TF-3GSDI-CAM:
3G-SDI Camera
User Manual

Megapixel CMOS Box & Module Camera

Version 1.4

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```
          ⚡           CAUTION
         /!\     RISK OF ELECTRIC SHOCK DO NOT OPEN     /!\

         CAUTION : TO REDUCE THE RISK OF ELECTRIC
                   SHOCK, DO NOT REMOVE COVER
                   (OR BACK). NO USER.SERVICEABLE
                   PARTS INSIDE. REFER SERVICING TO
                   QUALIFIED SERVICE PERSONNEL.
```
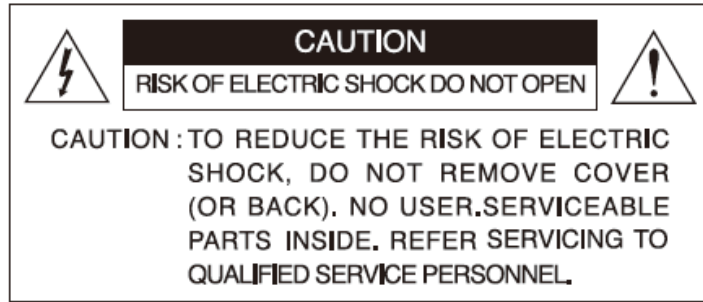
⚡ This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

/!\ This symbol is intended to alert the user to the presence of important operating and maintenance(servicing) instructions in the literature accompanying the appliance

INFORMATION - This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules & CE Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

WARNING - Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

CAUTION - To prevent electric shock and risk of fire hazards:

Do NOT use power sources other than those specified.

Before You Start

This manual should help you in the installation and set-up of the camera; and we recommend that you carefully follow the instructions described. To ensure that your warranty remains valid, please read the manual carefully before using the camera.

Precautions

- Please DO NOT disassemble, modify or repair the camera.   There are no user serviceable parts inside and disassembling the camera may void the warranty. For prevention of fire or electric shock, DO NOT removes screws or covers from the camera. (Only TF-3GSDI-CAM)

- Operation in a wet environment is NOT recommended.   The camera SHOULD NOT be exposed to rain or moisture.

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- For prolong life and the protection of the camera's image sensor, do not point the camera directly at the sun or a strong spotlight which may result in image sensor blooming and permanent damage.
- DO NOT operate the camera beyond the operation temperature range stated and AVOID usage in conditions exceeding 90% humidity.
- DO NOT use an unregulated power supply source to prevent damage to the camera's circuits.
- Use soft materials such as lens tissue or cotton tipped applicator with ethanol for image sensor faceplate cleaning ONLY when necessary and AVOID contact with fingers or any hard object. Do not use solvent, abrasives or detergent when cleaning the camera body.
- Warranty shall be voided for improper use of the camera caused by the user; or damage caused by other equipment due to negligence.

Warranty

TECHFURY warrants the original components free of defects for one year from the purchase date.   This warranty covers failures and damage due to defect, which may occur during normal use. It does not cover damages or failure resulting from mishandling, abuse, misuse or modification.   An RMA number must be obtained in advance for every repair or replacement.

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1.   Main Features

☐ **1/3" CMOS sensor**
2.2M Pixels (Total) / 2.1M Pixels (Active)

☐ **Full HD Resolution**
1920x1080@30/25p, 1920x1080@60/59.94/50i
1280x720@30/25p, 1280x720@60/59.94/50p,
1920x1080@60/59.94/50p

☐ **WDR (Wide Dynamic Range)**
WDR allows a camera to filter the intense back light surrounding a subject and thus enhances the ability to distinguish features and shapes on the subject.

☐ **DNR (Digital Noise Reduction, 2D/3D-NR)**
DNR technology will supply you with outstanding clear images by reducing noise of picture. DNR technology has excellent disk-saving effect. TECHFURY supports brilliant DNR technologies like DNR, 3D-NR and 2D+3D.

