

# FLEXIDOME IP starlight 7000 RD

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**BOSCH**  
Invented for life



HD ONVIF



- ▶ Excellent low-light performance (0.017 lx in color)
- ▶ Intelligent noise reduction reduces bandwidth and storage requirements by up to 30%
- ▶ High-impact, ruggedized enclosure with choice of lens
- ▶ Outstanding wide dynamic range of 84 dB
- ▶ Auto back focus for fast installation

The FLEXIDOME IP starlight 7000 RD camera provides clear images 24/7 – even at night or under low-light conditions.

High sensitivity in color (0.017 lx) and monochrome mode (0.0057 lx) enables this camera to work with a minimum of ambient light. This exceptional light sensitivity combined with Content-Based Imaging Technology (C-BIT) ensures crisp, clear, and detailed images in all lighting conditions. The 720p HD can also provide up to 60 images per second.

## System overview

### Advantages over SD cameras

Compared to SD cameras, the FLEXIDOME IP starlight 7000 RD offers, at no higher cost, motorized autofocus, higher resolution, better sensitivity, higher frame rates, and improved picture quality, and is still more bandwidth-efficient. Video storage costs are significantly reduced.

## Functions

### Exceptional low-light performance

The latest sensor technology combined with the sophisticated noise suppression results in a sensitivity of 0.017 lx in color. The low-light performance is so

good that the camera continues to provide excellent color performance even with a minimum of ambient light.

The camera is a true day/night camera with a mechanical filter for truly outstanding nighttime performance (0.0057 lx in monochrome). The filter can be switched remotely, or automatically via a light level sensor or contact input.

### Content-based Imaging Technology

Content-Based Image Technology (C-BIT) is used to radically improve image quality in all lighting conditions and to identify areas for enhanced processing. The camera examines the scene using intelligent video analytics and provides feedback to re-tune the image processing. This provides better detail in the areas that matter and better all-round performance. In IVA versions, the intelligent Automatic Exposure (iAE) technology, for example, allows you to view moving objects in bright and dark areas of a scene.

### Low bandwidth consumption

The intelligent Dynamic Noise Reduction (iDNR) actively analyzes the contents of the scene to reduce bandwidth and storage requirements. This removes noise artifacts so effectively that compression

efficiency is very high (up to 30% improvement). This results in reduced-bandwidth streams that still retain a high image quality and smooth motion. The camera provides the most usable image possible by cleverly optimizing the detail-to-bandwidth ratio via temporal and spatial noise filtering.

Compression parameters for up to eight user-definable regions can be set. This allows uninteresting regions to be highly compressed, thus lowering bandwidth consumption and storage requirements. Important regions can be tuned for best image quality, thus allowing the user to allocate bandwidth to important parts of the scene.

### Fast performance

The 60 images-per-second mode provides for optimum performance in fast action scenes and is particularly suitable for casino and banking applications.

### Flexible lens choice

The camera comes with a choice of tele, mid-range, and ultra wide angle lenses. These varifocal SR (Super Resolution) lenses have an advanced iris design to ensure that the high resolution HD sensor produces the sharpest image possible, even in the corners. The optically corrected ultra wide angle lens provides outstanding performance without the need for de-warping software.

### Simple installation

The camera has a very intuitive user interface that allows fast and easy configuration. Six configurable user modes are provided with the best settings for a variety of applications:

- **Outdoor** – general day-to-night changes with sun highlights and street lighting
- **Indoor** – general day-to-night changes without sun highlights and street lighting
- **Motion** – monitoring traffic or fast moving objects; motion artifacts are minimized
- **Lowlight** – optimized for sufficient details at low light.
- **Intelligent AE** (BLC on non-IVA models) – for people moving in front of a bright background
- **Vibrant** – enhanced contrast, sharpness and saturation

The auto-focus lens wizard makes it easy for an installer to accurately focus the camera for both day and night operation. The wizard is activated from the web browser or from the on-board camera push button making it easy to choose the workflow that suits best. The automatic motorized back focus adjustment with 1:1 pixel mapping ensures the camera is always focused accurately.

