Set up and user manual for the VFD28V12WDR Camera

Before You Begin
Read these instructions before installing or operating this product.

Note: This installation should be made by a qualified service person and should conform to local codes.
This manual provides installation and operation information. To use this document, you must have the following minimum qualifications:

- A basic knowledge of CCTV systems and components

- A basic knowledge of electrical wiring and low-voltage electrical connections

Intended use

Only use this product for its designated purpose; refer to the product specification and user documentation.

Customer Support

For assistance in installing, operating, maintaining and troubleshooting this product refer to this document and any other documentation provided. If you still have questions, please contact Norbain Technical Support and Sales:

Norbain SD Ltd, 210 Wharfedale Road, IQ Winnersh, Wokingham, Berkshire RG41 5TP, England.

UK +44 (0) 118 912 5000
Vista Technical Helpline: +44 (0) 118 912 5125

Note: You should be at the equipment and ready with details before calling Vista Technical Support.

Conventions Used in this Manual

Boldface or button icons highlight command entries. The following **WARNING, CAUTION** and **Note** statements identify potential hazards that can occur if the equipment is not handled properly:

* **WARNING:**
Improper use of this equipment can cause severe bodily injury or equipment damage.

** **Caution:**
Improper use of this equipment can cause equipment damage.

Note: Notes contain important information about a product or procedure.

* This symbol indicates electrical warnings and cautions.
** This symbol indicates general warnings and cautions.

NORBAIN SD LTD reserves the right to make changes to the product and specification of the product from time to time without prior notice.

WARNINGS AND CAUTIONS:
To reduce the risk of fire or electric shock, do not insert any metallic objects through the ventilation grills or other openings on the equipment.

CAUTION

	CAUTION	
⚡	**RISK OF ELECTRIC SHOCK DO NOT OPEN**	⚠
WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.		

IMPORTANT SAFEGUARDS

1. **READ AND RETAIN INSTRUCTIONS**
   Read the instruction manual before operating the equipment.
   Retain the manual for future reference.
2. **CLEANING**
   Turn the unit off and unplug from the power outlet before cleaning. Use a damp cloth for cleaning. Do not use harsh cleansers or aerosol cleaners.
3. **ATTACHMENTS**
   Do not use attachments unless recommended by manufactured as they may affect the functionality of the unit and result in the risk of fire, electric shock or injury.
4. **MOISTURE**
   Do not use equipment near water or other liquids.
5. **ACCESSORIES**
   Equipment should be installed in a safe, stable location. Any wall or shelf mounting accessory equipment should be installed using the manufacture's Instructions. Care should be used when moving heavy equipment. Quick stops, excessive force, and uneven surfaces may cause the equipment to fall causing serious injury to persons and objects.
6. **VENTILATION**
   Openings in the equipment, if any, are provided for ventilation to ensure reliable operation of the unit and to protect if from overheating. These openings must not be blocked or covered
7. **POWER SOURCES**
   The equipment should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied at the installation location, contact your dealer. For equipment designed to operate from battery power, refer to the operating instructions.
8. **GROUNDING OR POLARIZATION**
   Equipment that is powered through a polarized plug (a plug with one blade wider than the other) will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. Do not defeat the safety purpose of the polarized plug.
   Alternate Warning: If the equipment is powered through a three-way grounding-type plug, a plug having a third (grounding) pin, the plug will only fit into a grounding-type power outlet. This is a safety feature. Do not defeat the safety purpose of the grounding-type plug. If your outlet does not have the grounding plug receptacle, contact your local electrician.
9. **CORD AND CABLE PROTECTION**
   Route power cords and cables in such a manner to protect them from damage by being walked on or pinched by items places upon or against them.
10. **LIGHTNING**
    For protection of the equipment during a lightning storm or when it is left unattended and unused for long periods of time, unplug the unit from the wall outlet. Disconnect any antennas or cable systems that may be connected to the equipment.
    This will prevent damage to the equipment due to Lightning or power-line surges.
11. **OVERLOADING**
    Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

12. SERVICING
Do not attempt to service the video monitor or equipment yourself as opening or removing covers may expose you to dangerous voltage or other hazards.
Refer all servicing to qualified service personnel.

