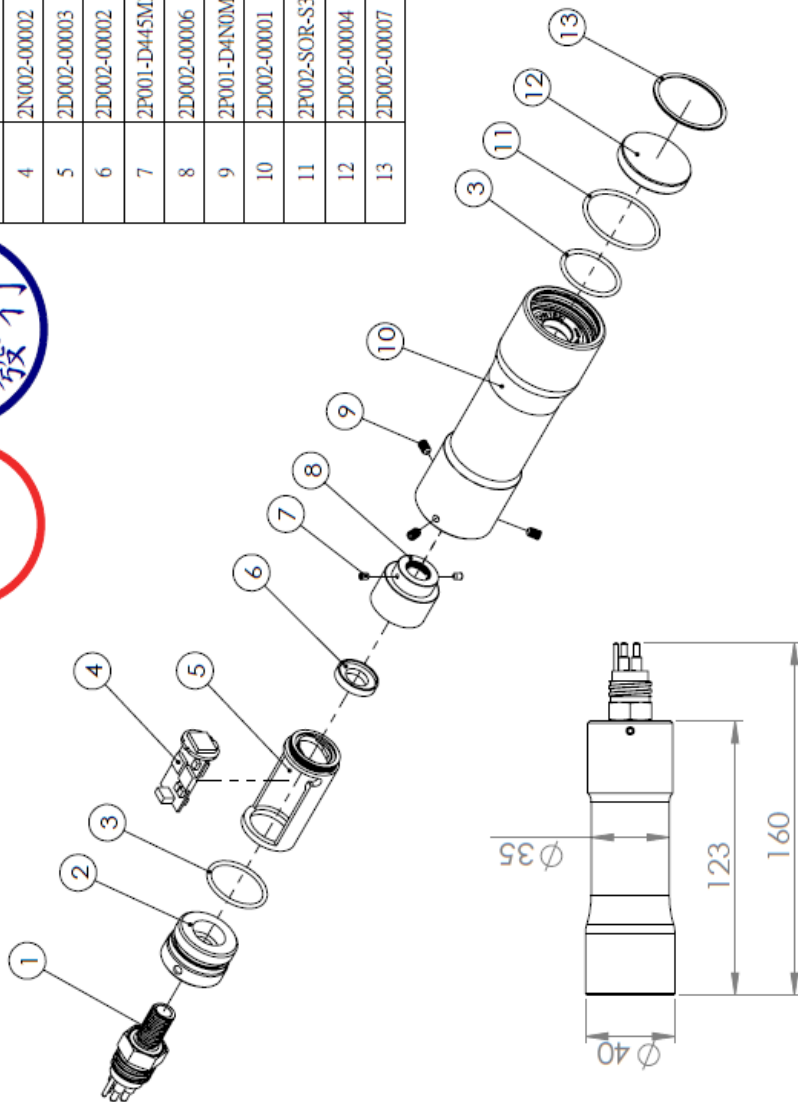
DWTEK- SD Camera	
ELECTRICAL	
Image Sensor	1/3" Super HAD CCD II
WDR	Digital
DNR	YES
White Balance	Automatic
Auto Gain Control (AGC)	Automatic
Day & Night	Digital / Automatic
Back Light Compensation	YES
Motion Detection	YES
Privacy Masking	YES
Gamma	0.45
Power Input	10~30 VDC ; 1.2 W
Video Output	Composite 1.0 Vp-p / 75 Ohms
Resolution	700 TVL
Communication	N/A
S/N Ratio	48 dB (AGC off)
Electronic Shutter	1/60 (1/50) ~ 1/120,000 sec (Auto / Fixed)
Mini Illumination	0.01 lx



OPTICS	
Lens	F3.6 mm / F2.0
Iris Control	Fixed
Focus	Fixed
Angle Of View	72.5°
Digital Zoom	N/A
MECHANICAL	
Dimension	123 mm (L) / 38 mm (D)
Weight in Air	0.29 kg
Weight in Water	0.16 kg
Standard Housing	Hard Anodized 6061-T6 Aluminum
Window Material	Acrylic
Pan/ Tilt	Acrylic
Connector	MCBH 4M
ENVIRONMENTAL	
Depth Rating	2,000 M
Testing Depth	200 Bar
Operation Temp.	10°C ~ 50°C