### Streams

The innovative multi-streaming feature delivers various H.264 streams together with an M-JPEG stream. These streams facilitate bandwidth-efficient viewing and recording as well as integration with third-party video management systems.

A corridor mode can be selected for the second stream. In this mode an image of 400 x 720 (9:16 aspect ratio) is cropped from the full sensor image. When the scene to be monitored is suitable to this mode, the bandwidth and storage requirements are reduced.

### Storage management

Recording management can be controlled by the Bosch Video Recording Manager (VRM) or the camera can use iSCSI targets directly without any recording software.

### Edge recording

The internal MicroSD card slot supports up to 2 TB of storage capacity. A microSD card can be used for local alarm recording. Pre-alarm recording in RAM reduces recording bandwidth on the network, or – if microSD card recording is used – extends the effective life of the storage medium.

### Video Analytics

With built-in video content analysis, the camera reinforces the Intelligence-at-the-Edge concept where edge devices become increasingly intelligent. The MOTION+ video motion analysis system that is built into all camera versions is the perfect solution for applications where standard video content analysis features are required.

The IVA version of the camera uses the latest generation of the Bosch Intelligent Video Analysis (IVA) software. This IVA system is the guard-assistant system of choice when reliable indoor or outdoor video analytics is needed. The state-of-the-art system reliably detects, tracks, and analyzes moving objects while suppressing unwanted alarms from spurious sources in the image.

The face detection feature detects faces in the scene and forwards a high quality JPEG image of the best shot of each face when the face disappears from the scene.

Retrospective forensic search capabilities are available remotely from the web browser or the Bosch Video Client.

### Regions of interest

Two Regions of Interest (ROI) can be user defined. The remote electronic pan, tilt and zoom controls allow you to select specific areas of the parent image. These regions produce separate streams for remote viewing and recording. These streams, together with the main stream, allow the operator to separately monitor the most interesting part of a scene while still retaining situational awareness.

The IVA Intelligent tracker can also follow objects within the defined regions of interest. The Intelligent tracker can autonomously detect and track moving objects or the user can click on an object which the Intelligent tracker will then follow.

### Rugged design

The cast-aluminum housing, polycarbonate window, and hardened inner liner can withstand the equivalent of 55 kg (120 lbs) of force (>IK10). Ideal for outdoor use, the camera is protected against water and dust to IP67 (NEMA Type-4X) standards. Using the proprietary pan/tilt/rotation mechanism, installers can select the exact field of view. Mounting options are numerous, including surface, wall, corner, and suspended-ceiling mounting.

### Access Security

Password protection with three levels and 802.1x authentication is supported. To secure Web browser access, use HTTPS with a SSL certificate stored in the camera. The video and audio communication channels can be independently AES encrypted with 128-bit keys by installing the optional encryption site license.

### Surveillance software

There are many ways to access the camera's video and IVA-based features: using a web browser, with the Bosch Video Management System, with the Bosch Recording System, with the free-of-charge Bosch Video Client, or with the video security mobile App. The Bosch Video Client PC surveillance software offers a user-friendly interface to support easy installation and configuration. It also provides easy live viewing of multiple cameras, playback, forensic search and export.

Access to IVA metadata is available to integrators via RTSP.

### Video security App

The Bosch video security mobile App has been developed to enable **Anywhere** access to HD surveillance images allowing you to view live images from any location. The App is designed to give you complete control of all your cameras, from panning and tilting to zoom and focus functions. It's like taking your control room with you.

This App, together with the separately available Bosch transcoder, will allow you to fully utilize our dynamic transcoding features so you can play back images even over low-bandwidth connections.

### Connections

The camera conforms to the ONVIF (Open Network Video Interface Forum) Profile S specification. This guarantees interoperability between network video products regardless of manufacturer. For trouble-free network cabling, the camera supports Auto-MDIX which allows the use of straight or cross-over cables. Camera power is supplied via PoE (Power-over-Ethernet) or via the 24 VAC/12 VDC connector. Third-party integrators can easily access the internal feature set of the camera for integration into large projects. Visit the Bosch Integration Partner Program (IPP) website ([ipp.boschsecurity.com](http://ipp.boschsecurity.com)) for more information.

