USER MANUAL

WDR TRUE DAY&NIGHT CAMERA ZW49IR





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About WDR/BLC/ 3D DNR



BLC

WIDE DYNAMIC RANGE

WDR is a powerful and ultra-advanced technology that captures cleaner and superior high resolution pictures even where images appear dark because there is a strong back light present.



WDR OFF

WDR ON

SPOTLIGHT BLC FUNCTION

Spotlight BLC function is especially effective for reading vehicle number plates at night time. Users can select and define the required observation area for the target object and ignore strong spotlight areas.



NORMAL



SPOTLIGHT BLC



3D FILTERING METHOD ADVANCED DNR TECHNOLOGY

Newly developed 3 D filtering enhances Digital Noise Reduction at low light levels. 3D filtering of the video signal optimises the signal to noise ratio, giving vastly improved low light visibility and a powerful Sens-Up function (up to 256 times magnification).



DNR OFF



DNR ON

	Specification	333335			
INT DNR OSD	INTUS True Day/Night Colour Camera Built-in 42pcs Infra-Red LEDs with CDS Sensor Camera OSD Control / IR Illumination Controller				
	560TV Lines DC Auto Iris Varifocal Lens(4mm-9mm) Built-in 42pcs Infra-Red LEDs Assembly True Day/Night Capability ICR – IR Cut Filter Removable Dual Voltage IP66				
	Image: Constraint of the second se	Auto White Balance Level 2 x-123 x Cont 2 to 2 x Cont 2 to 2 x Cont 2 to 2			
	MODEL	ZW49IR			
C C D	Sensor Total Pixels Effective Pixels Scanning System Synchronisation	1/3" SONY Vertical Double Density Interline CCD NTSC=811(H) * 508/(V) / PAL=795(H) * 595(V) NTSC=768(H) * 494(V) / PAL=752(H) * 582(V) 2:1 Interlace Internal			
E L E C T R I C A L	Ó.S.D Dynamic Range Backlight Resolution S/N (Y signal) Min. Illumination White Balance Electronic Shutter Speed Sens-Up Gain Control DNR Motion Detection PRIVACY MIRROR(H-REV) FLIP(V-REV) Freeze SHARPNESS D&N Selection DIS Digital Zoom Blemish Compensation Communication Power Supply Power Consumption Lens	Built-in (English, Japanese, Spanish) 52dB (x128) WDR / BLC / OFF Selectable 560TV Lines 52dB (AGC OFF / Weight ON) 0.001 Lux (Sens-Up x128) \rightarrow 0.00004 Lux F1.2 (Sens-Up x256) ATW / AWC / Manual / Outdoor / Indoor AUTQ(NTSC=1/50sec ~ 1/100,000sec / PAL=1/60sec ~ 1/120,000sec) / MANUAL / A.FLK AUTO (Selectable limit x2 ~ x256) / OFF HIGH / LOW / OFF Selectable OFF/ON (1~32 Level Adjustable) ON/OFF (8 Zone, ALARM Output) ON/OFF (8 Zone) ON/OFF ON/OFF ON/OFF ON/OFF ON/OFF ON/OFF ON/OFF ON/OFF ON (x10) / OFF 256 Point (Even 128 Point, ODD 128 Point) RS-485 (Pelco-D Protocol) - Option DC 12V / AC 24V - Dual Voltage CDS ON: 1A Max DC Auto Iris Varifocal Lens(4mm-9mm) 20 - (EQ Dec C BL 05EY Marx			
	Storage Temperature/Humidity Dimension Weight	-20 ~ +50 Deg C. KH 95% Max. -20 ~ +60 Deg C. RH 95% Max. 88mm(W) * 115mm(H) * 245mm(D) 1600g			

Safety Instructions

Precautions for use

Please read this manual thoroughly before using the camera to become familiar with the correct operational procedures.

Cautions When Using

- To not open the camera body and touch any electrical parts to avoid possible electric shocks.
- Provide the camera body to prevent fire hazards and electric shock.
- Do not touch the camera with wet hands to avoid electric shock.
- To not disconnect the power cord from a power plug when still connected to the outlet.
- Always disconnect the power by removing the plug from the power socket.
- If the camera emits a burning smell, immediately disconnect it from the power source and report the problem to your distributor.

