



ANX

TECHNICAL SPECIFICATIONS

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Version 1.0

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VIAN AN-X

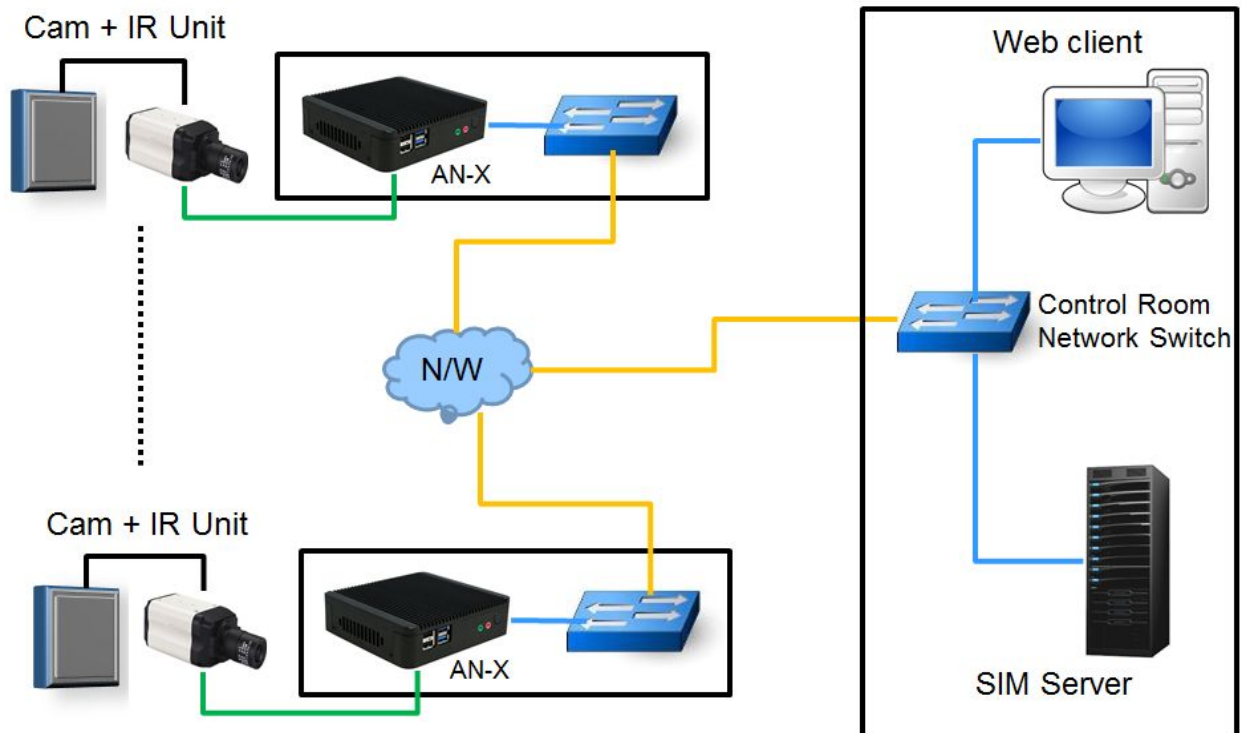


FIGURE 1 NETWORK CONNECTIVITY WITH ANALOG CAMERA

FEATURES	
Hardware Device with Linux	
ANPR Engine	
<ul style="list-style-type: none"> Automatically detects number plate of vehicle in motion in real time Vehicle image capturing Vehicle entry/exit date, timestamp Number Plate Recognition (NPR) using Optical Character Recognition (OCR) Algorithms 	
Interface with IP camera through RTSP, Direct interface with Analog Camera	
Day and night operation	
Communicates to ViAn SIM_SERVER	
Local storage for limited video recordings	
Local Database - MySQL	
IP 65	
System	<ul style="list-style-type: none"> CPU – ARM Cortex A9 Quad-core Tegra T30 SoC Flash – 2GB NAND , RAM – 1 GB DDR2 GPU – Ultra Low Power Nvidia GeForce Embedded Angstrom Linux



