AVLYTICS

artificial intelligence for video surveillance

The Most Cost Effective
Artificial Intelligence for Surveillance Solutions

Basic Sales and Technical Guidance for AVLYTICS Products

Version 1.3

INDEX

1. AVLYTICS Sales

Thank you for choosing AVLTICS as your AI security solution. AVLYTICS is an AI driven security solution developed by a proudly South African collaboration between Intertrade Security Distributors and our technology partner Cognitive Systems. The product specialises in offering Artificial Intelligence (Ai) based solutions to the security industry both locally and abroad.

Below is a short overview of the Sales Opportunities, as well as the Site, Camera, AVT-device and Control Room considerations to be kept in mind when making use of the AVLYTICS product.

1.1 Target Market

Where and who should AVLYTICS be sold too?

MARKETS
- Residential / Commercial / Industrial Sectors.
- Neighbourhood Watch street cameras.
- Community based monitoring projects.

SOLUTIONS
- Both interior & exterior CCTV installations.
- Both existing and new CCTV installations.
- On-site or remote monitoring via Alarm Management Software (AMS).
- Either 24hrs or scheduled arming solutions.

OPPORTUNITIES
How does AVLYTICS integrate with the Armed Response (AR) Sector?

- AVLYTICS offers additional protection for vulnerable sites, such as jewellery stores, retail stores, large warehouses, light commercial, industrial and remote sites.
- It is able to replace conventional outdoor detection.
- It offers affordable video verification which integrates with the Control Room's Alarm Management Software, saving the response company on false alarm call-outs and improving response performance in the event of a positive alarm.

How does AVLYTICS integrate with the Guarding Sector?

- AVLYTICS uses technology to complement on-site guards and improve their safety, by identifying any imminent threat in the area.
- If budget constraints do not allow for on-site guarding, the AVLYTICS solution can be supplied to provide an additional layer of security.

2. Fundamental Considerations

3 FUNDAMENTAL CONSIDERATIONS
WHEN USING AVLYTICS

CAMERAS

- → Diagnostics
- → Environment / Lens
- → System Design

AVT-SERIES DEVICE

- → Configuration & Device Options
- → Diagnostics/ Maintenance
- → System Design

CONTROL ROOM

- → Diagnostics/ Maintenance
- → System Design

2.1 Cameras

- New or Existing cameras may be used with the AVLYTICS solution.
- AVLYTICS has no resolution limitations if the hardware supports the processing requirements.
- Applicable for Optical or Thermal Cameras.
- The combination of the Lens and Resolution of the camera determines the range of detection.
- Camera height should ideally be installed between 2.5 – 4 meters from the ground.
- Good lighting in the area must be considered when specifying or committing to a detection range.
- Loadshedding and Power Outages in South Africa should be considered when designing your backup solution.

IMPORTANT NOTE:

Your detection capability will be determined by the camera's resolution and lens specification. Calculating your total mega pixel requirement of all the cameras used on a site, will allow you to select the correct AVT-series device. Please see the table below in *Section 3: Device Specifications.*

2.1.1 DIAGNOSTICS

- Ensure to always monitor the Camera Tamper Conditions via the *Alarm Management Software, Telegram APP*, or both.
- Look out for camera loss conditions by monitoring the FPS (frames per second) of each camera via the *Alarm Management Software, Telegram APP*, or both.


2.1.2 ENVIRONMENT / LENS

- Physically maintain the Environment for the most accurate detections by:
  - Controlling vegetation obscuring or affecting the ability to detect (make it clear to the client if this is their obligation, or enter into a Service Level Agreement whereby you maintain the visibility).
  - Ensure the camera lens is cleaned regularly, as dirt and spider webs will effect detection capability of the device. There are effective deterrents on the market for keeping spiders away for up to 8 weeks.