Cautions When Install

- Product.
- Do not install the camera in a position facing directly at a strong light source.
- Do not install or use the camera in areas of high humidity.
- To not install near any cooling or heating equipment.
- Do not install the camera in dusty environments.
- To not install the camera in places where the camera is subjected to physical shocks.
- This products must be used with a regulated DC 12V or AC 24V adaptor for power.

General Features

♦ WDR (Wide Dynamic Range)

The Genie INTUS range of camera uses very advanced WDR technology, which gives clear images even where the scene is strongly backlit. Adjustable sensitivity.

560TV Lines

The combination of Sony Super HAD CCD image sensor and DNR DSP provides an excellent resolution of 560 TV Lines.

Day & Night

Depending on luminance levels the camera switches automatically between colour and monochrome. The camera's IR Cut-Filter gives perfect colour rendition during the day.

Illumination

SDNR technology has solved the problem of ghosting and now displays clearer, superior high resolution images even in extremely low light conditions.

Disk Saving Effects

Advanced SDNR technology improves picture quality and saves hard drive space, as less noise means much smaller file sizes - much smaller than standard CCTV camera images.

DNR DSP Chip

The DNR DSP chipset has various powerful functions that give superior high resolution Day & Night images. It removes the camera noise and Sens-Up provides quality images at very low luminance levels. The most advanced technology is combined on a single DSP chipset, resulting in enhanced surveilance images.

Additional Functions

OSD - On Screen Display menu with Multi-Language support - 8 Countries Privacy Masking - 8 Zones Sens-Up - x256 Magnification Digital Zoom - x10



SET UP MENU	DEFAULT SET	MENU		
① LENS	DC / MANUAL	4 - 9mm DC Auto IRIS Vari-Focal Lens		
② EXPOSURE	SHUTTER :-	SHUTTER	A.FLK MANUAL(x256-120K) ESC(BRIGHTNESS: Level Selectable)	
	AGC: LOW SENS-UP: OFF	AGC: OFF /	LOW / HIGH	
		SENS-UP: C	OFF / AUTO(2-256 Level Selectable)	
		RETURN		
③ WHITE BAL.	ATW	INDOOR / OUTDOOR / AWC / ATW MANUAL (RGAIN : Level Selectable, BGain : Level Selectable)		
④ BACKLIGHT	OFF	WDR: LOW / MIDDLE / HIGH (Level 0-100) BLC: TOP / BOTTOM / LEFT / RIGHT LEVEL: LOW / MIDDLE / HIGH HLC: MASK COLOUR (Level 0-220)		
(5) SDNR	ON	ON (RANGE: 0 ~ 32 Level Selectable) / OFF		
⑥ DAY & NIGHT	AUTO	COLOUR / B/W / AUTO / EXTERNAL DWELLTIME: 5 ~ 60SEC DURATION TIME: SLOW / FAST		
⑦ IMAGE ADJ.	FREEZE: OFF V-REV: OFF H-REV: OFF DZOOM: OFF SHARPNESS: ON	FREEZE: ON / OFF V-REV: ON / OFF H-REV :ON / OFF DZOOM: ON / OFF(0 ~ 230 Level Selectable) SHARPNESS: ON / OFF(1 ~ 3 I Level Selectable) RETURN		
⑧ SPECIAL	Refer to the next page			
(9) EXIT		Save the SETUP Menu and exit		

The IR range shown below are maximum distances that can be achieved using this camera. The environment and camera positioning both affect IR performance.



♦ SETTINGS

Settings can be made using the OSD buttons Located on the bottom of the camera. (Adjust the IR Control Volume, using a screw driver, to increase or decrease the IR brightness level.)





