DDF4520HDV-DN

Hybrid HD Dome Camera, 1.3-Megapixel, 720p/30, SD (PAL/NTSC), H.264, Day/Night (ICR),
Low-Light, Wide Dynamic Range (WDR), Motor-driven Varifocal Lens, P-Iris, PoE (Class 0), Vandal-resistant (IK10)

The **DDF4520HDV-DN** is a **hybrid Wide Dynamic Range (WDR) HD network camera** built into a **vandal-resistant (IK10) dome enclosure**.

The camera provides **real-time HD video (720p/30)** using the **H.264** codec, currently, the most advanced standard for **high-efficiency video compression**, and supports **resolutions up to 1.3-megapixel**.
In addition to **HD video over IP**, the **hybrid camera** provides for a simultaneous **analogue SD (PAL/NTSC) video output via BNC (CVBS)**.

The camera is characterized by its **Wide Dynamic Range (WDR)** and allows you to capture images with highest colour fidelity and superb detail reproduction even in scenes with a wide range of contrast and strong backlighting.
The **excellent low light performance** also provides for clear and low noise images even in low light conditions.

Besides a comprehensive set of automatic and manual image optimization functions and many other setting options, it features automatic **Day/Night** operation supported by integrated **ambient light sensing** and a **removable IR cut filter (ICR[1])**.

In addition, the camera is equipped with a **fast (large maximum aperture)** and **motor-driven P-Iris megapixel varifocal lens** which allows for the convenient adjustment/configuration of the focal length (zoom), focus and iris (aperture) via the web browser.
The novel **P-Iris control** technology, designed for a precise and automatic adjustment of the best iris position (optimum aperture), thereby realizes a significantly improved image quality[2] with excellent contrast, brilliant clarity and enhanced detail resolution combined with a greater depth of field, under almost all lighting conditions.

At a resolution of 720p, the **Digital Image Shift** function additionally provides for a **subsequent digital fine alignment of the image section**.

Depending on the requirements, the camera can be conventionally supplied with 12 V DC or conveniently operated via **Power over Ethernet** (PoE Class 0, IEEE 802.3af) which allows for an easy, quick and cost-effective cabling and commissioning.

Features

- 1/3" 1.3-megapixel CMOS image sensor
- Pure Digital Signal Processing
- Hybrid HD camera – HD video over IP (Ethernet, RJ45) and analogue SD (PAL/NTSC) video output via BNC (CVBS)
- Real-time HD video (720p/30)
- Wide Dynamic Range (WDR)
- Automatic Day/Night switching using ambient light sensing and ICR[1] function (switching threshold level adjustable)
- Excellent low light performance
- Motor-driven megapixel varifocal lens
- Zoom, focus and iris control conveniently adjustable via web browser
- P-Iris control for an optimum image quality and significantly enhanced depth of field[2]
- Resolution video over IP: SD (4CIF PAL/NTSC), HD (720p, SXGA−)
- Resolution analogue video output: SD (4CIF PAL/NTSC)
- Video compression: H.264, MJPEG
- Frame rate up to 30 fps
- Automatic Exposure (AE) preset and frame rate of 50/60 fps at 720p for casino applications optional[3]
- Simultaneous Dual- or Tri-Streaming
- Manual White Balance (MWB)
- Automatic White Balance (ATW, One-Push AWB)

- Automatic Gain Control (AGC)
- Automatic Electronic Shutter (AES)
- Comprehensive set of image optimization functions like brightness, contrast, saturation and sharpness
- Digital Noise Reduction (DNR)
- Three different exposure metering modes: average metering (light information from entire scene), centre-weighted average metering and spot metering
- Privacy Zone Masking (hiding/masking of protected areas)
- Flip function (horizontal, vertical or both)
- Digital Image Shift[4]
- Motion detection[5] with selectable sensitivity
- Alarm notification via DaVid Protocol[5], e-mail and FTP image upload
- Voltage supply with 12 V DC or via PoE (Class 0, IEEE 802.3af)
- Low power consumption
- 3-axis adjustment
- Two available mounting variants: in-ceiling mount (IM) or surface mount (SM)
- Compact vandal-resistant (IK10) housing
- IP67 (surface mount variant)
- ONVIF compliant
- DIN EN 50130-4 compliant