☐ **AGC (Automatic Gain Control)**
AGC is circuit that automatically adjusts the incoming signal to proper level for display or recording and the sensitivity of pick-up object to render the most pleasing images. It improves performance in low light conditions.

☐ **2 Auto (AE/AWB) Control**
Slow Shutter control (Sens-Up), Color temperature Range (1800K ~ 10500K).

☐ **Dynamic Motion Detection (8 separable areas, Up to 1980-blocks, variable block size control)**
Motion can be detected and displayed in appointed area. It is possible to set up motion detection zones user wish.

☐ **Privacy Zone Masking (8 Polygon windows)**
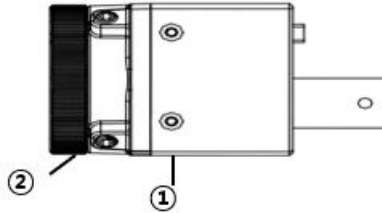The privacy zone function makes it possible to make specific areas of the scene from view.

☐ **Output**
3G-SDI / HD-SDI (NTSC / PAL)
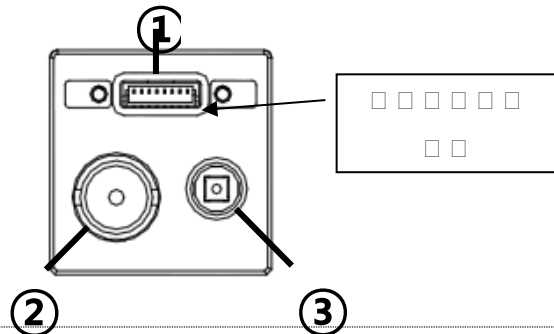
2.   Name and Function of Each Part

2.1.   TF-3GSDI-CAM

Side

Name	Function
☐ Holder	For attaching a bracket to the camera
☐ Lens Mount	Adaptor ring is tightened for C or CS mount lens

Rear

| Name	Function
☐ RS-485	☐ RS485_A_D+ ☐ RS485_A_D-
I/O Port	☐ Trigger Signal Input(Act: High) (Trigger Input Image Masking or Freeze/Play selectable) ☐ Motion/Trigger Common GND ☐ - ☐ Motion Signal Output(Act: High)
Power	☐ DC Power (+) ☐ DC Power (-) Ground (DC12V ~ 24V)
☐ HD-SDI Video Output	BNC connector for HD-SDI video signal output
☐ SETUP Switch	Camera function control switch Press and hold the switch for more than 2 seconds, then the main menu will appear on the screen.

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| | ◁ /▷ | Move from left side to right side, then the menu is moved to upper menu or the parameter is changed |
| | ▲/▼ | Move up and down, then the menu is moved up and down |
