MDF4220HD

Hybrid HD Mini Box Camera, 1.3-Megapixel, 720p/30, SD (PAL/NTSC), H.264,
Low-Light, Wide Dynamic Range (WDR), PoE (Class 0), Extremely Compact and Lightweight

The **MDF4220HD** is a **hybrid Wide Dynamic Range (WDR) HD mini box camera**.

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 **HD mini box 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.

Equipped with a 1/4" tripod socket located on the top and bottom side, the camera fits all standard brackets with UNC threaded screws. Due to its extremely compact design and the included mounting brackets, the mini box camera is also ideally suited for installations in automated teller machines (ATMs).

At a resolution of 720p, the **Digital Image Shift**[1] function provides for a **subsequent digital fine alignment of the image section**, which additionally guarantees for a straightforward installation process of the camera.

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)
- Excellent low-light performance
- Monofocal lens (F2.0 / 2.4 mm) or varifocal lens (F2.0 / 2.8 – 6 mm)
- 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
- 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[1]
- Motion detection[2] with selectable sensitivity
- Alarm notification via DaVid Protocol[2], e-mail and FTP image upload
- Voltage supply with 12 V DC or via PoE (Class 0, IEEE 802.3af)
- Low power consumption (2.9 W typical)
- 1/4" tripod socket on top and bottom side for the installation with wall or ceiling brackets
- Extremely compact and lightweight design
- Two mounting brackets for the installation in automated teller machines (ATMs) included in the scope of delivery
- Quick and easy mounting
- ONVIF compliant
- DIN EN 50130-4 compliant

[1] Digital Image Shift = Provides digital fine alignment of the image section (only applicable at 720p, vertical alignment by 120 pixels up or down)
[2] Function in preparation

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Variants/Options

Variants	
004647.407	**MDF4220HD** Hybrid HD mini box camera, 1.3-megapixel, 720p/30, SD (PAL/NTSC), H.264, Low-Light, WDR, megapixel monofocal lens, PoE (Class 0), F2.0 / 2.4 mm
004647.408	**MDF4220HD** Hybrid HD mini box camera, 1.3-megapixel, 720p/30, SD (PAL/NTSC), H.264, Low-Light, WDR, megapixel varifocal lens, PoE (Class 0), F2.0 / 2.8 – 6 mm

Options	
001431	**EvC-1** High-Speed Ethernet data transmission via coaxial cable
000978	**Voltage Converter (24 V AC -> 12 V DC)** Voltage converter 24V AC to 12V DC
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

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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	0.3 lux (F2.0, 50 IRE)
Dynamic range (WDR)	> 115 dB[3]
Signal-to-noise ratio (SNR_{MAX})	43.9 dB

Functions

Hybrid Video	On, Off
WDR (Wide Dynamic Range) mode	Automatic, On, Off
B/W (black-and-white) mode	Automatic (at low light)[4], On, Off
Automatic Electronic Shutter (AES)	1/4(3) – 1/10000 s
Slow Shutter Limit	1/4(3) – 1/30(25) s
Digital Noise Reduction (DNR)	Yes
Automatic Exposure (AE) Presets	Universal, Indoor, Fluorescent
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	MWB (Manual): 2500 K – 6500 K, 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[5]	Yes
Motion detection[6] (VMD)	With selectable sensitivity (5 levels)
Alarm notification	Via DaVid Protocol (Dallmeier Video Protocol) to PGuard advance[6], e-mail, FTP image upload
Configuration	Via web browser
Languages	German, English, Spanish, French, Italian

Lens

Type	See "Lens Types" on page 4.

Format and Encoding

Video standard	SDTV (PAL/NTSC), HDTV (SMPTE 296M)
Resolution video over IP	SXGA− (1280 × 960), 720p (1280 × 720), 4CIF (PAL: 704 × 576, NTSC: 704 × 480), VGA (640 × 352 / 640 × 480), QCIF (192 × 128)
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[7] (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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3) According to the sensor manufacturer's specifications
4) 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).
5) Digital Image Shift = Provides digital fine alignment of the image section (only applicable at 720p, vertical alignment by 120 pixels up or down)
6) Function in preparation
7) Only available with Hybrid Video -> Off

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Specifications (Continuation)

Connections

Video OUT	1× BNC (CVBS, 1.0V$_{p-p}$, 75 ohm)
Ethernet	1× RJ45 female connector, 10BASE-T-/100BASE-TX PoE
Power IN	12V DC

Miscellaneous

Programming interface	Open platform for integration into 3rd 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	2.9W typical (max. 4.0W)

Mechanical Data

Dimensions (w/o brackets)	*See "Dimensions Camera" on page 6.*
Weight	Approx. 180g (0.4 lbs) (including cable)
Colour	Black

Environmental Conditions

Operating temperature	0°C to +35°C (32°F to 95°F)
Relative humidity	0%–90% RH, non-condensing