1) ICR = IR Cut Filter Removable
2) Compared to conventional DC auto iris lenses
3) Optional license **DLC - Casino Preset and Frame Rate 50/60 fps at 720p** (004717) required. The recording at 50/60 fps is supported by the **DIS-2/M NSU**.
4) Digital Image Shift = Provides digital fine alignment of the image section (only applicable at 720p, vertical alignment by 120 pixels up or down)
5) Function in preparation

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Variants/Options

	Variants
004493.406	**DDF4520HDV-DN-IM** Hybrid HD dome camera, 1.3-megapixel, 720p/30, SD (PAL/NTSC), H.264, Day/Night (ICR), Low-Light, WDR, motor-driven varifocal lens, P-Iris, PoE (Class 0), vandal-resistant (IK10), in-ceiling mount variant, F1.2–F2.3 / 3–9 mm
004494.406	**DDF4520HDV-DN-SM** Hybrid HD dome camera, 1.3-megapixel, 720p/30, SD (PAL/NTSC), H.264, Day/Night (ICR), Low-Light, WDR, motor-driven varifocal lens, P-Iris, PoE (Class 0), vandal-resistant (IK10), surface mount variant, F1.2–F2.3 / 3–9 mm
004493.408	**DDF4520HDV-DN-IM** Hybrid HD dome camera, 1.3-megapixel, 720p/30, SD (PAL/NTSC), H.264, Day/Night (ICR), Low-Light, WDR, motor-driven varifocal lens, P-Iris, PoE (Class 0), vandal-resistant (IK10), in-ceiling mount variant, F1.6–F2.6 / 10–23 mm
004494.408	**DDF4520HDV-DN-SM** Hybrid HD dome camera, 1.3-megapixel, 720p/30, SD (PAL/NTSC), H.264, Day/Night (ICR), Low-Light, WDR, motor-driven varifocal lens, P-Iris, PoE (Class 0), vandal-resistant (IK10), surface mount variant, F1.6–F2.6 / 10–23 mm

	Options
000428	**Design Colours IM Cover Ring** Cover ring for in-ceiling mount variant according to RAL or Pantone colour chart
001044	**Tinted Bubble** For in-ceiling and surface mount variant, 4.5"
001431	**EvC-1** High-Speed Ethernet data transmission via coaxial cable
001678	**Power Supply Unit (110–240 V AC -> 12 V DC)** Universal power supply, 110–240 V AC to 12 V DC, 850 mA, plug adapter EU/UK/US/AUS

	Licences
004717	**DLC - Casino Preset and Frame Rate 50/60 fps at 720p**[6] License for the use of the Automatic Exposure (AE) preset Casino and the frame rate of 50/60 fps at 720p

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6) The recording at 50/60 fps is supported by the **DIS-2/M NSU**.

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Specifications

Sensor

Type	1/3" 1.3-megapixel CMOS image sensor
Signal processing	Pure Digital Signal Processing
Image capture	Progressive Scan
Minimum illumination	0.1 lux (F1.2, 50 IRE)
Dynamic range (WDR)	> 115 dB[8]
Signal-to-noise ratio (SNR_{MAX})	43.9 dB

Functions

Hybrid Video	On / Off
Day/Night switching	Yes, using ambient light sensing and ICR[7] function (switching threshold level adjustable)
B/W (black-and-white) mode	Automatic[9] (in Night mode)
Automatic Electronic Shutter (AES)	1/25(30) – 1/10000 s
	(Auto Slow Shutter extends maximum exposure time to 1/4(5) s with AE Preset "Low light")
Digital Noise Reduction	Yes
Automatic Exposure (AE) Presets	Outdoor, Indoor, Low light, Casino[10]
Exposure metering mode	Average metering (light information from entire scene), centre-weighted average metering, spot metering
Brightness adjustment	Automatic (ALC) / Manual
Gain control	Automatic (AGC)
White balance	ATW (Auto Tracking White Balance), One-Push AWB (Automatic White Balance)
Privacy Zone Masking	Yes (max. 40% of the entire image)
Flip function	Horizontal, vertical or both
Digital Image Shift[11]	Yes
Motion detection[12] (VMD)	With selectable sensitivity (5 levels)
Alarm notification	Via DaVid Protocol (Dallmeier Video Protocol) to PGuard advance[12], e-mail, FTP image upload
Configuration	Via web browser
Languages	German, English, Spanish, French, Italian

