in51TS2x2D Series
Tamper Resistant Dome Camera
Quick Start Guide

Rev 0.1

Before operating this product, please read this quick-start guide to ensure proper use.
Please store these instructions a safe place for future reference.

FEATURES

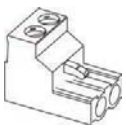
- Die Cast Aluminium Housing
- Polycarbonate Bubble
- DC Varifocal lens
- Full HD (1080P)
- 0.01 Lux
- Wide Dynamic Range
- HLC, BLC, DEFOG
- Sens Up
- On Screen Menu
- 3 Axis gimbal
- 12VDC/24VAC Powered

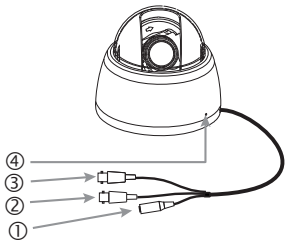
PRECAUTIONS

1. Before installing and operating the unit, please read this manual carefully.
2. Precision components are contained in this camera, please avoid violent vibrations during installation and maintenance. Do not connect the power until you have completed the installation.
3. Please obey all local electrical wiring regulations when using this unit.
4. Do not use abrasive or corrosive materials for cleaning. Use only a soft cloth for cleaning.
5. To prevent damage to the lens or sensor, do not point the camera directly into the sun or very strong light sources.
6. Do not use the camera outside it's working temperature (-10°C~ 50°C / 14°F ~122°F) or humidity (<90%) ranges.
7. Ensure that the power supply meets the current requirements of the camera and that the supply voltage is inside the tolerances of the camera: 24VAC ±10%
8. Ensure that the fixings used are adequate to support the load of camera.
9. In case of camera failure, do not attempt to dismantle or service the camera yourself. Please refer to qualified service personnel for repair of the camera.

CONNECTIONS

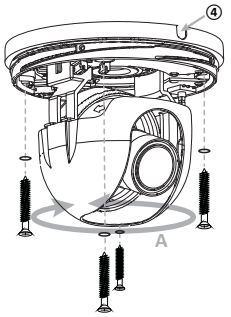
1. Power Input connector. This is a 2 pin removable scew connector. Refer to the diagrams below for clarification.
2. TVI video output, Black BNC Connector
3. Analog video output, Yellow BNC Connector
4. Locking grub-screw





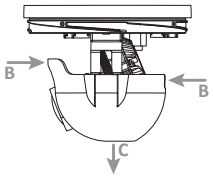
MOUNTING

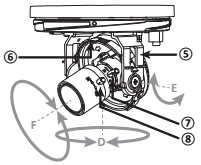
1. Using the enclosed drill template, mark and drill the four mounting holes for the base. Choose an appropriate drill bit for the surface you are drilling in to and ensure that the diameter is correct for the fixings being used.
2. If rear cable exit is to be used, mark and cut a central 20mm (¾") diameter hole for the cable and connectors, as indicated on the drill template.
3. If side cable exit is not to be used, insert the rubber trim bung at point ④. The bung is found in the accessory pack.
4. Use appropriate No.8 countersunk screws (and wall plugs, if applicable) for the mounting surface in use.
5. Ensure that the fixings can adequately bear the weight of the camera.
6. Slacken the locking grub-screw and remove the dome cover. If necessary, rotate the gimbal in axis A to gain access to the mounting holes
7. Mount the camera and fit the O-rings in the accessory pack to maintain a moisture proof seal.
8. Make the video and power connections and commission the camera
9. Once commissioning is complete, replace the liner, dome cover and re-tension the grub-screw to prevent unauthorized users tampering with the camera.



LENS AND POSITIONING

The camera and integral varifocal lens are mounted on a 3-axis gimbal with integrated liner. To remove the liner for commissioning, gently squeeze at points B and withdraw the liner in direction C.
To position the camera to give the required image content, gently turn the gimbal arms ⑤ to orientate it in axis D. To adjust the camera tilt, gently turn the gimbal disk ⑥ in axis E. To adjust the azimuth, turn the gimbal disk in axis F.
Note: Do not use the lens as a lever to adjust the camera position
The field of view may be adjusted by loosening the zoom lever, ⑦, and moving until the required field of view is obtained. Loosen the focus lever ⑧ and adjust to obtain optimum focus. Remember to tighten both levers when adjustments are complete to prevent image drift.. They should be tensioned "finger tight" only
When complete, gently push the liner back onto the gimbal arms, until it snaps into place.