OSD Control Board

OSD

Special Menu

SET UP MENU	DEFAULT SET	MENU
① CAMERA TITLE	OFF	ON / OFF
② SYNC	INT	INT /
③ MOTION DET.	OFF	SENSITIVITY: AREA I AREA MODE: OFF SEL POS: L - TOP X POS: Level Selectable Y POS: Level Selectable FILL \rightarrow SET RETURN
(4) PRIVACY	OFF	AREA SEL: AREA I AREA MODE: TOP / BOTTOM / LEFT / RIGHT MASK COLOUR: GREEN / RED / BLUE BLACK / WHITE / GREY TRANSP. : Level Selectable RETURN
⑤ DIS	OFF	ON / OFF
⑥ COMM ADJ.	CAM ID: 0 BAUD RATE: 38400 PARITY: 8-N-1 RET PKT: ENABLE DISP CAM ID: OFF	CAM ID: ID Selectable BAUD RATE: 2400 / 4800 / 9600 / 19200 / 38400 / 57600 PARITY: 8-N-1 RET PKT: ENABLE DISP CAM ID: OFF
⑦ LANGUAGE	ENGLISH	
⑧ RESET	-	RETURNS TO FACTORY SETTINGS
(9) RETURN	-	RETURNS TO THE SETUP MENU

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в

Menu Set Up

Menu items can be selected by using the OSD buttons of the camera.

- I. Press the Set Up button.
- The Set Up menu will be displayed on the monitor.



- 2. Move and select the required function using the Up and Down button.
- Move the arrow indicator Up or Down to select the desired feature by pressing the Up or Down button.

	MAIN SETUP		
LENS		DC	←
	~	ΔΤ\Δ/	
BACKLIGHT		OFF	
SDNR		ON	←
DAY / NIGHT		AUTO	←
IMAGE ADJ			
EXIT			

- 3. Changing menu settings using the Left or Right button.
- Available values or Status are displayed by pressing the Left or Right buttons.
 Press the button until desired value / status is displayed.
- 4. After completing the setting move the arrow indicator to EXIT and press the SET button to EXIT.





This function controls the image brightness.

- I. Move the arrow indicator to LENS using the Up and Down buttons on the Set Up menu screen.
- 2. Select the desired lens type by pressing the Left or Right button.



\rightarrow DC : DC Auto IRIS Lens



3. Press the SETUP button to return to the previous menu.

Exposure

This function is used to select Automatic or Manual shutter speed control.

- I. On the Set Up menu screen select EXPOSURE by using the Up or Down button.
- 2. Select the desired shutter mode by pressing the Left or Right button.



- ◆ FLK: Select FLK mode when flickering occurs; caused by the unmatched frequency of electric lights.
- ESC: Automatic shutter speed control. The image brightness is automatically controlled when ESC mode is selected.
- MANUAL: Shutter speed can be selected manually.

WDR DAY & NIGHT COLOUR CAMERA

EXPOSURE SETUP

► SHUTTER ESC AGC HIGH SENS - UP OFF RETURN ←

NOTE

- To produce better results with FLK, do not use it in conjunction with the WDR mode in the BACKLIGHT menu.
- When the SHUTTER is set to ESC and the CAMERA is using internal synchronisation, the picture may become unstable if the camera is facing a bright fluorescent light. So take special care when choosing the installation position.
- When the SHUTTER is set to MANUAL or FLK mode, SENS-UP will be disabled.
- ESC and MANUAL modes are only available together when the lens is set to MANUAL.

AGC(AUTO GAIN CONTROL):

A higher gain increases brightness but also increases any noise.

OFF: Deactivates the AGC function.

LOW: Allows automatic gain control from $0 \sim 30$ dB.

HIGH: Allows automatic gain control from $0 \sim 42$ dB.

	LENS
BRIGHTNESS	III 70
Press SET to	Return

SENS - UP:

At night and/or in dark conditions, the camera automatically detects the light level and maintains a clear picture when this mode is activated.

OFF: Disables the SENS-UP function.

AUTO: Enables the SENS-UP function.



RETURN:

Select Return to save the changes in the EXPOSURE menu and retun to the SETUP menu.



- Pressing the SET button in AUTO mode allows adjustment of image brightness by increasing or decreasing the shutter speed (x2 ~ x256).
- The higher the level, the brighter the image becomes, but it is possible that an after the image (ghosting) could appear.
- When SENS-UP is activated the increased magnification can induce noise and pixelation; this is quite normal.

White Balance

The White Balance function is used to control the "on-screen" colours.

- I. Move the arrow indicator to WHITE BAL on the SETUP menu screen using the Up and Down button.
- 2. Select the desired mode by using the Left or Right button.