2.1.3 SYSTEM DESIGN

- Position cameras to best eliminate blind spots where possible.
- *Understand the implications of your camera position and the ability for it to be tampered with. Where possible position cameras so that it is able to monitor each other, and in a manner in which it may only be approached from one direction.*
- Schedule Camera IR functionality to switch ON/ OFF at specific times, as leaving the IR settings to automatically adjust, may influence the picture quality and detection.
- Inclement weather, such as fog, mist or heavy rain will reduce visibility and the device's ability to detect and predict. Consider using thermal imaging, perimeter or fence-line protection in these instances.
- Where no physical barriers are in place to slow an intruder, configure the correct shutter speed on the camera (faster setting) to ensure that fast moving objects are not blurred. Note that when increasing the shutter speed, additional lighting may be required.
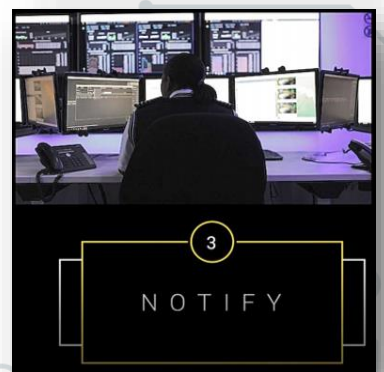

IMPORTANT NOTE:

The clarity and definition of the human form may be lost in shadows, dark areas and areas with low IR coverage at night, which may adversely affect the device's ability to detect and make predictions. Ensure that lighting is optimal in areas of detection.

2.2 AVT-Series Device

- The Function of the AVT-device is to analyse the camera's RTSP stream.
- As standard practise, AVLYTICS makes use of the Sub-stream RTSP for fluid processing.
- The device must be setup on the same Network as the NVR/ DVR/ IP camera.
- Live streaming is available through the secure VPN connection, either locally on-site or remotely, provided that a stable internet connection is present.
- Detection & Analysis is done at the edge (on-site, on the device).
- The device is configurable on-site or remotely via the Graphical User Interface (GUI).
- Integrates with Alarm Management Software via the AVTASS IP base station.
- Video verification is available via the URL setting on Alarm Management Software (AMS).
- No port forwarding is required when utilising the URL link for video verification.
- Three Communication platforms or Alert options are available, this includes TCP/IP Communication (AMS / AVTASS / HUB), physical on-board relay contacts, and the Telegram Messenger Application.
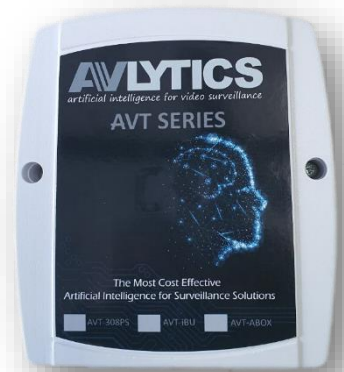
2.2.1 CONFIGURATIONS AND DEVICE OPTIONS

- The AVT-SERIES includes:
    - **AVT-308PS**: An entry level option for AVLYTICS, which provides 8x CIF resolution channels, 4x on-board outputs (relays), and 1x input.
    - **AVT-316/332/364/394**: Devices for 16, 32, 64 and 94 channels where detection areas are specific to 1MP, per channel. As standard, these devices are not supplied with input/ output modules.
    - **AVT-IBU**: The IBU (Integrated Backup Unit), may be added to the AVT-316/332/364/394 devices if required to provide inputs/ outputs and secondary communication.
    - **AVT-A-BOX:** may be used where open platform video verification is required, but no Ai detections or predictions.
- Licence Packs:
    - Pre-paid licence packs are available in 8, 16 and 32 channel options (1 licence pack per device). Licence pack options available (please note T&C's apply to each pack):
        - **AVT-836LP:** 8 Channel bundle for 36 months
        - **AVT-1624LP:** 16 Channel bundle for 24 months
        - **AVT-3224LP:** 32 Channel bundle for 24 months

IMPORTANT NOTE:

When choosing your AVT-device, the total MP capacity of all the cameras used on site will direct you to the AVT-device required for that installation.

For example: 16 cameras at 1MP resolution each = 16 MP, meaning the AVT-316PS device should be selected, whereas 9 cameras at 4 MP resolution each = 36 MP, meaning the AVT-364PS will need to be utilised for the installation.