Video	<ul style="list-style-type: none">• Compression: H.264 BP• Streaming: H.264 over RTSPat 720x576• Frame Rates: 25 fps at 720x576
Networking	<ul style="list-style-type: none">• 10/100Mbps with PoE support RJ-45 type Ethernet socket interface• Protocols: HTTP, HTTPS, RTSP
Interfaces	<ul style="list-style-type: none">• Video Input: Analog Camera Interface 4 Channels• Video Output: DVI-I• UART: 2x• USB Host Type A: 4x
LED Indicator	4 LED indicators, System Power and Status Indicator, System Activity and Network Indicator
Weight	500gms
Power	<ul style="list-style-type: none">• 12V DC 1A• Power over Ethernet (PoE)• Power consumption < 12.4 watts
Temperature	<ul style="list-style-type: none">• Temperature: -20 C ~ 60 C• Humidity: 100%• Vibration Compliance: Targeted for Stationary• EMI/EMC Compliance: Normal Outdoor

VIAN SIM_SERVER

FEATURES	
Interface with ANPR Engines	
Maintain database of captured images with date/time stamp	
Maintain data base of derived numbers (from ANPR Engine)	
Display captured image and OCR data	
Manual editing facility for un-clear/ fancy numbers with displayed image	
Vehicle classification based on color detection (day time)	
Validation of vehicle number	
Real time alerts	
Data Management	
Live view of ANPR at all connected locations	
GUI for remote device configuration	
Centralised configuration and monitoring of ANPR Engines	
Vehicle Registration management of authorized/ unauthorized/ hotlisted vehicles	
User Privileges / User authentication	
Real time statistics	
Functional Reports of vehicle statistics	
Customized report generation and data analytics	
Operating System – MS Windows 7 Professional or 8.1/ Windows Server 2012	
Database – MS SQL	
Configuration Rules management	
Detection and recognition rule configuration	Setting of detection areas and virtual line of crossing
	Setting of Entry and Exit direction
User Management	
Privileges	Admin is allowed to configure rules and create users with privileges
Authentication	Password authentication for users
Vehicle Registration	
Database of vehicles	Allows addition of vehicles in database with appropriate access type, e.g. Allow for authorized, Stop for unauthorized, Stop for suspicious, Allow for VIP
Access categories	Allows definition of access categories and the action to be taken
ANPR monitoring	
Live view	Live view of vehicle entry point 24X7



Event notification	Image captured, number plate detection and recognition, date and time logging with validation of registered vehicles
Event reports	Customized report generation
Search and Reports	
By vehicle number plate	Extracts a report of entries of the number plate in the database
By date and time	Extracts a report of entries in the database within the duration specified
By location with a specified date and time	Extracts a report of all vehicles that have entered the location

PERFORMANCE CRITERIA	
Performance with our benchmark streams	
TEST STREAM	ANPR ACCURACY
Chennai_32.avi 704x576@ 12fps	90%
DelhiNight.avi 704x576 @ 12fps	70%

System Statistics	
CPU Load	90%
Average Memory (storage per vehicle record) SQL	7KB
Average Memory (storage per vehicle record) Local Storage	120KB
Typical Memory for 5000 Records per day per lane for 30 days	20GB