	MAIN SETUP		
LENS EXPOSURE	ℯ┙	DC	4
WHITE BAL		ATW	
BACKLIGHT		OFF	
SDNR		ON	←
DAY / NIGHT		AUTO	←
IMAGE ADJ	←		
SPECIAL	←		
EXIT			

- * There are three user selectable White Balance settings available.
- ATW: Normal setting; when the colour temperature range is from 1,800 K to 10,500 K. INDOOR: Select this mode when the colour temperature range is between 4,500 • K to 8,500 • K. OUTDOOR: Select this mode when the colour temperature range is between 1,800 • K to 10,500 • K.
- ♦ AWC → SET: To obtain the best results press the SET button while the camera is focused onto white paper. If the environment, and/or light source changes, the White Balance will require re-adjustment.
- MANUAL: Used for fine adjustment of White Balance. Set White Balance first using ATW or AWC then change to MANUAL and press SETUP button. Increase or decrease the value of R-Gain(Red) and B-Gain(Blue) while monitoring the colour of the image.



NOTE

- nder the following conditions the hite alance function ma not operate correctl.
 In such case please select the mode.
- hen the scene has a ver high colour temperature. x lue unset etc.
- hen the scene and or its surroundings are dar .
- hen the camera is installed in a place with considerable changes in illumination or is facing directl into a fluorescent light source.

Back Light (BLC) (

This camera provides intelligent light level control to overcome even strong bac light conditions.

- I. ove the arrow indicator to I T using the p or own button on the T menu screen.
 - . elect the desired level b using the eft or Right button.

	MAIN SETUP		
LENS EXPOSU R E	ℯ┙	DC	4
WH IT E BAL		ATW	
BACKLIGHT		OFF	
SDNR		ON	
DAY / NIGHT		AUTO	←-
IMAGE ADJ	←		
SPECIAL	←		
EXIT			

- R hen there are simultaneous brightness dar image areas R ma es both distinct.
- R function does not operate.
- Users can select and define a specific area in a scene and view the area clearl.
- If there is a high light installed in a limited environment such as an apartment par ing garage or gas station entrance removing the high light ma es it possible to view car license plates efficientl .





- . elect a mode using the eft and Right buttons then press the T button. elect R to ad ust the R I IT and .
- I IT d ust the R sensitivit b selecting I or I.
 d ust the R brightness between .

	WDR LIMIT
LIMIT	LOW
LEVEL	100
Press S	ET to Return

Select BLC to define the backlight enhancement area and the enhancement level.

	BLC S	ETUP	
TOP			85
BOTTO	M		132
LEF T			91
RIGHT			165
LEVEL			LOW
Press S	ET to Return		

HLC : Enable a user to select a mask color of high light area from picture.



NOTE

- The WDR mode cannot be used when FLK mode is selected in the SHUTTER.
- The following symptoms may occur, according to the ambient illumination, when WDR is selected, if they do, set WDR to OFF.

Colour or screen changes unnaturally.

Noise appears within the brightest part of the screen.

- The WDR performance can be affected if there is particularly bright area within the image always optimise the installation angle to avoid this.
- If the LIMIT is increased the image may become distorted.
- To achieve the best WDR performance use a DC Iris lens rather than a manual lens.

SDNR

SDNR is used to reduce the level of background noise in a low luminance environment.

I. When the SETUP menu screen is displayed select SDNR using the Up and Down button.

	MAIN SETUP		
LENS EXPOSURE	لې	DC	←
WHITE BAL		ATW	
BACKLIGHT		OFF	
SDNR		ON	← _
DAY / NIGHT IMAGE ADJ SPECIAL EXIT	₽ ₽	AUTO	~

- 2. Select whether or not to activate SDNR by using the Left and Right buttons.
- ON: Activates SDNR noise is reduced.
- ♦ OFF: Deactivates SDNR noise is not reduced.

3. Select the SDNR mode to ON and press the SET button to adjust noise reduction level.



Picture can be displayed in either colour or black and white.

I. Select DAY / NIGHT using the Up or Down button on the MAIN SETUP menu screen.

	MAIN SETUP		
LENS EXPOSURE	لې	DC	←
WHITE BAL		ATW	
BACKLIGHT		OFF	
SDNR		ON	
DAY / NIGHT		AUTO	┥┥┙
IMAGE ADJ	←		
SPECIAL	←		
EXIT			

2. Select the desired mode using the Left and Right buttons.

COLOUR: The picture is always displayed in colour.