Approvals/Certifications

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

Lens Types

Lens F2.0 / 2.4 mm	
Type	Megapixel monofocal lens
Format	1/3"
Mount	Board lens (Ø 12 mm thread mount)
Focal length	2.4 mm
Iris range	F2.0
Iris control	Fixed iris
Zoom	-
Focus	Fixed focus
MOD (Minimum Object Distance)	0.3 m
Available angles of view[8] (H × V) at wide end	approx. 106° × 80° with 4CIF, SXGA– approx. 106° × 60° with 720p

Lens F2.0 / 2.8 – 6 mm	
Type	Megapixel varifocal lens
Format	1/2.7"
Mount	Board lens (Ø 12 mm thread mount)
Focal length	2.8 – 6 mm
Iris range	F2.0
Iris control	Fixed iris
Zoom	Manual
Focus	Manual
MOD (Minimum Object Distance)	0.1 m
Available angles of view[8] (H × V) at wide end	approx. 85° × 62° with 4CIF, SXGA– approx. 85° × 45° with 720p
Available angles of view[8] (H × V) at tele end	approx. 46° × 34° with 4CIF, SXGA– approx. 46° × 25° with 720p

8) All specifications ±5%. Minor deviations with lenses may be a result of manufacturing tolerances and do not constitute a defect.
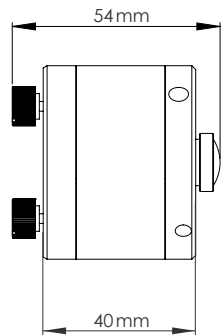
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Available Encoder Combinations

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 / − 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 / − 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
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
4CIF	25/30 fps	25/30 fps

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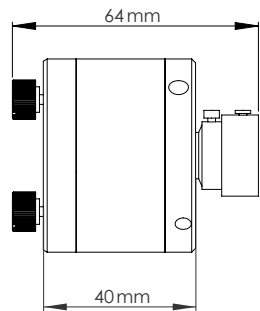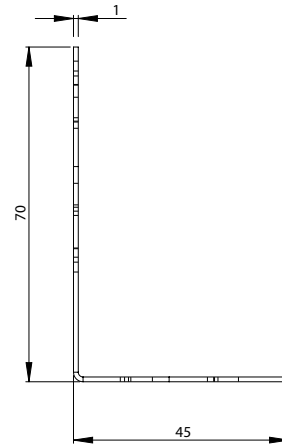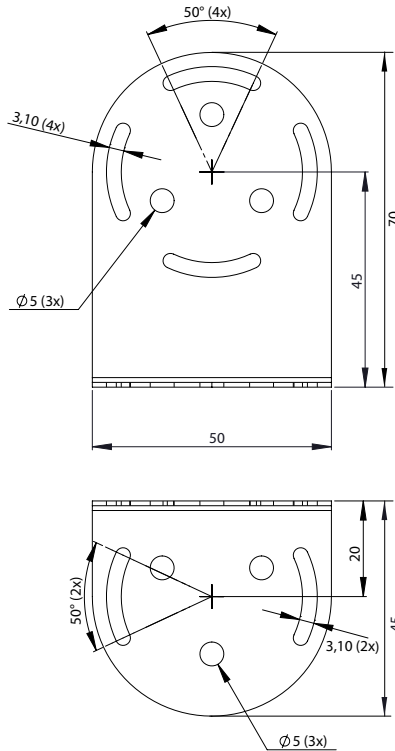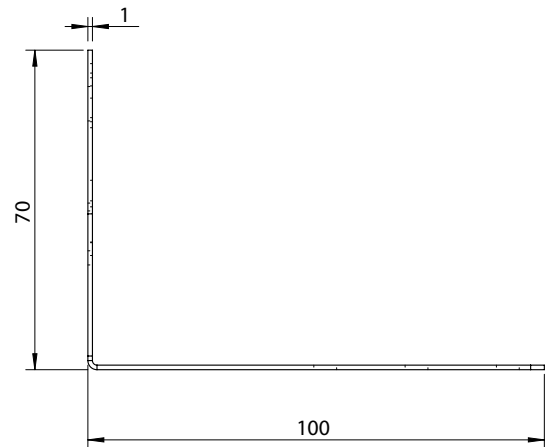
Dimensions Camera

Ø 50 mm
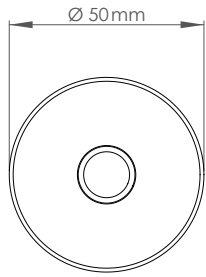
View with lens F2.0 / 2,4 mm

54 mm

40 mm

View with lens F2.0 / 2,8-6 mm

64 mm

40 mm

Dimensions Mounting Bracket 1
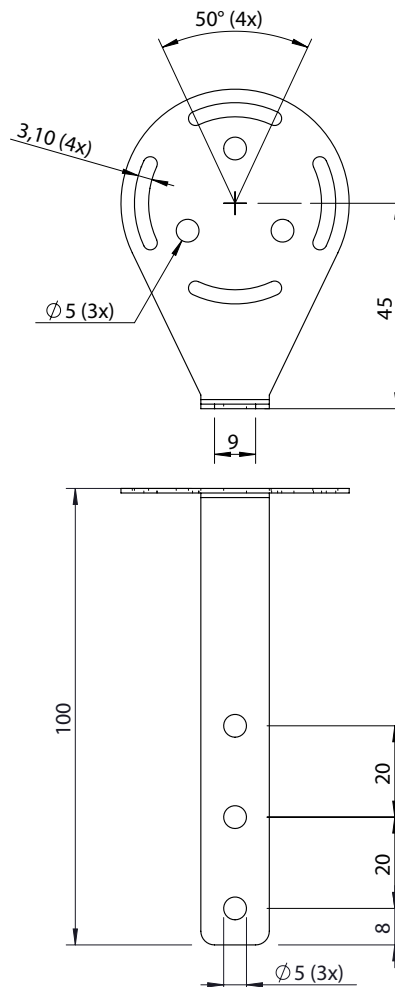
50° (4x)