| | ■ | Press and the feature is set
Press it, then it is moved to sub menu |

2.2.   TF-3GSDI-CAMS
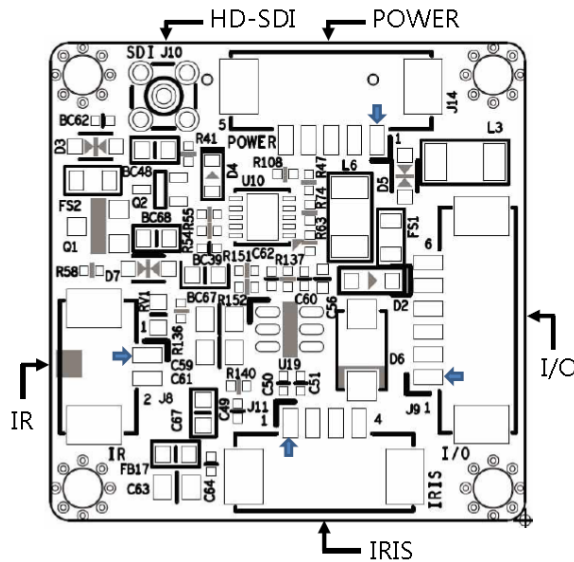
I/O	
Pin. 1	RS485_A_D+
Pin. 2	RS485_B_D-
Pin. 3	TRIGGER Signal Input(Act: High)
Pin. 4	MOT/TRI Common GND
Pin. 5	-
Pin. 6	MOTION Signal Output(Act : High)

IRIS	
Pin. 1	DMP+
Pin. 2	DMP-
Pin. 3	DRV+
Pin. 4	DRV-

POWER	
Pin. 1	Main DC12~24V
Pin. 2	Main GND
Pin. 3	CVBS_OUT
Pin. 4	AD_KEY
Pin. 5	DC GND

IR	
Pin. 1	Brushless Motor Driver A OUTPUT
Pin. 2	Brushless Motor Driver B OUTPUT

Connector Part Number(Maker)	
HD-SDI	73415-1471(MOLEX)
IR	53398-0271(MOLEX)
IRIS	53398-0471(MOLEX)
POWER	53398-0571(MOLEX)
I/O	53398-0671(MOLEX)

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3. Other Device Connection
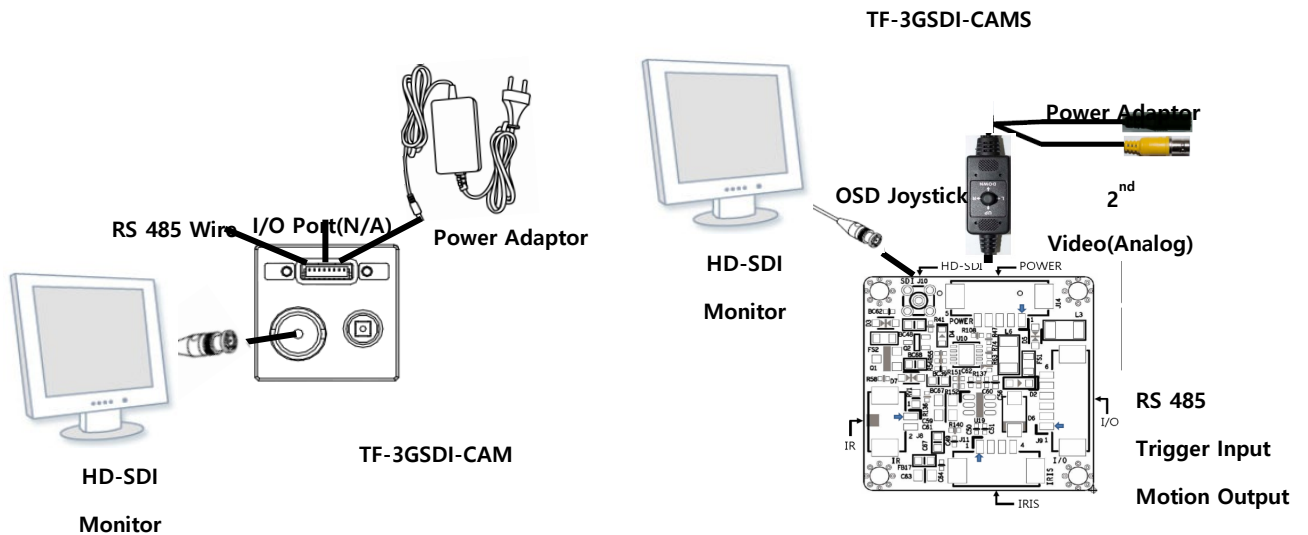
3.1. Monitor Connection

Connect the HD-SDI output of the monitor to the BNC connector of the camera by Coaxial cable. The connector of TF-3GSDI-CAM is consist of MMCX(Board side) and BNC(Monitor side). If the monitor does not support HD-SDI output, you must use HD-SDI converter.
Video output type could be set as NTSC or PAL.

3.2. Video Cable Connection

Refer to following table regarding the cable. If the distance between the camera and the monitor is over maximum video transmission distance, separate video amp is required to use.
* Maximum HD-SDI transmission distance depends on cable manufacturer and installation environment.

Maximum Transmission Distance	Cable Requirement
100 ~ 140m	5C2V, 75ohm
200m	L-6CHD, 75ohm (HDTV-SDI Cable)

3.3. Power Connection

For easy installation, TECHFURY provides special power cable to connect DC jack type of power adapter. Connect the camera to the device, which its power is turned off.