13. DAMAGE REQUIRING SERVICE
Unplug the equipment from the wall outlet and refer servicing to qualified service personnel under the Following conditions:
A. When the power supply cord or the plug has been damaged.
B. If liquid has spilled or objects have fallen into the Unit.
C. If the equipment has been exposed to water or other liquids.
D. If the equipment does not operate normally by following the operating instructions, adjust those controls that are covered by the operating instructions as Improper adjustment for other controls may result in damage to the unit.
E. If the equipment has been dropped or the casing is damaged.
F. When the equipment exhibits a distinct change in performance.

14. REPLACEMENT PARTS
When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or that have the same characteristics as the original part.
Unauthorized substitutions may result in fire, electric shock, or other hazards.

15. SAFETY CHECK
Upon completion of any service or repairs to the equipment, ask the service technician to perform safety checks to verify that the equipment is in proper operating condition.

16. FIELD INSTALLATION
The installation of equipment should be made by a qualified service person and should conform to all local codes.

17. CAUTION
THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED SERVICE PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.

18. Use certified/Listed Class 2 power source only.

CE COMPLIANCE STATEMENT

WARNING
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

TABLE OF CONTENTS

INTRODUCTION

Camera Model Features:
- 1/3" Sony IMX238 CMOS
- 120dB Wide Dynamic Range (WDR)
- True Day/Night operation
- 1000TVL colour and monochrome resolution
- 2.8-12mm (F1.4-360) 2MP varifocal IR corrected lens
- 1.0Lux (Colour) / 0.5Lux (Monochrome) / 0.01Lux (Sens-up) @ F1.4 sensitivity
- Auto electronic shutter (1/50 to 1/60,000) and manual electronic shutter modes
- Day & Night – Auto, Colour, B&W
- OSD - On Screen Display (via tact switch)
- 3DNR (Digital Noise Reduction)
- AGC (Auto Gain Control)
- Auto and manual white balance modes
- BLC (Back Light Compensation)
- HLC (High Light Compensation - PWI)
- 16 Privacy zones
- 4 Motion detection zones with digital zoom
- Functions (Mirror, Flip, Digital Zoom, Quick Zoom Brightness, Sharpness, Contrast)
- Test Monitor Output (Service Jack)
- 12VDC operation
- Use Certified Listed Class 2 power source only.

CONTENTS OF PACKAGE

Installation of the camera must be performed by qualified service personnel in accordance with all local and national electrical and mechanical codes.
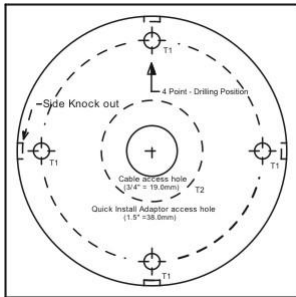
Carefully remove the colour camera and its accessories from the carton and verify that they were not damaged in shipment.

The content of the package includes:

1. Camera   2. Fixings
3. Instruction manual   4. Template sheet
5. DC Jack

BASIC INSTALLATION

1. Make mounting holes and cable hole in the place (ceiling) to which this dome camera is installed using the supplied template sheet.
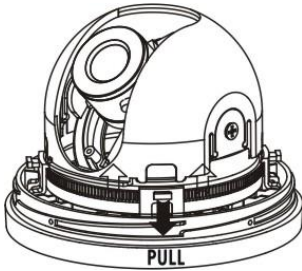

When using the mounting screws, Use the holes on template position "T1"

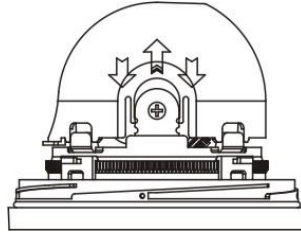Use the side knock-outs for cable entry

[Template sheet]

NOTE: it is not critical that the camera module is removed for installation so as long as care is used.