Lens

Type	*For specifications and available angles of view see "Lens Specifications" on page 6.*
Zoom control (Tele – Wide)	Motor-driven (controllable via web browser)
Focus control (Far – Near)	Motor-driven (controllable via web browser)
Iris control	P-Iris (motor-driven, configurable via web browser)

Format and Encoding

Video standard	SDTV (PAL/NTSC)
	HDTV (SMPTE 296M)
Resolution video over IP	4CIF (PAL: 704 × 576, NTSC: 704 × 480)
	720p (1280 × 720)
	SXGA− (1280 × 960)
Resolution analogue SD video	4CIF (PAL: 704 × 576, NTSC: 704 × 480)
Aspect ratio video over IP	4:3 (4CIF, SXGA−)
	16:9 (720p)
Aspect ratio analogue SD video	Scale Analog Output -> On: 4:3 (if Encoder 1 resolution: 4CIF, SXGA−)
	16:9 Letterbox (if Encoder 1 resolution: 720p)
	Scale Analog Output -> Off: 4:3 (cropped from centre sensor area)
Video compression	H.264, MJPEG
Frame rate	*See tables "Maximum Frame Rates" on page 5.*
Video bit rate	0.25 – 10 Mbit/s, CBR (constant bit rate) or VBR (variable bit rate)
	Video streaming Simultaneous Dual- or Tri-Streaming[13]
	(Note the tables "Available Encoder Combinations" on page 5.)
Transfer format	Progressive (full image)
Live streaming transmission method	Unicast, Multicast

Protocols

Ethernet protocols	IPv4, TCP, UDP, ARP, ICMP, DHCP, NTP, HTTP, RTSP, IGMP V2, FTP, SMTP, RTP, RTCP
SNMP support	Yes

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7) ICR = IR Cut Filter Removable
8) According to the sensor manufacturer's specifications
9) Without colour information, or rather in black-and-white mode, the image quality in low light conditions will be much clearer (e.g. less colour noise).
10) Optional license **DLC - Casino Preset and Frame Rate 50/60 fps at 720p** (004717) required. The recording at 50/60 fps is supported by the **DIS-2/M NSU**.
11) Digital Image Shift = Provides digital fine alignment of the image section (only applicable at 720p, vertical alignment by 120 pixels up or down)
12) Function in preparation
13) Only usable if analogue video output is disabled

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Specifications (Continuation)

Connections

Video OUT	1× BNC (CVBS, 1.0 V_{p-p}, 75 Ohm)
Ethernet	1× RJ45, 10BASE-T-/100BASE-TX-PoE
Power IN	12V DC (Weidmüller male connector SL 3.50/02/90G)

Miscellaneous

Ambient light sensor	Integrated
Programming interface	Open platform for integration into third-party systems using API and ActiveX*
ONVIF compliance	Core Specifications 1.01 & 1.02

Electrical Data

Voltage supply	12V DC ±10% or PoE (Class 0)
PoE standard	IEEE 802.3af
Power consumption	Max. 4.5W

Mechanical Data

Dimensions	In-ceiling mount variant: approx. Ø 170 × H 135 mm (Ø 6.7 × H 5.3 inches)
	Surface mount variant: approx. Ø 153 × H 135 mm (Ø 6.0 × H 5.3 inches)
Weight	In-ceiling mount variant: approx. 1200 g (2.6 lb)
	Surface mount variant: approx. 1100 g (2.4 lb)
Adjustment	3-axis
Colour	White (standard variant)
Bubble	Clear (with black inner liner for discrete surveillance)
Vandal-resistant	Yes
IK protection	IK10 protection against external mechanical impacts (up to 20 joules)
IP rating	IP67 (surface mount variant only)

Environmental Conditions

Operating temperature	In-ceiling mount variant (indoor): −20°C to +40°C (−4°F to 104°F)
	Surface mount variant (in- and outdoor): −20°C to +50°C (−4°F to 122°F)
Relative humidity	0% − 90% RH, non-condensing