ANPR CAMERA KIT- IP

IP CAMERA - SPECIFICATIONS

Resolution (H x V pixels)	Minimum 1280 px x 960 px (CCD sensor)
Pixel Size horizontal/vertical	3.75 µm x 3.75 µm
Frame Rate MJPEG/MPEG-	30 fps
Synchronization	<ul style="list-style-type: none"> external trigger, NTP
Exposure Control	<ul style="list-style-type: none"> automatic, manual
Day/Night Functionality	yes (movable IR-cut filter)
Minimum Illumination	color: 0.34 lux (F1.2/33ms) day/night: 0.09 lux (F1.2/33ms)
Image Settings	<ul style="list-style-type: none"> automatic gain
	<ul style="list-style-type: none"> exposure area
	<ul style="list-style-type: none"> backlight compensation
	<ul style="list-style-type: none"> white balance
	<ul style="list-style-type: none"> electronic shutter
	<ul style="list-style-type: none"> 180° image rotation
	<ul style="list-style-type: none"> anti-flicker
Video Compression	<ul style="list-style-type: none"> MJPEG: multiple compression levels
	<ul style="list-style-type: none"> MPEG-4: SP (Level 3)
	<ul style="list-style-type: none"> H.264 (MPEG-4 AVC): High Profile levels up to 5.0, Baseline Profile
Video Streaming	multi-encoding and multi-streaming for MJPEG, H.264, and MPEG-4; VBR and CBR for MJPEG and MPEG-4, VBR, CBR, and CVBR for H.264, uncompressed YUV images, multicast and unicast
Protocols	<ul style="list-style-type: none"> TCP/IP, HTTP, FTP, NTP, RTP, RTSP
Operating Conditions	<ul style="list-style-type: none"> -10 °C - 50 °C (14 °F - 122 °F)
	<ul style="list-style-type: none"> <90% relative humidity (non-condensing)
	<ul style="list-style-type: none"> starting temperature: 0 °C - 50 °C (32 °F - 122 °F)
Lens Mount	<ul style="list-style-type: none"> CS-mount
Digital Input/Output-	2 (needed for external IR connections)
Connectors	<ul style="list-style-type: none"> RJ-45 connector for 10/100 BASE-T Ethernet, 8-pin terminal for DC power, digital I/O, RS-485
Power Requirements	PoE (Power over Ethernet IEEE 802.3af Class 2) or 12 to 24 VDC
Power Consumption (typical)	3.5 W
Browser	<ul style="list-style-type: none"> Internet Explorer 8.0 or higher
ONVIF	yes



LENS - SPECIFICATIONS

Focal Length	8.5mm -50mm	
Max. Aperture Ratio	01:01.3	
Max. Image Format	4.8mmx3.6mm(6mm)	
Operation--Range Iris	F1.3-F360	
Focus	0.8m- Inf.	
Zoom	8.5mm- 40mm	
Control--Iris Auto	Auto Iris	
Focus	Manual	
Zoom	Manual	
Object Dimension	8.5mm--48.1cmx34.5cm	
at M.O.D.	40mm--10cmx7.5cm	
Angle of View	1/3 type	1/4 type
D	43.9deg-8.9deg	31.2deg-6.7deg
H	33.5 - 7.1	7.1 24.4
V	24.4 - 5.3 deg	5.3 deg 17.4deg
Coil Drive	190 ohm	
Control	1000ohm	
Operating Temperature	-20 degC -+50degC	
Effective Lens Aperture--	Front27.0mm, Rear9.3mm	
Back Focal	Tele 10.6mm	
Length	Wide 9.0mm	
Flange Back Length	12.5mm	
Mount	CS-Mount	

IR STROBE SPECIFICATIONS

Illumination Source:	High Power LEDs
Wavelength:	White/Blue/NIR 850nm
Light drive Power:	(Pulsed) 360w
Distance:	150 - 30 m for ANPR
Trigger Modes:	1.Trigger Mode (Flashes upon input pulse)
	2. Strobe Mode(Strobe combine with continuous limit pulse)
	3. Video/HD---SDI Mode (NTSC/PAL&Progressive)
Maximum trigger frequency:	10kHz
Maximum Pulse width:	2ms
Trigger input:	3.3V to 5V opto---isolated
Control/Communication:	RS485 /Deep switching
Beam angle:	20/40/60 degrees(Optional)
Operating temperature:	-20°C to +60°C
Power requirement:	ADC24V
Enclosure:	IP66