2. First remove the camera module by pulling down on the taps that hold the camera module in place **[fig A]**

[fig A]

[fig B]

PULL

3. Knock out the screw access holes (T1), this is can be done by using a Cross head screwdriver
4. Pull the video / power cables through the cable hole, then connect in the normal way
5. Attach the dome base to ceiling or wall using mounting screws, plastic anchors (If required, remove the side knock-outs for cable entry, make sure the video & power cables are properly arranged in the cable notch>
6. Insert the camera module, remove the liner
7. Adjust the camera module to the area you want to view, then adjust the zoom and focus to suit
8. Carefully fit the liner over the camera module so that it snaps into place **[fig B]**
9. Close the dome cover by rotating clockwise
10. Secure the dome cover using the tapping screw

NOTES:
- **If the 2.1mm jack adaptor is not used then please ensure the correct polarity is observed when 12VDC is being used. The terminals are colour coded to assist: Red = 12VDC / Black = 0V**

Ceiling / Wall Mounting

Template sheet

Plastic anchor

Dome Base

Mounting Screw

Camera Module

Liner

Tapping screw

Dome Cover
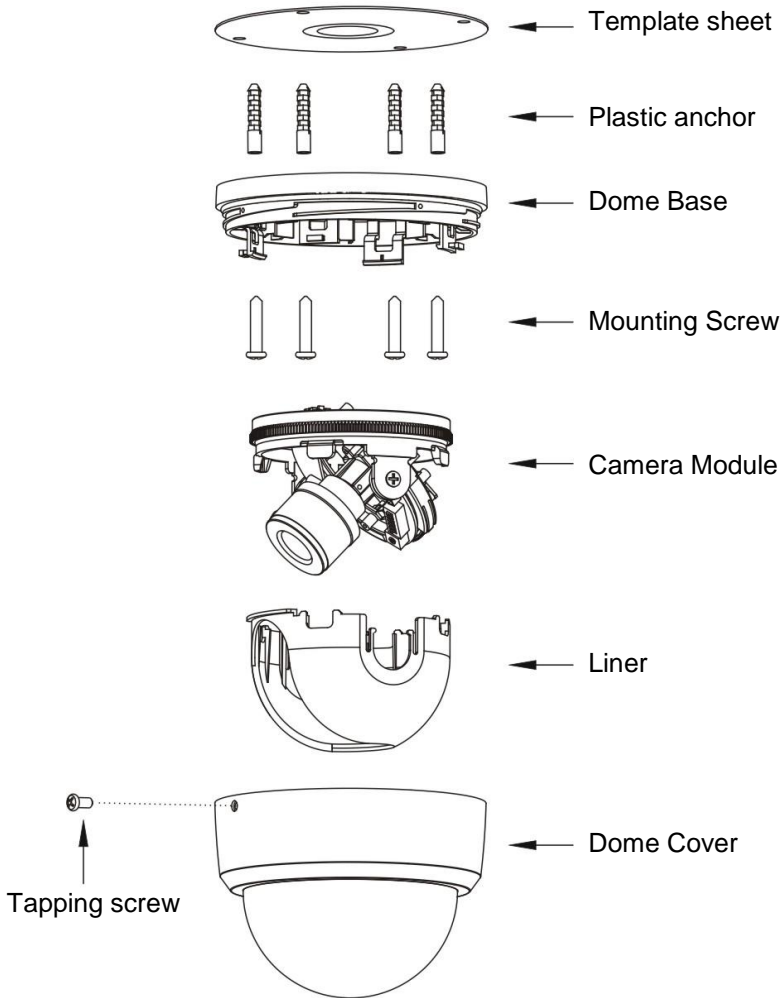
MOUNTING ON A SINGLE GANG BOX

Mount the dome base on the box with proper securing holes
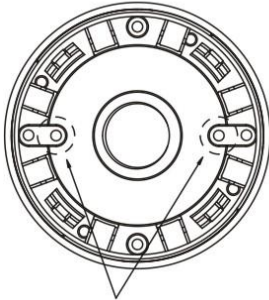
Mounting holes available
for the Single Gang Box

UK Single Gang Box
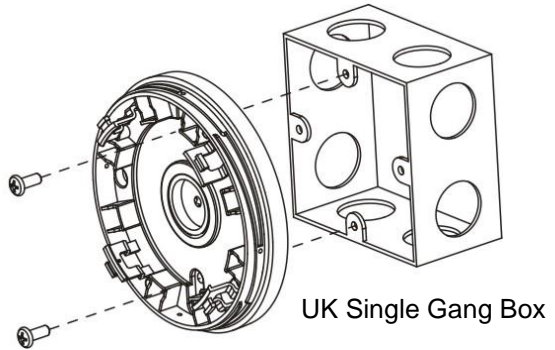
TACT SWITCH OPERATION/SERVICE JACK

