

# Module-X IR

## modular AI camera system



The Module-X IR is designed to offer an all-in-one modular camera system for ANPR based parking and access control solutions.

The camera can be mounted standalone or built-in into a terminal.

Equipped with neural processing power, the Module-X performs license plate recognition and additional video analysis routines simultaneously.

The many built-in communication protocols and interfaces provide third party systems with recognition results.

The camera's modularity and wealth of features, makes the Module-X versatile and widely applicable. By default, the Module-X offers such a wide array of features, that it provides a solution for most projects right out of the box.

Hardware and software agility facilitate the adjustments necessary to meet specific project requirements.

### Highlighted

**Low light technology** - The IR sensitive sensor with IR LEDs and daylight filter on one hand and the low light colour sensor, supported by embedded white lights on the other hand, ensure high accuracy ANPR under all weather and lighting conditions.

**Built-in interfaces and I/O ports** - RS485, OSDP, Wiegand and IP connectivity facilitate communication with access control systems. The potential free contacts directly operate any gate, indicator or electronic peripheral.

**Mounting options** - The Module-X can be mounted standalone or built into a terminal. The many mounting options, its compact size and attractive design add style to any installation.

**Integration and connectivity** - Recognition results can be uploaded to a database, FTP server or a webservice. The rule engine, a large collection of connector modules, the AVUTECH integration service and a developers SDK ensure connectivity and integration with any other system or interface.

### Features

Embedded ANPR engine to read number plates

PoE+ enabled to simplify cabling and deployment

White and IR LED illumination for day and night operation

Internal storage of 128 GB for embedded recording and data buffering.

IP67 rated enclosure for performance in all weather conditions and harsh environments

Remote accessibility for fast and cost-effective service and support

AI-boosted to run additional video analysis algorithms in parallel

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## Connectivity & I/O cable

### Software connectivity

The standard FTP-, database- and webservice-module cover most common connectivity with third party systems. The rule engine implements additional project required functionality. Specialised connector modules take care of more complex or specific software integration.

### I/O cable

The Module-X comes with a network and a I/O cable. The I/O cable brings out 14 pins to facilitate 2x relays contacts, RS-485, OSDP and external power (see table below). The Module-X can be powered via PoE+ using the network cable or providing 12 - 48 Volt DC on the I/O cable.

I/O cable: AV0017-02, TRVVPS 7X2x0.2m2			
P1	Color	Description	
1	orange	RS485-	OSDP
2	white/red	Wiegand D0	
3	black	Relay_B COM	
4	white/black	Relay_A NO	
5	red	Wiegand D1	
6	black/orange	RS485+	OSDP
7	brown	GND	
8	white/brown	Relay_B NO	
9	blue	Relay_A COM	
10	white/blue	IN1	>2.2=high
11	green	GND	
12	white/green	GND	
13	yellow	EXT PWR IN	24 VDC~48VDC
14	black/yellow	EXT PWR IN	24 VDC~48VDC

# Module-X

## Mounting the camera

Mounting height	80-100 cm above the floor
Maximum horizontal recognition angle	40 degrees
Recognition area	<ul style="list-style-type: none"> <li>• 2-5 meters (standard)</li> <li>• custom recognition area on request</li> </ul>
Built-in options	yes (see page 4 for measurements)
Mounted standalone	yes (see below)

### Mounting compatibility

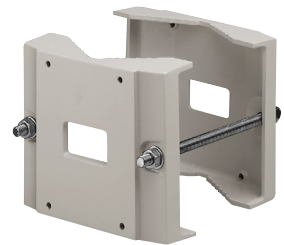
The mounting holes in the back of the camera (see drawings page 4) are compatible with Videotec bracket models: WBOVA2, WCM4A2 and WSFPA.



WBOVA2

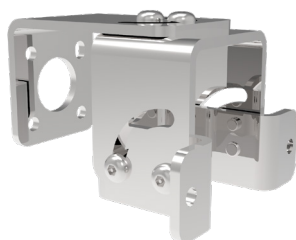


WCM4A2

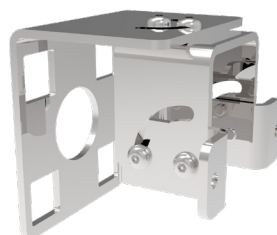


WSFPA

The AVUTECH **Mod-brackets** are designed with many degrees of freedom to position the Module-X on any surface or pole. The stainless steel brackets are compact in size and provide for cable transit. They come with hex pin security fasteners (M5 x 8 mm. hex pin 3 mm.) and a corresponding bit (25 mm. BZK-PIN 3 mm.) for installation.