ANPR CAMERA KIT- ANALOG

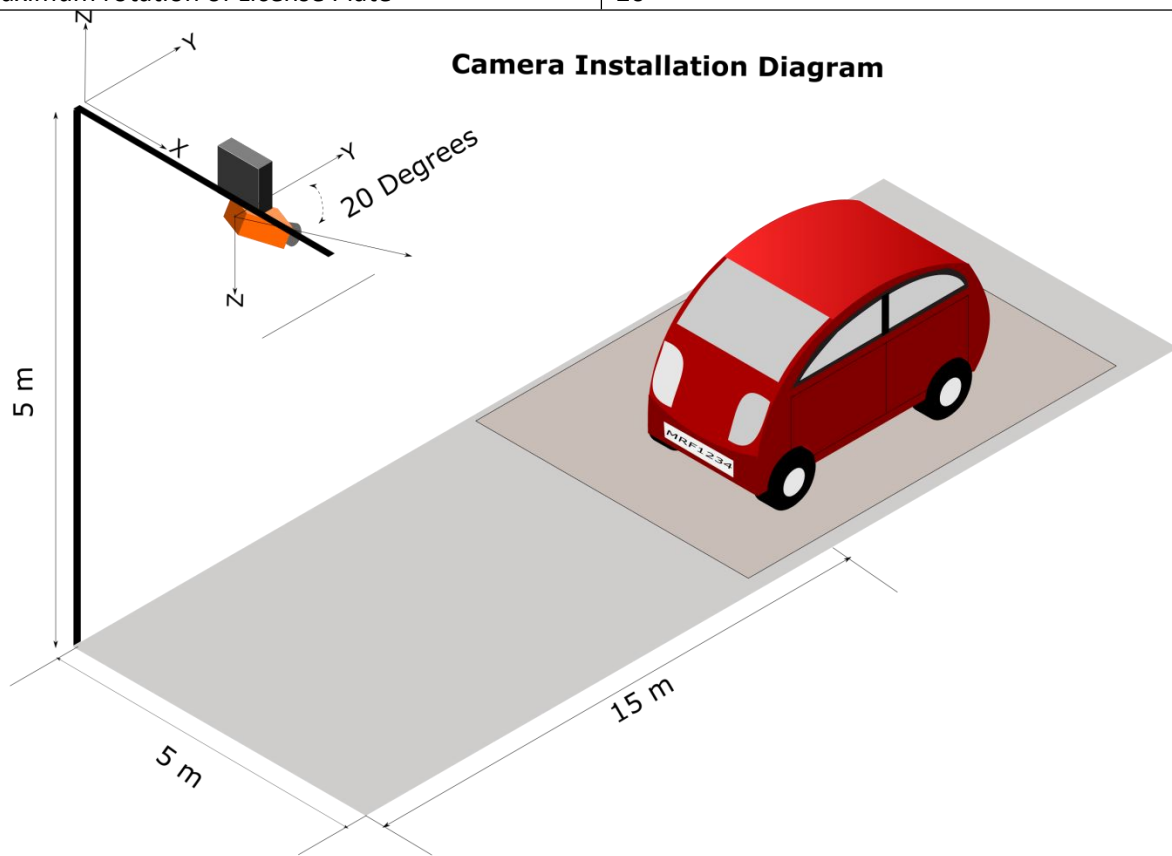
ANPR Analog Camera with lens and IR illuminator	
Infrared wavelength	850nm
Colour	silver/ Black
led quantity	320
speed limit	normally to 160 kph / max up to 220 kph
IR effective range	Number plate mode 15m-20m / surveillance mode up 150M
System	NTSC / PAL
lens & view angle	6-60mm optional
minimum illumination	0 lux with IR Strobe
image sensor	1/3-inch CCD image sensor
CCD total pixels	410 / 470k
sync system	Internal
Resolution	540TVL
s/n ratio typical (max)	60dB
auto IRIS	DC-IRIS
electronic shutter	1/60(50) ~ 1/120,000 sec
Video output	1.0V p-p composite video at 75 ohm
gamma correction	1/0.45
gain control	AGC
operation temperature	(-20 to -60) deg.
weather proof	IP66
power consumption	18W
power requirement	AC/DC 24V
Electrical	JUNCTION BOX INCLUDED

MISCELLANEOUS SPECIFICATIONS

Server (for 100 channels)	Xeon E5 with 8 cores@3 GHz
	Minimum 16 GB RAM
	4TB HDD for image storage for 30 days
IP Network	LAN setup for ANX and SIM_SERVER
	Camera connected to ANX device
Software Packages	.NET framework 4.0 or higher
	Windows Server 2012
	All cameras with rtsp support / Camera SDK libraries to interface with camera
	MS SQL Server 2012

CAMERA PLACEMENT

Camera Placement	
Height of camera from ground	5 - 6 m
Distance of vehicle number plate from camera	10 - 20 m
Camera tilt angle	20° – 30°
Horizontal field of view	30° – 35°
Vertical field of view	20° – 25°
Minimum size of character in view	25 Pixel height
Minimum size of License Plate in view	140 x 50 Pixel (width x height)
Maximum rotation of License Plate	20°



Top View of the Installation