The tact switch allows both navigation and changes to the OSD Menu. To enter into the OSD menu push centrally on the joystick and navigate using the up, down, left and right actions. If there is an arrow to the right of the menu function, this denotes that there is an accessible sub menu function. The white plug to the left is the service jack to allow setup of the camera without having to remove the main video cable (the service cable is available separately)
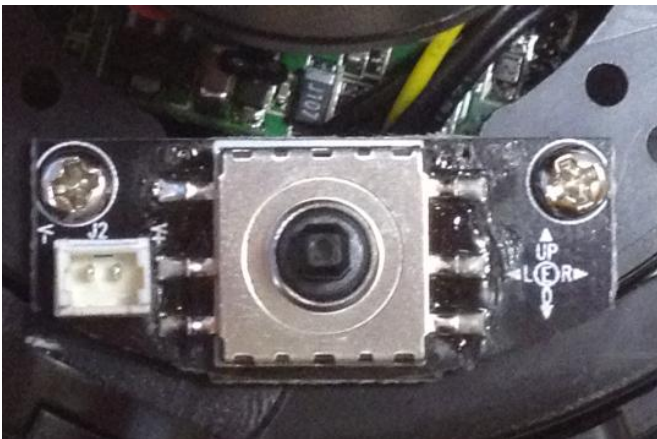
LENS ADJUSTMENT

Zoom ring: Adjust setting from Tele (T)
to Wide (W) field of View.

Focus ring: Adjust lens focus from near

(N) to infinity (∞).

	2.8 to 12mm
Image Size	1/2.7'' CCD
Focal Length	2.8-12mm $\pm$ 5%
Aperture Ratio	1 : 1.4 $\pm$ 5%
Angular Field of View	HORIZONTAL 2.8mm: 81.2° 12mm: 22.6°

Focus ring

Zoom ring

OSD MENU STRUCTURE

```
SETUP

FOCUS ADJ
LENS
EXPOSURE
BACKLIGHT
DAY&NIGHT
WHITE BAL
DNR
SPECIAL
SYSTEM
EXIT
```

```
FOCUS ADJ




RETURN
```

```
LENS

ELC
ALC



RETURN
```

```
EXPOSURE

BRIGHTNESS
SHUTTER
SENS-UP
AGC


RETURN
```

```
BACKLIGHT

OFF
HLC
BLC
WDR




RETURN
```

```
DAY&NIGHT

MODE
IR LED
ANTI-SAT
EXTERN S/W
AGC THRES
AGC MARGIN
DELAY

RETURN
```

```
WHITE BAL

AUTO
AUTOEXT
PRESET
MANUAL




RETURN
```

```
DNR

OFF
LOW
MIDDLE
HIGH




RETURN
```

```
SPECIAL

D-ZOOM
ACE
DEFOG
SHADING
PRIVACY
INTELLIGENT


RETURN
```

```
SYSTEM

COM.
VIEW ANGLE
CVBS
LANGUAGE
CAM TITLE
RESET


RETURN
```

FOCUS ADJ

The columns from left to right assist in focusing. The higher the yellow scale on the column, the better the focus. Any green on the column shows how much the focusing could be improved by.

LENS

ALC
Mode: Indoor, Outdoor, Deblur

ELC
Mode: Normal, Deblur

EXPOSURE

Brightness: 1 - 20 (increments of 1)

Shutter (Auto / Manual / Flicker)
Auto: Lens adjusts automatically
Manual: 1/50, 1/100, 1/240, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/16000, 1/30000, 1/60000
Flicker: Not applicable as DC lens used

Sens-up: Off, x2, x4, x8, x16, x32, x50

AGC: 1 - 20 (increments of 1)

BACKLIGHT

Mode: Off, HLC, BLC, WDR
Note: only one of the above can be applied at any one time

HLC (Globally applies Peak White Inversion to the image)
Level: 1 - 20 (increments of 1), the lower the number the more HLC is applied
Mode: All Day, Night only