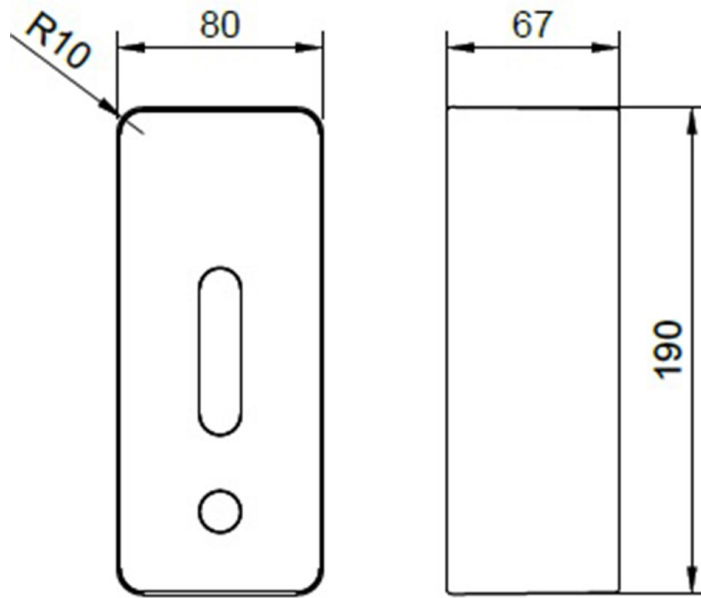
Wall mount



Pole mount

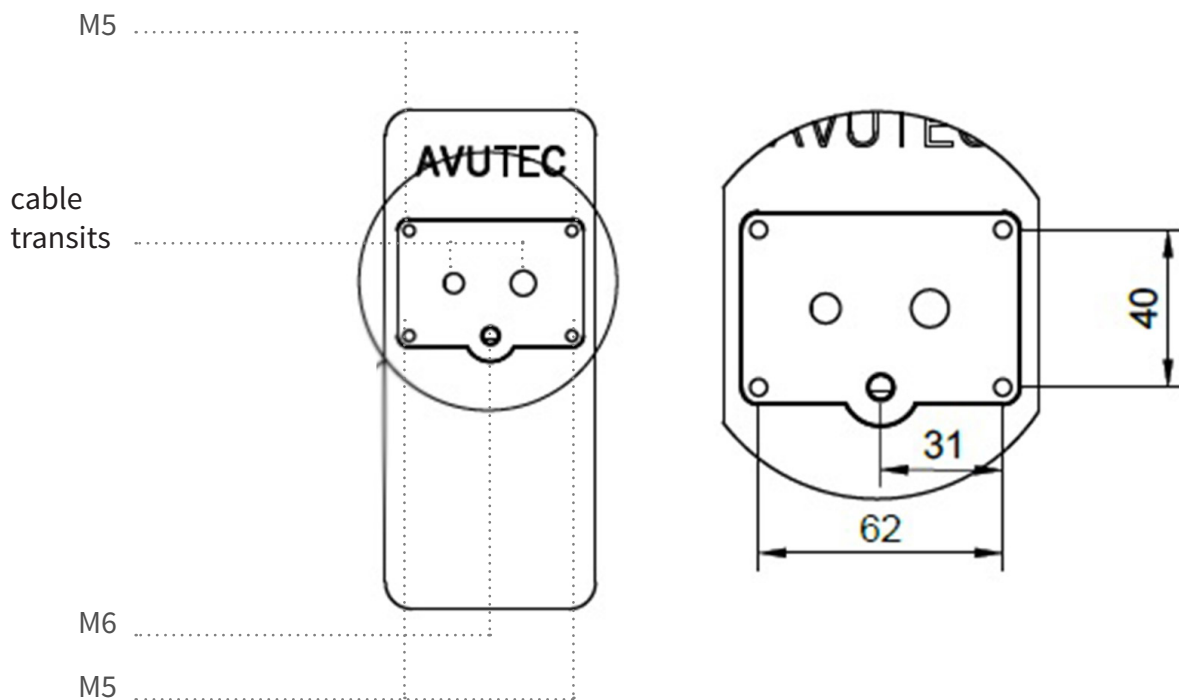
# Module-X

## Measurements



Front view

Side view



SENSOR AND LENS	
IR sensor	1920 x 900 , 25 fps
Color sensor	1920x1080 , 30 fps
Daylight filter	850 nM IR band pass filter

HARDWARE	
IR LEDs	Frame speed synchronized 850 nm. high power LED illuminator
White LED's	High power white LEDs
Processing unit	<ul style="list-style-type: none"> <li>• Embedded quad core 2.0GHz, 64-bit CPU</li> <li>• Neural Processing Unit</li> </ul>

ENCLOSURE	
Measurements	190 x 80 x 67 mm.
Weight	0.75 kg
Material	Aluminium zinc alloy
Protection level	IP67
Color	RAL9002 / custom RAL colors possible

POWER	
Power supply	<ul style="list-style-type: none"> <li>• PoE+ (Plus), IEEE 802.3at, 25 Watts minimal at RJ-45 socket</li> <li>• 24-48 Volt regulated DC</li> </ul>

OPERATING CONDITIONS	
Recognition area	2-5 meter or custom on request
Max lane width	4 meter
Vehicle speed	0 - 20 km/h.

CONNECTIVITY	
Communication ports	1 x 10/100/1000 Base-T Ethernet port,
Inputs/Outputs	<ul style="list-style-type: none"> <li>• 2 x relay</li> <li>• RS-485, Wiegand, 2x EXT power, 3x GND</li> </ul> See page 3 for I/O cable specifications
Communication protocols	RS485(OSDP), Wiegand, http, https, ftp(s), JSON, ONVIF profile S, mysql

DEEP LEARNING AND AI	
ANPR/ALPR	Automated Number / License Plate Recognition
Detection, tracking, counting	Detection, tracking and counting of people, vehicles and other objects
Binary/multiple class vehicle classification	Binary: Detection of a car or no car Multiple: Distinction between e.g. trucks, cars, bicycles and people
Segmentation	Segmentation of an image at pixel level
Pose estimation	The estimation of the pose of a person
Custom trained module	Custom networks trained by the AVUTECH deep learning development service

**FACT SHEET TECHNICAL SPECIFICATIONS**