* Camera operation guarantees power: DC 12V ~ 24V ±10%

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3.4.   RS-485 Connection

Using RS-485 communication, it can be possible to control OSD menu and some features in external device. Regarding features to control by RS 485, refer to register control document.

3.5.   I/O Port Connection

Using Input Port, User can get triggered captured image with image marking and motion output signal. Or according to firmware version, user can get freeze/play image.

4.   OSD Menu

Press the OSD joystick of cameras rear side 1~2 seconds. Then OSD menu is shown up on the screen.

1. **LENS**	DC	INDOOR**(Default TF-3GSDI-CAM)**,OUTDOOR	Select DC Iris Lens(Not supported)
	P-IRIS	AUTO, MANUAL	Select P-Iris Lens(Not supported)
	MANUAL**(Default TF-3GSDI-CAM)**		Select Manual Iris Lens
	VIDEO		Select Video Iris Lens use(Not supported)
2. EXPOSURE	SHUTTER	AUTO**(Default)**	Select Auto Shutter Speed
		FLK	Select in Flickering
		1/30~1/50000 x2 ~ x30	Shutter Speed Manual Control
	AGC	Level 1-15	Adjust Auto Gain Level
	SENS-UP	OFF, AUTO**(Default)**	The camera automatically detects the light level in night or dark area
		x2~x30	Select the level of desired Sens-up
	RIGHTNESS	0 ~ 100**(Default: 40)**	Adjust the screen brightness
	D-WDR	OFF**(Default)**,LOW,MIDDLE,HIGH	Adjust the level of dynamic range
	DEFOG	OFF**(Default)**,ON	Adjust the level of defog function Position/Size/Gradation adjustable
3. BACKLIGHT	OFF**(Default)**		
	WDR	GAIN	Low / Middle / High
		WDR OFFSET	Select the level 0~255
	BLC	GAIN	High / Middle / Low

		AREA		Select Position & Size
		DEFAULT		BLC Factory Reset
	HSBLC	SELECT		Select the area (AREA1~AERA4)
		DISPLAY		Select the area maintain/remove (ON/OFF)
		LEVEL		Select the level 0~100
		MODE		Select the activation time(ALL DAY / NIGHT)
		BLACK MASK		Select the black mask (ON/OFF)
		DEFAULT		HSBLC Factory Reset
4. WHITE BAL	ATW**(Default)**	Auto Tracking White Balance		
	AWC → SET	Set the real environment white balance. Use the white color object and select SET button		
	INDOOR	Select this for indoor application		
	OUTDOOR	Select this for outdoor application		
	MANUAL	Select this to fine-tune White Balance manually		
5. DAY & NIGH **(H/W- Only TF-** **3GSDI-CAM)**	AUTO	DELAY	Select the duration time about changing the day/night mode	
		D → N (AGC)	Select the percent about changing Day to Night mode(AGC based)	
		N → D (AGC)	Select the percent about changing Night to Day mode(AGC based)	
	COLOR	Select the color mode		
	B/W	BURST	Select the bust signal on/off	
		IR SMART	Adjust LEVEL(0~15) / AREA(Position & Size)	