2.2.2 DIAGNOSTICS/ MAINTENANCE

- When configuring the AVT-device, ensure that a test signal is set to be transmitted. The interval is adjustable and the notifications may be linked to an Alarm Management Software program as well as received via the Telegram Messenger Application.
- Ensure to always monitor the Camera Tamper Conditions via the *Alarm Management Software, Telegram APP,* or both.
- Look out for camera loss conditions by monitoring the FPS (frames per second) of each camera via the *Alarm Management Software, Telegram APP,* or both.
- Through the functionality provided by the Telegram APP, the installer is able to easily identify system health status.
- Technical issues are easily identified on Telegram through the respective alert messages indicating a Timeout, CPU high usage and various system alerts.
- The AVLYTICS solution operates with dual communication. Alerts are sent to the control room and AVLYTICS software through a secure VPN tunnel using AMQP. The second channel of communication is through the use of the Telegram Messenger App's secure messaging facility. Having dual communication ensures that alerts are delivered through at least one of these communication mechanisms, in the unlikely event that one should fail.
- The Telegram application serves as a fully redundant platform in the event of a server failure to monitor alert notifications, maintenance and device alerts.

Telegram Status Check

Telegram Output	Description
Health Status : All systems running	System's Check: All processes operational.
Comms bot Version :5.1.2	Comms Bot version: Illustrates the current version on the device.
Device Model :['Raspberry Pi 4 Model B Rev 1.1\x00'] Temperature :["temp=55.0'C\n"] Voltage :['volt=0.8688V\n'] Throttling :['throttled=0x0\n']	Model, Temp, Voltage, Throttling: Features that are only available with the BRT, temperature should not be above 85.
Current VPN IP :172.29.7.102 Download speed : 34.271149 Mbps Upload speed : 4.020027 Mbps	Network related: VPN IP Address – registered AME Server link Download Speed – registered on-site speed Upload Speed – registered on-site speed
System Resources CPU : 13% Diskspace : 2.853230592 GB Swapspace : 0.805040128 GB Memory : 0.77423616 GB	System Resources: CPU operating at 90% + must be reported. Disk space - should be more than 0 GB. Swapspace – should be more than 0.0 GB Memory - should be more than 0GB.
Armed Status : ['channel1:armed', 'channel2:armed', 'channel3:armed', 'channel4:armed']	Armed or Disarmed status per channel.
FPS : {'channel1': '6.0 Fps', 'channel2': '4.0 Fps', 'channel3': '6.0 Fps', 'channel4': '6.0 Fps'}	FPS feed per channel: Monitoring the connection between the individual camera feeds.
Internet : Internet Status is Good Max ping response is 57.352ms	Ping response time of the on-site internet <45ms ideal, >100ms will adversely affect communication
Vpn : VPN Status is Good Max ping response is 75.432ms	VPN Ping response time and STATUS
Vpn reconnects : 119 Device reboots : 3 Device errors : 0 VPN Server : 129.232.211.202 13:29	Connection and Reboot information: VPN Reconnects – shows how many times the device has reconnected to the VPN in the last 24 hours.

Device reboots – shows how many times a device has rebooted in the last 24 hours.
Device errors – shows if the device has had any errors in the last 24 hours.
VPN server – shows the current VPN server end point.

2.2.3 SYSTEM DESIGN

- The AVT-device is an added layer of the site's security and should be installed in a well ventilated, protected, and secure environment.
- Industry best practice dictates that all security device credentials relating to the site (for the DVR, Network, Router and Internet Connection) are held by a responsible person and available on request. This will eliminate the potential delays in configuration and/ or problem solving.
- The installer should inform the client or IT manager that any unannounced changes to the Network and/ or security infrastructure or equipment may result in AVLYTICS protection being compromised. For example, if the client changes the DVR username and password, IP address, or replaces the router on site.

2.3 Control Rooms

Control Room Monitoring Options are as follows:

- Alerts directly into the AMS software (bVigilant, Listener, Patriot, and Watchmanager).
- Alerts into standalone AVLYTICS software, which provides a basic electronic occurrence book (OB) facility. This software is not designed to be an AMS replacement.
- Alerts into Telegram App, which is used primarily by the controller as a backup visual verification tool.
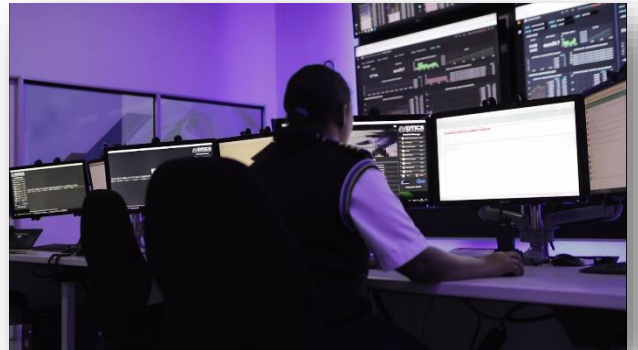