BLC (Applies a user defined area of Back Light Compensation to the image)
H-Poz: 1 - 20 (increments of 1), changes horizontal position of BLC area
V-Poz: 1 - 20 (increments of 1), changes vertical position of BLC area
H-Size: 1 - 20 (increments of 1), changes horizontal size of BLC area
V-Size: 1 - 20 (increments of 1), changes vertical size BLC area

WDR (Globally applies Wide Dynamic Range to the image)
Weight: Low, Middle, High

DAY & NIGHT

Mode: External, Auto, Colour, B&W

External: Do not use
Auto: Uses AGC to switch from colour to mono & vice versa
Colour: Colour only mode
B&W: Monochrome only mode

IR LED: Not applicable

Anti-Sat: Not applicable

External S/W: Not applicable

AGC Thres: 1 - 20 (increments of 1), the lower number, the less AGC is required before switching occurs

AGC Margin: 1 - 20 (increments of 1), the lower the number the less additional AGC margin is applied before switching occurs

Delay: Low (3secs), Middle (6secs), High (10secs)

WHITE BALANCE

Mode: Auto, AutoExt, Preset, Manual

Auto: Auto trace white balance

AutoExt: Wide auto trace white balance

Preset: Do not use

Manual (manually set the white balance)
Kelvin: Low, Middle, High
R-Gain: 1 - 20 (increments of 1)
B-Gain: 1 - 20 (increments of 1)

IMAGE

Sharpness: 0 – 10 (increments of 1)
Gamma: 0.45, 0.5, 0.55, 0.6, 0.65
Pedestal: 0 – 20 (increments of 1)
Colour Gain: 0 – 20 (increments of 1)
Mirror: Off, on (horizontally inverts image)
Flip: Off, on (vertically inverts image)

DNR

Mode: Low, Middle, High

SPECIAL

D-Zoom: 1.0x - 8.0x (increments of 0.1)

ACE: Off, Low, Middle, High (D-WDR)

Defog (enhances image in scenes of view when fog is present)
Mode: Auto, Manual
Level: Low, Middle, High

Shading: Do not use

Privacy (apply up to 16 privacy zones onto the image)
Zone Num: 0 - 15
Zone Disp: Off, on
H-Poz: 0 - 60 (Horizontal position of zone)
V-Poz: 0 - 40 (Vertical position of zone)
H-Size: 0 - 40 (Horizontal size of zone)
V-Size: 0 - 40 (Vertical size of zone)
Y Level: 0 - 20 (Luminance of zones)
CR Level: 0 - 20 (Colour level of red for the zones)
CB Level: 0 - 20 (Colour level of blue for the zones)
Note: all zones are the same colour

Intelligent (Motion, Alarm, Quick Zoom)
For use in low traffic areas. Can provide tracking and zooming into a motion detection area. Detection results will vary with scene content / movement and does not work if WDR is enabled

Motion (4 motion detection zones)

Det.Setting
Sensitivity: 0 - 20 (the lower the number the lower the sensitivity)
Obj. Keep LV: 0 - 60
Motion Est: 0 - 20
Signal Out: Not applicable as no alarm output

Window Tone: 0 - 6 (applies level of obscurity to non motion area)

Window Zone: 0 - 3

Window Use: Off, On

Det H-Poz: 0 - 60 (Horizontal position of zone)
Det V-Poz: 0 - 40 (Vertical position of zone)
Det H-Size: 0 - 60 (Horizontal size of zone)
Det V-Size: 0 - 40 (Vertical size of zone)

Alarm Not applicable as no alarm output

Quick Zoom (this enables digitally zooming in on a user defined motion area)
Moving: 0 - 240 / 60sec (the lower the number the faster the area moves)
Zoom In: 0 - 240 / 60sec (the lower the number the slower the zoom state)
Standby: 0 - 240 / 60sec (the lower the number the faster the reset period before the next event)
Synchronous: Off, On
Tracking: Off, On (tracks moving object through motion area)
Repeat: Off, On (Off moves to next motion event in the defined area)

SYSTEM

Com: Not applicable
View angle: Wide 4:3, Wide 16:9, Normal
**CVBS:** PAL, NTSC
Language: English
Cam Title: Apply an 8 character name to the camera
Reset: Push ENTER on the OSD tact switch to restore the defaults

DEAD PIXEL CORRECTION

It is perfectly normal for a camera CCD / CMOS to have what is known as 'dead', 'hot' or 'white' pixels, develop over time and on occasion and these can be noticeable on the viewed image. These can be masked easily, without affecting the quality of the image with the DEFECT DET function. To access this, push and hold the joystick LEFT for approx 5 seconds, scroll DOWN to DEFECT DET then push ENTER (central push on the OSD tact switch). Once this has run the OSD text disappears from screen.