ITEM No.	PART No.	TITLE	DESCRIPTION	數量
1	2GW100604M-00001	Mini Bulkhead Connector	Male 4 Pin	1
2	2D002-00005	Mini Camera Lid		1
3	2P002-SOR-S26N70	S-26	ID25.5 x W2	2
4	2N002-00002	電子半成品	DWTEK用	1
5	2D002-00003	Mini Camera Chassis		1
6	2D002-00002	Spacer		1
7	2P001-D445M3-0504	Socket Grub Screw	合金鋼12.9 M3x0.5Px4	2
8	2D002-00006	Mini Camera Chassis Nut	M12*P0.5*8 / M24*P1.0*4.5	1
9	2P001-D4N0M4-0706	Socket Grub Screw	PEEK M4*P0.7*6	3
10	2D002-00001	Mini Camera Body		1
11	2P002-SOR-S34N70	S-34	ID33.5 x W2	1
12	2D002-00004	Mini Camera Port PC		1
13	2D002-00007	Spiral Internal Retaining ring	D34	1



立體視圖

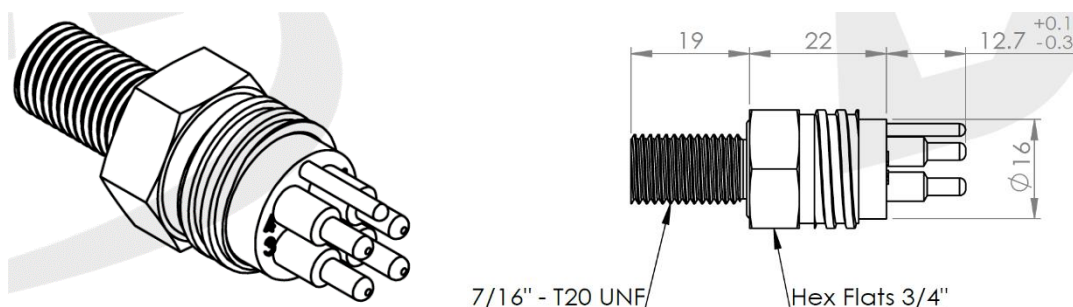
Revisions		Issue	Date	DESIGN		CATEGORY : SD Camera	
210901新舊碼變更。		△1	2022/3/1	DRAWING	DS	TITLE : Mini Standard Camera with MCBH4M (DW)	
221012 類別說明及圖紙板次更新		△2	2022.10.28		Tsui Hwa	PART No. : B00007	
					DS	DWG No. : 2B0020002-00001	
				APPROV.	DS	SIZE : A4 ISSUE : 2 PAGE 1 OF 1	



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2.2 Connector

2.2.1 Micro Circular



2GW100604M-00001 (MCBH4MBR)	
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.	2GW100604M-00001
Title	Micro Circular Bulkhead
Service Check	Regularly
Tool	None

SD Camera function with MCBH4MBR 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


SD Camera Electrical

	Nominal	Max	Min
Input Voltage	24 VDC	30 VDC	10 VDC
Input Current	0.05 A	0.04 A	0.12 A

Procedure of electronic Connection:

1. Cable Black /Pin1 to +24V
2. Cable White /Pin2 to GND
3. Cable Red /Pin3 to CVBS+
4. Cable Green /Pin4 to CVBS-

3.2 Pin Assignment

Num of Pin	Cable Code	Assignment	Bulkhead Top View (Male)
1	Black	+24V	
2	White	GND	
3	Red	CVBS+	
4	Green	CVBS-	

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

1. Deliver +24 VDC to Black
2. Deliver GND to White
3. Deliver CVBS+ to Red and CVBS- to Green



3.3 Maintenance and Removal

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

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

SD Camera FIELD & DEPOT REPAIR PROCEDURES LISTED BELOW SHALL BE CARED.



Warning!!

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



Caution!!

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

4 Trouble shooting

4.1 SD Camera Trouble shooting

If SD 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 White is connected to GND, and Black is connected to +24 VDC.
2. Make sure that the SD 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