The control room integration offers the following benefits:
- The AVLYTICS device can be added to a new or existing alarm customer's profile, further simplifying operations.
- Live streaming video verification is available directly in the AMS platform.
- The device's diagnostic and event notifications are designed around South African standards of operation and 24hr control room protocols.
- AVLYTICS Client Software provides a Report facility that displays alert images, object classification, time of event and any operator comments.
- Arming and Disarming sites can be done from the AVLYTICS software or via Telegram.
- In the case of overly active predictions on a channel – an individual camera may be disarmed remotely from the control room.
- Scheduled arming/disarming times can be managed from the control room or directly on the device's GUI.

2.3.1 DIAGNOSTICS/ MAINTENANCE

- When connecting an AVLYTICS device to a client profile in a control room environment, ensure to configure all available maintenance and diagnostic notifications, mirroring the standard operating procedures followed by the standard alarm industry protocol. This includes Test, Mains Failure, and Arming / Disarming (open / close) signals.
- Tamper and FPS (camera loss) events should be given high priority on the response list, as these indicate that the device is unable to make predictions in the detection region.
- Software Heartbeats and Keep Alive Signals should be configured to poll at no more than 10-15 minutes. This indicates whether the AVTASS base is operational and the VPN connection is intact.
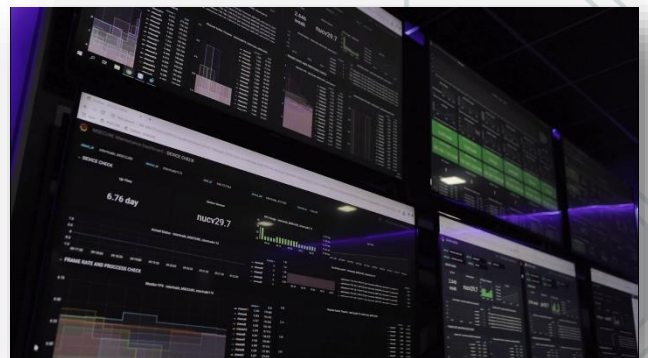
2.3.2 SYSTEM DESIGN

- It is recommended that the controller use a 2nd monitor for Video Verification on the AMS.
- Periodically inspect the cameras remotely to ensure that the condition of the image, environment and position of the camera are optimal to prevent any missed detections.
- Quick checks from the controller can be used to ascertain whether a site has hardware, connectivity, or data issues.
- It is encouraged that all AVLYTICS sites make use of either the on-board relays or an AVT-IBU device for backup communication.

3. Device Specifications

BENCHMARK SPECIFICATIONS			NUMBER OF CHANNELS PER RESOLUTION				
RESOLUTION	RAM	CAPACITY	4MP	2MP	1MP	VGA	CIF
AVT-308PS	Standard	1MP	-	-	-	2	8
AVT-316PS	8 GB	16MP	4	8	**16**	28	50
AVT-332PS	16 GB	32MP	7	15	**32**	48	100
AVT-364PS	32 GB	64MP	14	25	**64**	*Sq	*Sq

RESOLUTION / LENS / ACCURACY		RESOLUTION INDEX AND CAPACITY CALCULATOR	
CIF – 3.6mm	20 meters	When making use of the resolutions outside of the 1 MP specification, you are able to use multiple resolutions (CIF/ VGA/ 2MP and 4MP) on one AVT device. This excludes the AVT-308PS, which is limited to VGA/ CIF resolution).	
VGA – 4mm	30 meters		
1MP – 6mm	40 meters	To do this, take the total MP capacity of your AVT-Device and divide it by the total number of channels / resolution you wish to utilise.	
2MP – 6mm	60 meters	By adding the number of CIF (1/8 MP), VGA (1/4 MP) and the MP of the cameras on the site, you are able to calculate the correct settings for your limitation, to not exceed the MP capacity of the device.	
4MP – 8mm	80 meters		

IMPORTANT NOTE:

Additional RAM can be added to an AVT316 – 364 PS if more VGA/ CIF channels are required.

* Sq : Please contact our technical department for more information.