DIMENSIONS
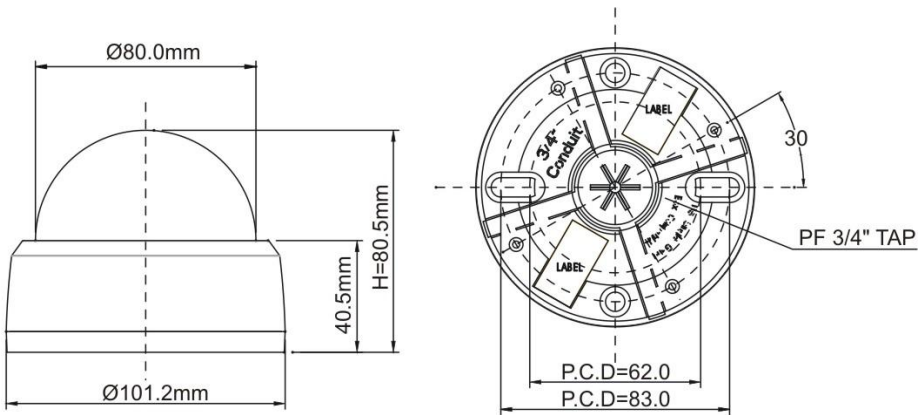
Mounting Type	Surface Type
Window Spec.	Thick t = 0.05 in (2.0 mm)
	Material = Polycarbonate
	Diameter = 3.15 in (80.0 mm)
Bottom Case	Thick t = 0.18 in (3.0 mm)
	Material = Polycarbonate
	Diameter = 3.98 in (101.2 mm)
Cable Entry	One(1) opening hole with grommet (3/4'')
	Four(4) Side Knockouts

SPECIFICATIONS

Model		VFD28V12WDR
General	Resolution	1000TVL (colour and monochrome)
	Image sensor	1/3″ SONY IMX238 CMOS
	WDR	120dB
	Operation	True day / night
	Total pixels	1305(H) x 1069(V)
	Effective pixels	1305(H) x 1049(V)
	Scanning Syst.	2:1 Interlace
	Scanning Freq.	PAL: 15.625KHz(H) x 50Hz(V)
	Sync. system	Internal
	Video output	1.0Vp-p (75Ω, composite)
	S/N Ratio	50dB (AGC off)
	Lens	f2.8 - 12mm (F1.4 - 360) 2MP IR Corrected
	Min. illumination	1.0Lux (colour), 0.5Lux (mono), 0.01Lux (mono & Sens-up)
	OSD Control	Tactile switch
	Electronic Shutter	Auto or Manual (1/50 to 1/60,000 sec)
	Function — Backlight	Off, HLC (PWI), BLC, WDR
	Day / Night	Auto, Colour, B&W
	AGC	Off, On
	White Bal.	Auto, AutoExt, Manual
	Sens-up	Off, x2, to x50
	3DNR	Off, Low, Middle, High
	Motion Det.	4 areas
	Quick Zoom	4 areas
	Privacy	16 zones
	Brightness	0 - 20
	Gamma	0.45 to 0.65
	Digital Zoom	x1.0 to x8.0
	Mirror	Off, On
	Flip	Off, On
	Title	Off, On (8 characters)
	Language	English
Connections/other	Power	12VDC (-10 to +15%)
	Consumption	1.6W (130mA)
	Power input	2-pin terminal block with 2.1mm jack adapter
	Video output	BNC connector, Spot Out
	Temperatures	0 to 40°C (operating) / -10 to 50°C (storage)
	Humidity	0 to 90% (non-condensing)
	Dims. (net)	101.2(Φ) x 80.5 (H) mm
	Dims. (gross)	120 (W) x 135 (H) x 135 (D) mm
	Weight	140g (net) / 400g (gross)
	Approvals	CE & RoHS2: 2011/65/EU