## Certifications and approvals

### HD Standards

Complies with the 296M-2001 Standard in:

- Resolution: 1280x720
- Scan: Progressive
- Color representation: complies with ITU-R BT.709
- Aspect ratio: 16:9
- Frame rate: 25/30 and 50/60 frames/s

### Standards

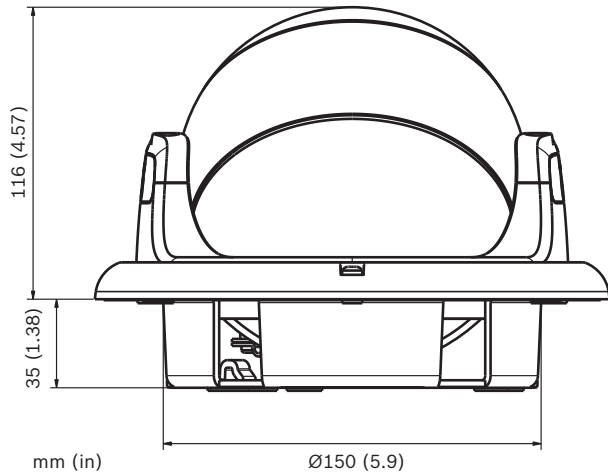
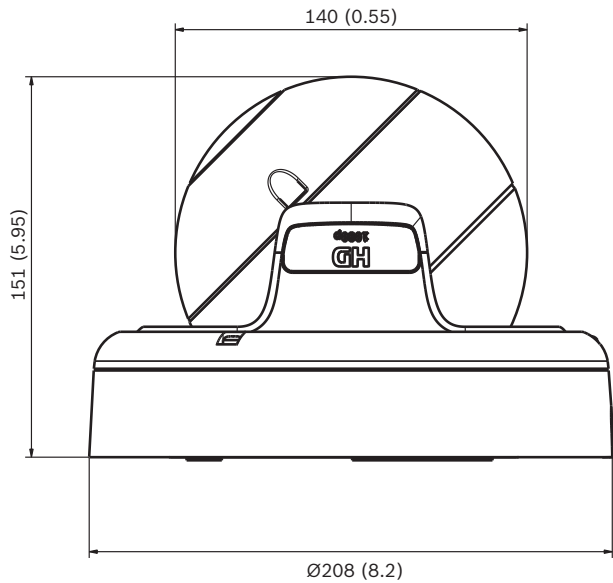
Emission	EN 55022 Class B FCC Part 15 Class B
Immunity	EN 50130-4 (PoE, +12 VDC, 24 VAC)* EN 50121-4
Safety	EN 60950-1 UL 60950-1 (2nd edition) CAN/CSA-C 22.2 No. 60950-1
Vibration	Camera with lens as per IEC 60068-2-6 (5 m/s <sup>2</sup> , operational)
ONVIF conformance	EN 50132-5-2; IEC 62676-2-3

\* Chapters 7 and 8 (mains voltage supply requirement) are not applicable to the camera. However, if the system in which this camera is used needs to comply with this standard, then any power supplies used must comply with this standard.

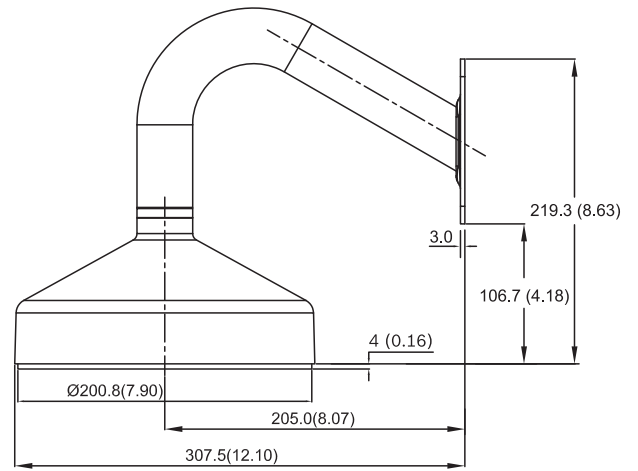
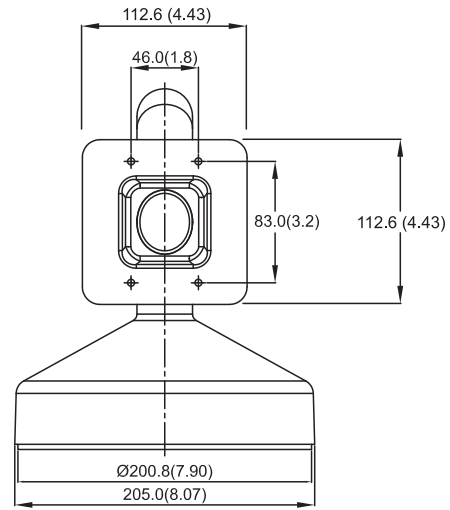
Region	Certification
Europe	CE
USA	UL
	FCC
Canada	CSA