B/W: The picture is always displayed in black and white.

AUTO: The mode automatically switches to COLOUR in normal conditions and switches to B/W mode when ambient illumination is low. To set the switching time or speed in AUTO mode, press the SET button.

AUTO SETU	IP
DWELL TIME	10sec
DURATION	Slow
Press SET to Return	

DWELLTIME: Adjust the delay when changing between COLOUR and B/W.

 \rightarrow 5s,7s,10s,20s,30s,40s,50s,60s.

DURATION: The illumination brightness can be used to control switchover.

	$Colour \to B/W$	$B/W \rightarrow Colour$
Fast	2.5 Lux	4 Lux
Slow	0.8 Lux	6 Lux

* The environmental illumination is extremly changeable.

EXTERN : This mode allows the application of a filter to external signals.

NOTE

- When using Video Drive lens with the lens level set to low, it automatic switching between colour and monochrome may not occur.
- The DAY/NIGHT menu cannot be controlled if AGC is set to OFF in the EXPOSURE menu.
 In instance, where DAY/NIGHT is already selected and AGC is switched off the camera functions as if in COLOUR mode.
- The OSD key does not work for 3 seconds when switching between COLOUR and B/W, this is to ensure stable camera operation.
- The camera responds well to infra-Red as it equipped with an Infra-Red Cut-Filter.
- Since the camera may not focus as well under infrared illumination at night as it does under normal illumination, install an Extra-Low dispersion lens to obtain sharp pictures.



I. When the SETUP menu screen is displayed, select IMAGE Adj. using the Up and Down buttons.

	MAIN SETUP		
LENS EXPOSURE	4-1	DC	←
WHITE BAL		ATW	
SDNR		OFF	←
DAY / NIGHT	ب	AUTO	← 4
SPECIAL	←		

2. Select the desired mode by using the Up or Down button.



FREEZE: Image freezing or moving Image.

- V REV: Flip the image vertically on the screen.
- H REV: Flip the image horizontally on the screen.
- D ZOOM : Digital zoom available, range x1 ~ x I0.



SHARPNESS: Improves image clarity. The level can be adjusted to obtain an improved image. However, when the level is set too high it can distort the image or cause noise.

SHARPNESS	
LEVEL	10
Press SET to Return	

RETURN: Select Return and press SET to save the settings for the IMAGE Adj. menu and return to the SETUP menu.





When the SETUP menu screen is displayed, select SPECIAL using the Up and Down buttons.

	MAIN SETUP		
LENS EXPOSURE	4	DC	←
WHITE BAL		ATW	
BACKLIGHT		OFF	
SDNR		ON	←
DAY / NIGHT		AUTO	←
IMAGE ADJ	←		
SPECIAL	↓		
EXIT			

Select one of the mode using the Up and Down button.

SPEC	CIAL
	OFF
2. SYNC	INT
3. MOTION DET	OFF
4. PRIVACY	OFF
5.DIS	OFF
6.COMM ADJ. 🖊	
7. LANGUAGE	ENGLISH
8. RESET	
9. RETURN 🖊	

- 1. CAM TITLE: When input, the Camera ID is displayed on the monitor.
- 1-1) Move the arrow indicator to CAMERA ID using the Up or Down button on the SETUP menu screen.
- 1-2) Set to ON using the Left or Right button.



1-3) Press the SETUP botton.



1-4) The CAMERA TITLE can be up to 15 alphanumeric characters in length.

1 Move the cursor to choose an alphanumeric character.

CAMERA TILE SETUP	
ABCDEFGHIJKLM NOPQRSTUVWXYZ abcdefghijklm nopqrstuvwxyz —,0123456789 ← → CLR POS END	

- ② Choose a character in displayed range A-Z, a-z, 0-9 using the Up, Down, Left and Right buttons.
- ③ Select the desired character by pressing the SETUP button.
- The cursor moves to the next position, after character input by pressing the SETUP button.
- 4 Repeat the above steps until the Camera ID has been created.

In cases where the wrong Cam	era ID has been input
Move the cursor to CLR and pre	ss SETUP button to erase characters from left to right, and repeat
the above steps to input the cha	racters again.

1-5) To select the position where the Camera ID should be displayed on the screen.