3,10 (4x)

Ø 5 (3x)

70

45

50

1

70

45

20

50° (2x)

3,10 (2x)

Ø 5 (3x)

45

Dimensions Mounting Bracket 2

50° (4x)

3,10 (4x)

Ø 5 (3x)

45

9

1

70

100

100

20

20

8

Ø 5 (3x)
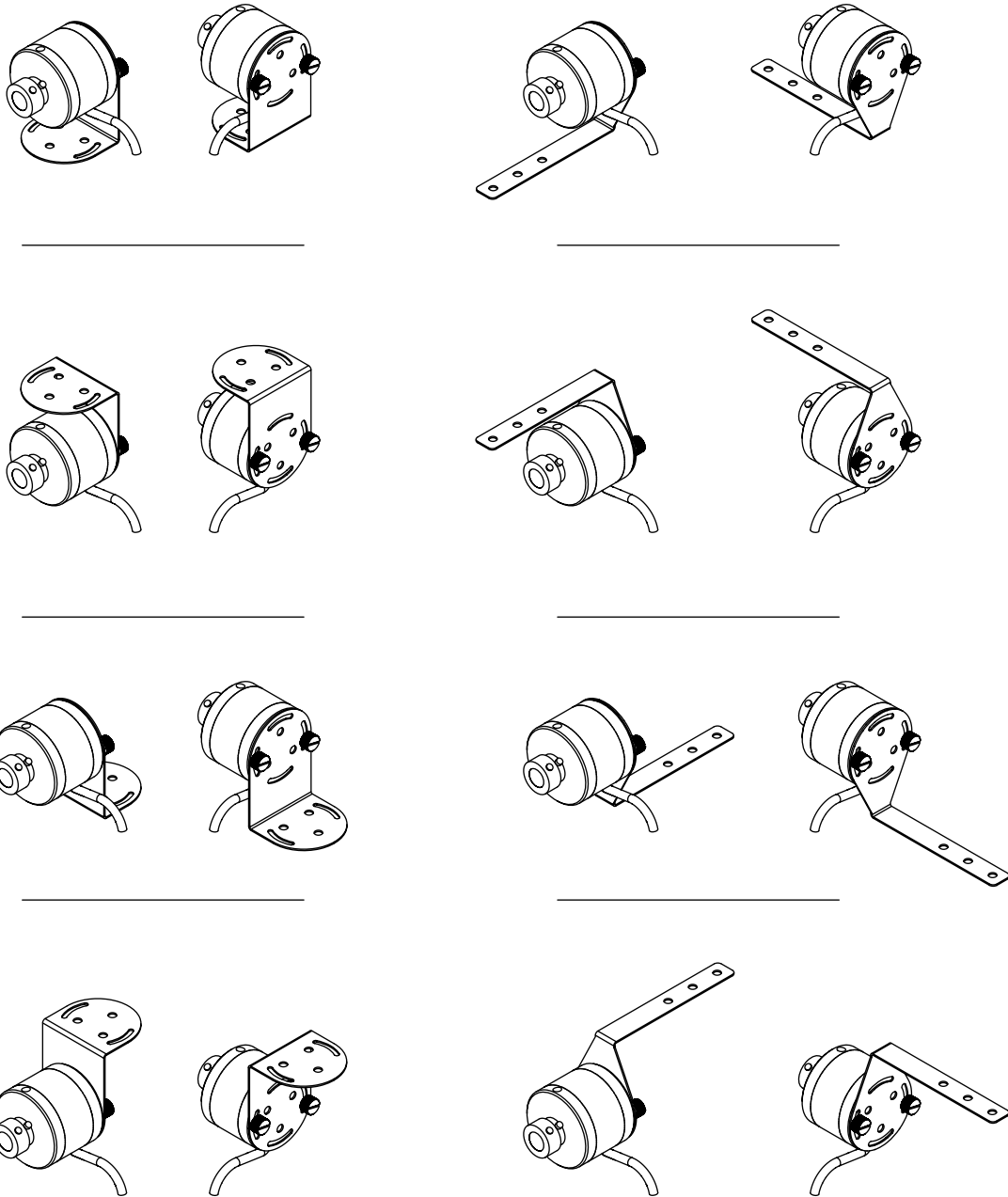
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Installation in Automated Teller Machines (mounting brackets included in the scope of delivery)

Wall / Ceiling Installation (brackets not included in the scope of delivery)