Installation/configuration notes

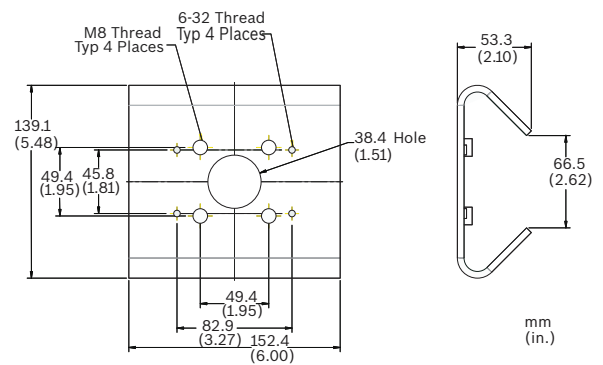
Dimensions



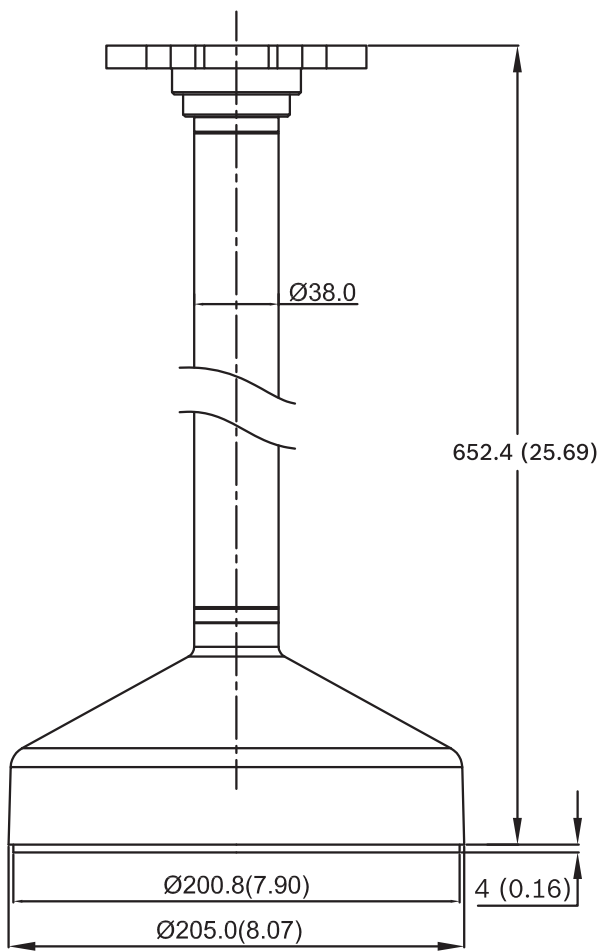
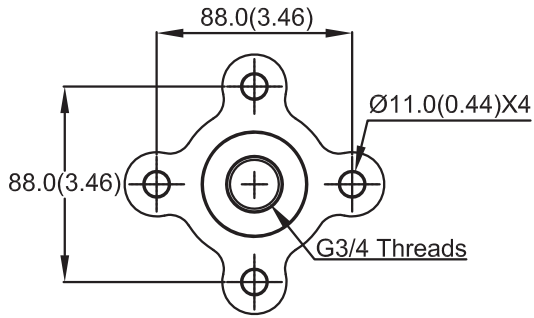
Mounting Brackets (not included)