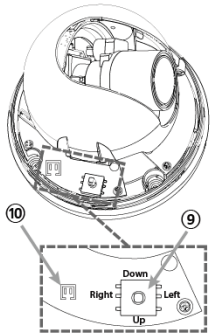




OSD ACCESS

The camera is supplied in a general configuration that will suit the majority of installation requirements. Should advanced configuration be required then the on-board ⑨ joystick may be used to provide access to the camera On Screen Display (OSD) for user programming.
To view the On Screen Display and image from the camera, connect a monitor to the service jack ⑩ (use supplied molex to BNC cable) or direct to the video output of the camera.

To activate the camera OSD, depress the joystick on the service board
Push the joystick ▲▼ to select a menu from the list.
Push the joystick ◀▶ to change the selected value.
Press the joystick button to open a sub-menu or execute a command.



OSD MAIN MENU

When the OSD menu is launched, you are presented with the adjacent opening screen. A menu option followed by a ↵ indicates the presence of a sub-menu. Options set to OFF will not show a ↵ until set to ON

Use RETURN ↵ to return to the previous menu.

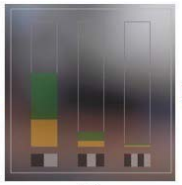
MAIN MENU	
FOCUS ADJUST	OFF
EXPOSURE.	↵
BACKLIGHT	WDR
DAY&NIGHT	AUTO↵
WHITE BAL	↵
DNR	LOW
ADJUST	↵
MOTION	OFF
SYSTEM	↵
EXIT	

FOCUS ADJUST MENU

FOCUS ADJUST menu:

- From the Main Menu, turn the Focus ADJ from OFF to ON to create a Focus Adjust Box on the screen's bottom left
- Move the lens to direct towards the object to be focused, and turn the lens focus from near to far until the location from the Focus Assist Box shows a green bar. Next turn the lens focus until the yellow bar has a similar size with the green bar for focus. Your camera should now have a clear crisp image.


Near


Far


Complete

EXPOSURE MENU

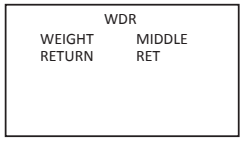
EXPOSURE menu:

- **LENS -** DC or Manual selection
- **BRIGHTNESS -** Sets the level of the overall brightness
- **SHUTTER** - Auto, Manual, FLK selection, 1/30~1/30K. Set this on to reduce the exposure time of each image. This can be used to reduce blur in images with fast changing content. FLK mode Use this when flicker is observed in the image under fluorescent lighting.
- **SENS UP -** Slows frame rate and increases low light sensitivity
- **AGC- Level Control -**Used to adjust overall gain

EXPOSURE	
LENS	DC
BRIGHTNESS	10 ▬
SHUTTER	AUTO ↵
SENS-UP	X2
AGC	9 ▬
RETURN	RET

BACKLIGHT

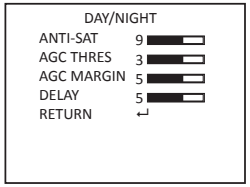
BACKLIGHT - OFF, WDR, BLC, HLC



- **WDR** - Used to improve contrast in bright/dark areas.
- **BLC** -Adjust the area to be enhanced and sets the level
- **HLC** -is the ability to reverse bright points to black or gray, (areas such as headlights, any high luminance areas) this function will improve the overall picture

DAY&NIGHT

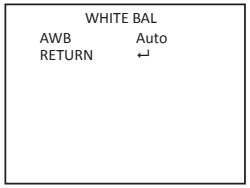
DAY/NIGHT - AUTO, COLOR, B/W, EXT, CDS



- **AUTO** - Allows the camera to switch from color to B/W mode in low light. The switching thresholds and hysteresis time are adjustable.
- **COLOR** - fixes the camera in color mode
- **B/W** - fixes the camera in monochrome mode.
- **Ext - NA**
- **CDS -NA**

WHITE BALANCE MENU

WHITE BALANCE - AUTO, AUTO-EXT , PRESET, MANUAL



- **AWB** -AUTO (default) The camera automatically samples the image for optimum white balance
- **AUTO EXT** - The camera automatically samples the image for optimum white balance in an exterior environment.
- **PRESET -** Allows the white balance to be set automatically and locked. This option is normally used when no white reference is present in the image. To set the white balance, hold a white object in front of the camera, with light from the source falling on it and press the joystick to set and lock the white balance
- **MANUAL** - This option allows a selection of color temperature, Red and Blue gain to be manually set in the image. Note, using this option requires care to ensure all cameras on one system have the same color response.

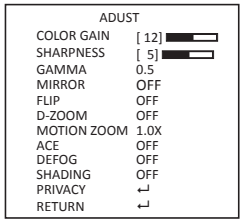
DNR

DNR - OFF, LOW, MIDDLE, HIGH

- This function is used to improve the picture quality by filtering the noise which is generated under low light conditions

ADJUST

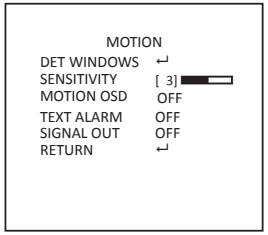
ADJUST - OFF, ON - Press to open submenu.