Approvals/Certifications

Type	CE, FCC, ACA, UVV "Kassen" (DGUV Test), UL, DIN EN 50130-4 compliant

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Available Encoder Combinations

Encoder 1 (H.264)

Encoder 1	Encoder 2	Encoder 3**
H.264	H.264/MJPEG	H.264
SXGA− / − 30 fps	VGA (640 × 480) / − 15 fps	-
720p / − 60 fps[14)	-	-
720p / − 30 fps	VGA (640 × 352) / − 30 fps	-
720p / − 30 fps	VGA (640 × 352) / − 15 fps	QCIF (192 ×128) / − 15 fps
4CIF / − 30 fps	4CIF / − 30 fps	-

Encoder 1 (MJPEG)

Encoder 1	Encoder 2	Encoder 3**
MJPEG	H.264/MJPEG	H.264
SXGA− / − 30 fps	-	-
720p / − 60 fps[14)	-	-
720p / − 30 fps	-	-
4CIF / − 30 fps	-	-

** only available if Encoder 2 -> MJPEG

Maximum Frame Rates

Hybrid Video Off

Resolution	Encoder 1	Analogue Output
SXGA−	25/30 fps	12.5/15 fps
720p	25/30 fps	25/30 fps
720p	50/60 fps[14)	− ***
4CIF	25/30 fps	25/30 fps

Hybrid Video ON

Resolution	Encoder 1	Analogue Output
SXGA−	12.5/15 fps	25/30 fps
720p	25/30 fps	25/30 fps
720p	50/60 fps[14)	− ***
4CIF	25/30 fps	25/30 fps

*** At 720p/50 (PAL) or 720p/60 (NTSC), no analogue video output and no encoding by Encoder 2 and Encoder 3 is possible

14) Optional license **DLC - Casino Preset and Frame Rate 50/60 fps at 720p** (004717) required. The recording at 50/60 fps is supported by the **DIS-2/M NSU**.

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Lens Specifications

Lens F1.2 – F2.3 / 3 – 9 mm	
Type	Motor-driven megapixel varifocal lens
Format	1/2.7"
Mount	Board Lens
Focal length	3 – 9 mm
Iris range (at wide end)	F1.2 – 360 (Closed)
Iris range (at tele end)	F2.3 – 360 (Closed)
Iris control	P-Iris (motor-driven)
Zoom	Motor-driven
Focus	Motor-driven
MOD (Minimum Object Distance)	0.5 m
IR corrected	Yes
Available angles of view[15] (H × V) at wide end	approx. 77° × 61° with 4CIF, SXGA– approx. 77° × 48° with 720p
Available angles of view[15] (H × V) at tele end	approx. 29° × 22° with 4CIF, SXGA– approx. 29° × 17° with 720p

Lens F1.6 – F2.6 / 10 – 23 mm	
Type	Motor-driven megapixel varifocal lens
Format	1/2.7"
Mount	Board Lens
Focal length	10 – 23 mm
Iris range (at wide end)	F1.6 – F16 (Closed)
Iris range (at tele end)	F2.6 – F16 (Closed)
Iris control	P-Iris (motor-driven)
Zoom	Motor-driven
Focus	Motor-driven
MOD (Minimum Object Distance)	0.8 m
IR corrected	Yes
Available angles of view[15] (H × V) at wide end	approx. 27° × 20° with 4CIF, SXGA– approx. 27° × 15° with 720p
Available angles of view[15] (H × V) at tele end	approx. 11° × 8° with 4CIF, SXGA– approx. 11° × 6° with 720p