VDA-832FHD-WMT Wall mount dimensions



LTC 9213/01 Pole Mount Adapter dimensions



VDA-832FHD-PMT Pipe mount dimensions

## Technical specifications

### Electrical

Power Supply	24 VAC 50/60 Hz 12 VDC Power-over-Ethernet 48 VDC nominal
Current Consumption	1 A (12 VDC) 0.8 A (24 VAC) 0.3 A (PoE 48 VDC)
Power Consumption	12 W
PoE	IEEE 802.3af (802.3at Type 1)

### Sensor

Type	1/3-inch CMOS HD
Sensor Pixels	1312 x 1069 (1.4MP)

### Video

Video compression	H.264 (ISO/IEC 14496-10); M-JPEG, JPEG
Streaming	Multiple configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI)
Overall IP Delay	Min. 120 ms, Max. 240 ms
GOP structure	IP, IBP, IBBP
Encoding interval	1 to 60 (50) ips

### Resolutions (H x V)

• 720p HD	1280 x 720
• D1 4:3 (cropped)	704 x 480
• SD upright (cropped)	400 x 720
• 480p SD	Encoding: 704 x 480; Displayed: 854 x 480
• 432p SD	768 x 432
• 288p SD	512 x 288
• 240p SD	Encoding: 352 x 240; Displayed: 432 x 240
• 144p SD	256 x 144

### Sensitivity (3200 K, scene reflectivity 89%, F1.2)

	Minimum illumination (30 IRE)
Color	0.017 lx (0.0017 fc)
Monochrome	0.0057 lx (0.00057 fc)

Day/Night	Color, Monochrome, Auto
White Balance	ATW (2500 to 10000K), ATWhold and manual Indoor and Outdoor ATW
Shutter	Automatic Electronic Shutter (AES) Fixed (1/30 [1/25] to 1/150000) selectable Default shutter
Backlight compensation (IVA)	Off, Auto, IntelligentAE (IAE)
Backlight compensation (non IVA)	Off, Auto, BLC
Noise reduction	Intelligent Dynamic Noise Reduction (iDNR) with separate temporal and spatial adjustments
Contrast enhancement	On/off
Sharpness	Sharpness enhancement level selectable
Dynamic range	84 dB WDR 100 dB WDR (with iAE)
Privacy Masking	Four independent areas, fully programmable
Video Motion Analysis	Intelligent Video Analysis

### Audio

Standard	AAC G.711, 8kHz sampling rate L16, 16kHz sampling rate
Signal-to-noise ratio	> 50 dB
Audio Streaming	Full duplex / half duplex

### Input/output

Analog Video out (service only)	CVBS (PAL/NTSC), 1 Vpp, 2.5 mm jack, 75 Ohm (non-protected)
Audio	1 x mono line in, 1 x mono line out
• connector	3.5 mm stereo jack
• signal line in	12 kOhm typical, 1 Vrms max
• signal line out	1 Vrms at 1.5 kOhm typical,
Alarm	2 inputs
• activation voltage	+5 VDC to +40 VDC (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor)
Relay	1 output
• voltage	30 VAC or +40 VDC max. Maximum 0.5 A continuous, 10VA

**Local Storage**

Internal RAM	10 s pre-alarm recording
Memory card slot	Supports SDHC and SDXC microSD cards
Recording	Continuous recording, ring recording, alarm/events/schedule recording

**Software Control**

Unit Configuration	Via web browser or Configuration Manager
Software update	Remotely programmable

**Network**

Protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, SNMP, SNMP (V1, MIB-II), 802.1x, DNS, DNSv6, DDNS, SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox, CHAP, Digest Authentication.
Encryption	TLS 1.0, SSL, DES, 3DES, AES (optional)
Ethernet	10/100 Base-T, auto-sensing, half/full duplex
Ethernet connector	RJ45
Connectivity	ONVIF Profile S, Auto-MDIX