1 Move the cursor to POS and press the SET button.



② Created camera ID is displayed.

(Factory default position)



③ Select a new position by using the four directional buttons. Press the SET button to confirm the position.



1-6) Move the cursor to END and press the SET button after completing the above process.

2. SYNC:

-INT : Internal Synchronisation

3. MOTION DETECTION(MD):

MOTION DET			
I. SENSITIVITY 2. AREA MODE 3.SEL POS 4. Y POS 5. X POS 6.FILL→ SET 7. Return ←	AREA I ON L-TOP	2	

3-1) When the special menu screen is displayed use the Up or Down botton to access the MOTION DET. menu.

- 3-2) Set up the detection areas using the four direction buttons.
- ① SENSITIVITY: Select up to 8 MD areas. When the SENSITIVITY is set too high, motion detection sensitivity is increased and responds to even small movements.
- ② AREA MODE: Determines whether the MD area selected in SENSITIVITY is used.
- ③ SEL POS: Determines which of the four vertices of each MD area is to be used.
- ④ Y POS: Determines the coordinates of the vertical axis for SEL POS.
- (5) X POS: Determines the coordinates of the horizontal axis for the SEL POS.
- ⑥ FILL → SET: Fills in a selected MD area. The colour filling is sequentially selected as brown, orange, blue, cyan, green, yellow, magenta and red.
- 1 RETURN: Select this to save the MOTION DET. menu settings and return to the SPECIAL menu.

NOTE

• MD area only shown on the MOTION DET. menu. MD areas are not displayed on the monitor screen.

4. PRIVACY

Hide an area you want to hide on the screen.

4-1) When the SPECIAL menu screen is displayed press the Up and Down buttons to set to PRIVACY.



4-2) Set up the area mode using the 4 direction buttons.

- 1 AREA SEL: You can select up to 8 MD area.
- ② AREA MODE: Determines whether to use the area selected in the AREA SEL, and the size and the position of the area.

AREA SE	TUP
I. TOP	II 12
2. BOTTOM	II 27
3. LEFT	II 45
4. RIGHT	II 30
Press SET to Return	

- ③ MASK COLOUR: Set area colour. Select either Gray, Green, Red, Blue, Black and White.
- ④ TRANSP.: Determines the transparency of selected area, the range is $0 \sim 3$.
- (5) RETURN: Select to save the PRIVACY menu settings and return to the SPECIAL menu.
- 5. DIS (Digital Image Stabiliser)

This picture negates any picture movement due to external factors, such as, wind.

NOTE

- The chance of resolution decrease exists with the DIS function and the digital zoom.
- DIS does not operate if the background illumination is too low.
- DIS does not operate when the object pattern is monotonic, such as, blue sky or white walls.
- 6. COMM Adj. (Communication Adjustment) :- Operation for RS485 Connection.

This function sets up the camera communication status when controlling the camera through an external control device. ----(NOT AVAILABLE ON WDR CAMERA SERIES.)

9600
8-N-1
ENABLE
OFF

6-1) When the SPECIAL menu screen is displayed, press the UP and DOWN buttons to adjust "COMM ADJ"

- 6-2) Set up the mode using the 4 direction buttons.
- ① CAM ID: Determines the camera's identification number(between 0 and 25).
- ② BAUD RATE: You can select 2400/ 4800/ 9600/ 19200/ 38400/ 57600 bps.
- ③ UART MODE: You can select NONE, EVEN, ODD for parity bits.
- ④ RET PKT: Determines whether to send a command back to the controller device when a communication control command is sent to the camera.
- (5) DISP ID: Display camera title on top left of the screen.

- 7. LANGUAGE: Select the menu language according to local requirements through the multi language settings.
- 8. RESET: Resets the camera settings to the factory defaults.
- 9. RETURN: Select this to save the SPECIAL menu settings and return to the SETUP menu.



Press the SET button in the EXIT menu to save the current settings and exit the SETUP menu.



* Camera Adjustment

- ① Connect Video & Power Line (AC 24V or DC 12V Regulated Power)
- ② Position the camera for the correct angle of view.
- ③ Loosen the locking screws and focus the camera.
- ④ Re-tighten the locking screws.

Trouble Shooting





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Edition : GN December 2010