- **COLOR GAIN -** Level control
- **SHARPNESS** - Level control
- **GAMMA** - Level Control
- **MIRROR -** Reverse image
- **FLIP -** Vertical flip of image
- **D-ZOOM-** Digital zoom up to 16x Pan & Tilt position.
- **MOTION ZOOM -** Digital zoom upon motion.
- **ACE -** Adaptive contrast enhancer, preserves fine details, reduces artifacts and loss of local contrast in the image areas of bright/dark which would normally be degraded.
- **DEFOG-** Compensates for foggy image. It automatically controls contrast ratio by spatially analyzing the histogram characteristics.
- **SHADING -**Compensates for the dark area created by the outline of the lens. Compensation uses 2D gain table. Users can control 0 ~ 100% compensation rate according to shading weight
- **PRIVACY -** Set up to 16 privacey zones

MOTION

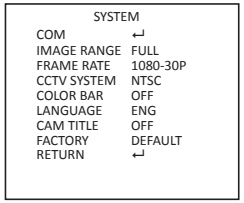
Motion - OFF, ON - Press to open submenu.



- **DET WINDOWS** - Select and set up to 4 motion areas
- **SENSITIVITY** - Level Control
- **MOTION OSD** - Display motion are on screen
- **TEXT ALARM -** Dispaly "Motion Alarm" on Screen
- **SIGNAL OUT -NA**

SYSTEM

System - OFF, ON - Press to open submenu.



- **COM -** Set com port and speed
- **IMAGE RANGE** - Used to adjust black level in dark sceen
- **FRAME RATE** - Select from 1080P-30P or 720P-30p or 720P-60P
- **CCTV SYSTEM-** Select PAL or NTSC
- **COLOR BAR -** Vertical flip of image
- **LANGUAGE-** Select from 5 languages
- **CAMERA TITLE -** Display title for camera
- **FACTORY-** Factory default, Press and hold enter to reset.

SPECIFICATIONS

	System		PAL	NTSC
Imaging	Sensor		2 Mega Pixel Sensor	
	Effective Pixels		1305x1080	
Performance	TVI Resolution		Full HD (1280 x 1020)	
	Analog Resolution		1000TVL	
	Sensitivity		0.01Lux	
	Wide Dynamic Range		130dB Max	
	S/N Ratio		52dB	
	Day / Night		Software Controlled	
Lens	Type		2.8~12mm, 3.5~16mm DC Varifocal	
	Mount		14mm straight	
Functions	OSD		15 Languages	
	Shutter		1/50~1/120,000	1/60~120,000
	Flickerless		On/Off	
	Wide Dynamic Range		On/Off low/Middle/High	
	DEFOG		Auto/Manual/Low/Medium/High	
	AGC		Adjustable Level	
	SENS UP		Adjustable Level 32x	
	Electronic shutter		Off/On 1/200,000 sec maximum	
	Sync		Internal	
	Camera ID Number		Off/On 1~255	
	Camera Name		Off/On, 8 Characters	
	White Balance		AWB/Push/Manual	
	DNR		Auto	
	Gamma		4, 0.45, 0.5, 0.55	
	Motion Detection		4 areas, Off/On, Position & Sensitivity	
	Motion Digital Zoom		Yes	
	Digital Zoom		Yes	
	Privacy masking		16 areas, Off/On, Color, Position	
	Image functions		Sharpness, Mirror, Defog, HLC, BLC, D-Zoom, Shade Comp	
Input/Output	Video Output		TVI (Full HD) BNC CVBS 1.0Vp-p 75Ω - BNC CVBS 1.0Vp-p 75Ω - Service port	
	Programming interface		On board joystick	
Power	D Model		12VDC/24VAC ±10% 4.2W max	
Physical	Construction		Die Cast Aluminum Shell Polycarbonate Bubble	
	Dimensions (mm)		108Ø x 95mmH (4.24"Ø x 3.47"H)	
	Weight		550g (1.21 lb)	
	Mounting		Surface	
Environmental	Operating Temperature		-10°C~+50°C	
	Humidity		Less than 90%, non condensing	
Order Codes	Lens	2.8~12mm	in51TS2P2D28V12	in51TS2N2D28V12
		3.5~16mm	in51TS2P2D35V16	in51TS2N2D35V16

inMotion CCTV
519 Bennet Lane
Suite 100
Lewisville, Texas 75057
214-960-4640

Please visit our website for full information: www.inMotioncctv.com