**Optical**

Lens	Varifocal SR (Super Resolution)
Focus control	Motorized back-focus adjustment
Iris control	Automatic iris control
<b>Viewing angle</b>	
1.8 to 3 mm (IR corrected)	Wide 105° x 74° (H x V) Tele 77° x 49° (H x V)
3.8 to 13 mm	Wide: 72° x 40° (H x V) Tele: 21° x 11.9° (H x V)
9 to 40 mm (IR corrected)	Wide: 30° x 17° (H x V) Tele: 7.1° x 3.9° (H x V)

**Mechanical**

Dimensions (D x H)	208 x 151 mm (8.2 x 5.95 in)
Weight	2200 g (4.85 lb)
Color	RAL 9006 Metallic Titanium

**Environmental**

Operating Temperature	-50°C to +50°C (-58°F to 122°F) Non-IVA: -50°C to +55°C (-58°F to 131°F)
Cold Start Temperature	-20°C (-4°F)
Storage Temperature	-30°C to +70°C (-22°F to +158°F)
Operating Humidity	20% to 93% RH
Storage Humidity	up to 98% RH
Vandal Resistance	IK10
Ingress Resistance	IP67, NEMA Type-4X

**Ordering information****FLEXIDOME IP starlight 7000 RD**

High-performance IP dome camera for HD surveillance in low light. 720p60; IP67; >IK10; iDNR; ROI; H.264 quad-streaming; cloud services; free viewing Apps; 1.8 to 3 mm SR lens; MOTION+  
Order number **NDN-733V02-P**

**FLEXIDOME IP starlight 7000 RD**

High-performance IP dome camera for HD surveillance in low light. 720p60; IP67; >IK10; iDNR; ROI; H.264 quad-streaming; cloud services; free viewing Apps; 3.8 to 13 mm SR lens; MOTION+  
Order number **NDN-733V03-P**

**FLEXIDOME IP starlight 7000 RD**

High-performance IP dome camera for HD surveillance in low light. 720p60; IP67; >IK10; iDNR; ROI; H.264 quad-streaming; cloud services; free viewing Apps; 9 to 40 mm SR lens; MOTION+  
Order number **NDN-733V09-P**

**FLEXIDOME IP starlight 7000 RD**

High-performance IP dome camera for HD surveillance in low light. 720p60; IP67; >IK10; iDNR; iAE; ROI; H.264 quad-streaming; cloud services; free viewing Apps; 1.8 to 3 mm SR lens; IVA  
Order number **NDN-733V02-IP**

**FLEXIDOME IP starlight 7000 RD**

High-performance IP dome camera for HD surveillance in low light. 720p60; IP67; >IK10; iDNR; iAE; ROI; H.264 quad-streaming; cloud services; free viewing Apps; 3.8 to 13 mm SR lens; IVA  
Order number **NDN-733V03-IP**

**FLEXIDOME IP starlight 7000 RD**

High-performance IP dome camera for HD surveillance in low light. 720p60; IP67; >IK10; iDNR; iAE; ROI; H.264 quad-streaming; cloud services; free viewing Apps; 9 to 40 mm SR lens; IVA  
Order number **NDN-733V09-IP**

**Accessories****VDA-832FHD-WMT**

Wall mount bracket for HD FlexiDomes  
Order number **VDA-832FHD-WMT**

**VDA-832FHD-PMT**

Pendant pipe mount bracket for HD FlexiDomes  
Order number **VDA-832FHD-PMT**

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**LTC 9213/01 Pole Mount Adapter**

Flexible pole mount adapter for camera mounts. Max.  
9 kg (20 lb); 3 to 15 inch diameter pole; stainless steel  
straps  
Order number **LTC 9213/01**

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**S1460 Service/Monitor Cable**

2.5 mm jack to BNC video connector cable. 1 m  
Order number **S1460**

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**VJT-XTCXF**

Dynamic transcoder to enable HD video viewing.  
HD1080; IVA; H.264 streaming; web interface  
Order number **VJT-XTCXF**

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**Software Options**

**BVIP AES 128 Bit Encryption**

Single installation licence for BVIP AES 128-bit  
encryption site. Enables encrypted communication  
between BVIP devices and management stations.  
Order number **MVS-FENC-AES**

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