15) All specifications ±5%. Minor deviations with lenses may be a result of manufacturing tolerances and do not constitute a defect.
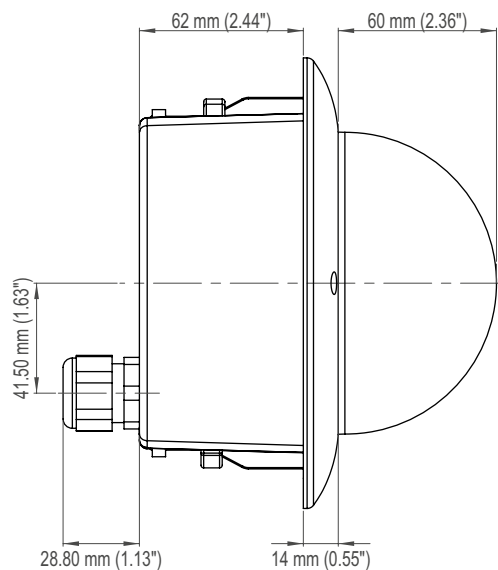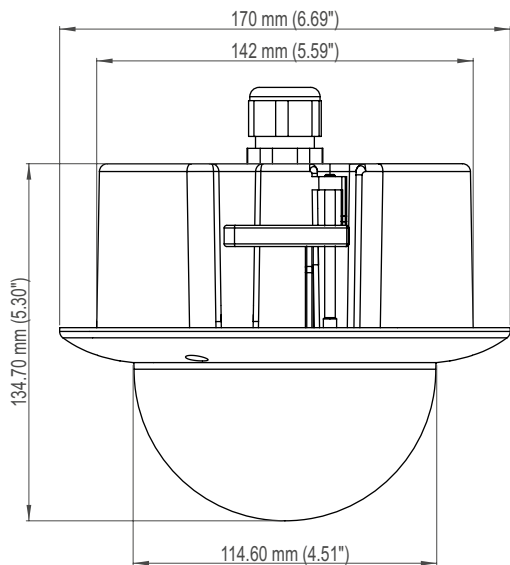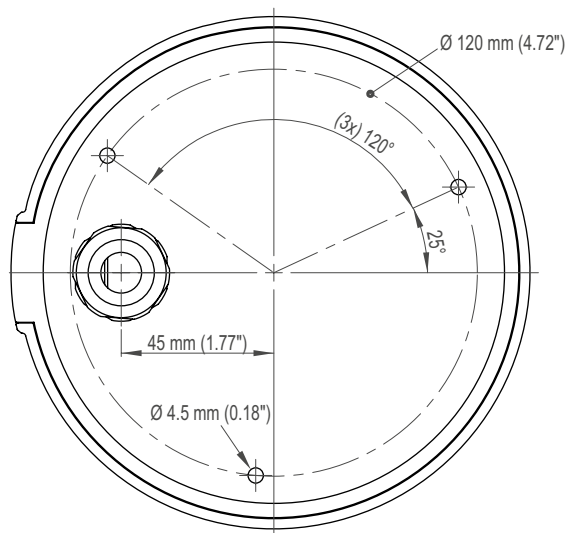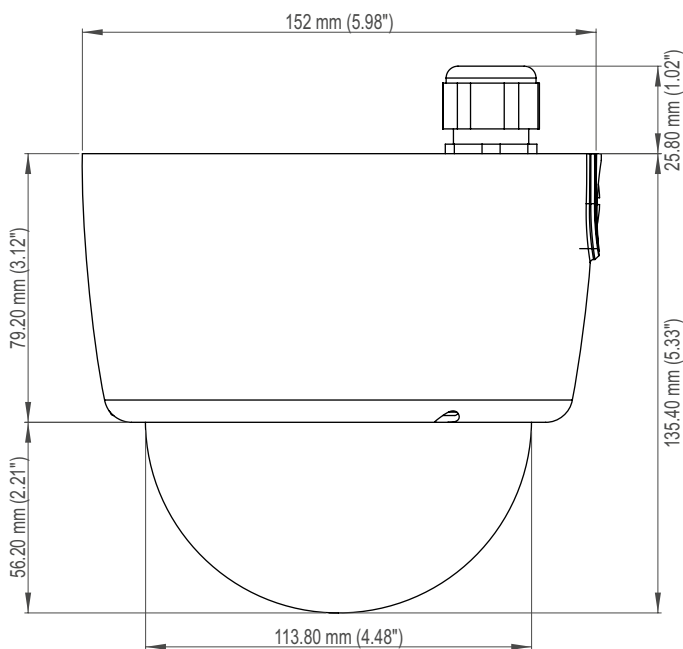
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Dimensions

In-ceiling mount variant

Surface mount variant