		IR LED	Select On/Off(Not Available)	
		IR PWM	Select the level 0~100(Not Available)	
6. DNR	2DNR		Select On/Off	
	3DNR	SMART NR	Select the Smart NR mode	
		LEVEL	Select the level of 3DNR mode(0~100)	
		START. AGC	3DNR function Start percent(AGC based)(0~100)	
		END. AGC	3DNR function End percent(AGC based)(0~100)	
7. SPECIAL	CAM TITLE			Enter the camera title (ON/OFF)
	D-EFFECT	FREEZE		Freeze the image (ON/OFF)
		MIRROR	MIRROR	Mirror the image (ON/OFF)
			V-FLIP	Flip the image vertically
			ROTATE	Flip the image horizontally

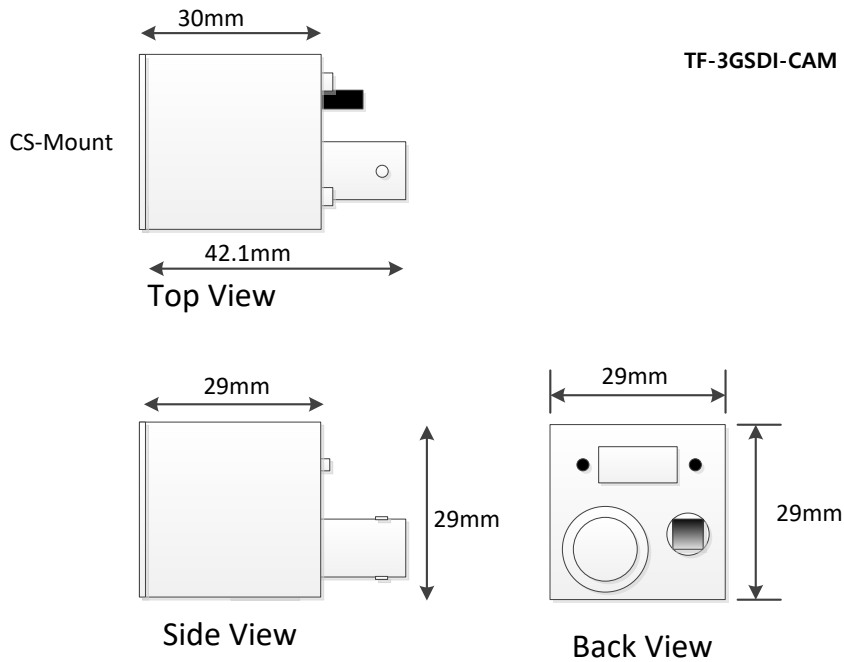|		D-ZOOM	x2 ~ x62 / PAN&TILT / DEFAULT
		SMART D-ZOOM	AREA 1/2 / DISPLAY / SENSITIVITY (0~60) / D-ZOOM(x2~x62) TIME (0~26) / DEFAULT (Not Available)
		NEG. IMAGE	Select the negative image (ON/OFF)
		DIS	Not Available
	MOTION	SELECT	Select the area 1 ~ 4
		DISPLAY	Adjust the position & size (ON/OFF)
		SENSITIVITY	Select the sensitivity of motion recognition (0~100)
		MOTION VIEW	Display masks on the motion detected area (ON/OFF)
		DEFAULT	Motion Factory reset
	PRIVACY	SELECT	Select the area (1~8)
		DISPLAY	Display the privacy area on the screen (ON/OFF)
		COLOR	Select the color 0~15
		TRANS	Transfer 0~3
		DEFAULT	Privacy Factory reset
	LANGUAGE	ENG, JPN, CHN1,CHN2, KOR, GER, FRA, ITA, SPA, POL, RUS, POR, NED, TUR, HEB, ARB	
	DEFECT	LIVE DPC	Select the dead pixel compensation mode in real time (AUTO/OFF) LEVEL (0~100)
		STATIC DPC	Select the dead pixel compensation mode in static points (ON/OFF) START / LEVEL (0~60) / SENS-UP (x2 ~ x30)
		BLACK DPC	Select the dead pixel compensation mode in black points (ON/OFF) START / LEVEL (0~255) / DIFT. TH (0~255)
	RS485	CAM ID	Select the number of camera (0~255)
		ID DISPLAY	Select the display of CAM ID (ON/OFF)
		BAUDRATE	Select the baud rate (2400~38400)
	VERSION	Display the current Camera Version	
8. ADJUST	SHARPNESS		Adjust the level of sharpness (0~15)
	MONITOR	LCD	GAMMA / ADAPT. LEVEL / BLUE GAIN / RED GAIN
		CRT	BLACK LEVEL / BLUE GAIN / RED GAIN

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	LSC	Select Lens Shading Compensation Scan (ON/OFF)
	RESOLUTION	FULL-HD**(Default)** / HD
	FRAMERATE	A- Sensor Scanning 60P, B- Sensor Scanning 30P**(Default)** 60/30 & 50/25 depends on NTSC/PAL selection in advance
		A-30/25P / A-60/59.94/50I(Only Full HD) B-30/25P / A-60/59.94/50P
	VIDEO.OUT	Select NTSC/PAL
9. RESET	FACTORY	Reset the camera settings to the factory defaults
10. EXIT	Exit the Main SETUP menu (or Hidden Menu selection)	

5.   Specifications

Items	Description
Image Sensor	1/2.8" 2.38Megapixel Sony Exmor CMOS Sensor
Scanning System	Progressive, Interlace
Effective Pixels Number	1,920(H) x 1,080(V), 2.07M Pixels (Full-HD)
Total number of pixels	1,952(H) x 1,116(V), 2.18M Pixels (Full-HD)
Lens Mount	C/CS Mount (S mount DC Auto Iris D/N – TF-3GSDI-CAMS only)
Video Output Mode	HD-SDI: 1920x1080p(30/25fps), 1920x1080i(60/59.94/50fps), 1280x720p(30/25fps) 1280x720p(60/59.94/50fps) 3G-SDI: 1920x1080p(60/59.94/50fps)
Video Output Level	HD-SDI, 3G-HDI / 1.0 Vp-p (75Ω, Composite) NTSC/PAL(Selectable)
Min. Illumination	Color: 0.2Lux @ F1.2 / B/W : 0.01@F1.2
OSD	Built-in
Electronic Shutter Speed	Auto / Manual (1/30 ~ 1/50,000)
White Balance	ATW / AWC / Indoor / Outdoor / Manual
Back Light Compensation	Off / WDR / BLC / HSBLC
D-WDR/ACCE	Low / Middle / High / Off, 0~15 steps
AGC	0~15 steps
Adjust	SHARPNESS / MONITOR / OSD / LSC / VIDEO OUT(NTSC/PAL)

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Language	ENG, JPN, CHN, KOR, GER, FRA, ITA, SPA, POL, RUS, POR, NED, TUB, HER, ARB (Directional Switches)
Day & Night	Auto / B.W / Color / EXT (Selectable)
2D/3D-NR	2DNR / 3DNR / SMART NR
Digital Zoom / PIP	On / Off (x2 ~ x64)
Privacy Masking	On / Off (8 Zone Selectable)
Motion Detection	On / Off (4 Zone Selectable)
Defect	LIVE DPC / STATIC DPC / BLACK DPC
Defog	Low / Middle / High / Off (Position/Size- User Setting)
Sens - up	Auto (Selectable limit ~ x30) / Off
D − EFFECT	Freeze / Mirror / D-Zoom / NEG.IMAGE
Protocol	Pelco-D / Pelco-P
Communication	RS-485[Baud Rate: 2400~38400]
Power	DC12V ~ 24V ± 10%, 2.3W(1080p/30fps), 3.3W(1080p/60fps)
Operating / Storage Temperature	-5℃ ~ +50℃ (Humidity: 0%RH ~ 80%RH) -20℃ ~ +60℃ (Humidity: 0%RH ~ 90%RH)
Dimension	29mm X 29mm X 29mm (Connector, C/CS mount excluded.)
Weight	Approx. 40g

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6.   Dimension

30mm

CS-Mount

TF-3GSDI-CAM

42.1mm

Top View

29mm

29mm

29mm

29mm

Side View

Back View

7.   Technical Support

TECHFURY ensures the conformity of our product to be reliable and free from defects during manufacturing by testing all the cameras before release. However, unexpected problems and technical issues may come up due to the complexity of the product. In case you require technical support; contact the agent near you or contact TECHFURY directly at the following locations:

Webpage: http://www.techfury.com

Technical Support : sales@techfury.com

In case of an RMA, you must first contact TECHFURY and obtain an RMA Number before sending the product to us. We are not responsible for any problems caused by not following the RMA procedure.

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