



# ITSCAM 600

HIGH PROCESSING POWER, CONNECTIVITY AND EMBEDDED SOFTWARE

# | Product

**Pumatronix Equipamentos Eletrônicos Ltda.**

Rua Bartolomeu Lourenço de Gusmão, 1970. Curitiba, Brazil

Copyright 2020 Pumatronix Equipamentos Eletrônicos Ltda.

*All rights reserved.*

Visit our website <https://www.pumatronix.com>

Send comments on this document to [suporte@pumatronix.com](mailto:suporte@pumatronix.com)

Information contained in this document is subject to change without prior notice.

Pumatronix reserves the right to modify or improve this material without obligation to notify the changes or improvements.

Pumatronix grants permission to download and print this document, provided that the electronic or physical copy of this document contains the full text. Any changes to this content are strictly prohibited.

## Change History

Date	Revision	Content updated
21/10/2020	0.6.0	Initial Version
28/06/2022	1.0	Updating the format; Firmware content update
23/11/2022	1.1	Operating temperature update
23/01/2024	1.2	Maximum reading speed update
06/14/2024	2.0	Inclusion of ITSCAM 600 FHD models Digital Signature and Encryption Update

## Overview

---

The ITSCAM 600 Family offers a powerful image processing engine and the flexibility to embed customized software, allowing adaptation to specific project needs. In addition, it provides connectivity via cables, Wi-Fi or mobile data to ensure perfect communication in any scenario.

Our latest technology allows authorities, technicians and city managers to interact in real time, transforming the management of city infrastructure. This results in safer and higher quality urban environments for citizens, while enabling agile and effective actions to promote the sustainable growth of smart cities.

The ITSCAM 600 is a low energy consumption device, making it a viable option for solar power, demonstrating our commitment to sustainability. This versatility is reflected in applications ranging from traffic enforcement and urban mobility systems to public and private security monitoring, customs enclosures, parking and access control, as well as highway concessionaires.

As a state-of-the-art device, it is designed to offer total security and integrity to the data captured. Equipped with Digital Signature, this technology ensures that the information received by the end user can be validated and in the event of an attempt to alter or manipulate the data, it will be promptly identified, providing absolute confidence in the authenticity of the information.

In addition, the ITSCAM 600 Family has data Encryption that can be used as an additional layer of protection for accessing the device and sending data to servers, ensuring that only authorized recipients have access to the images. This security measure prevents unauthorized individuals from intercepting or viewing the information, maintaining the privacy and confidentiality of the data at all times.

The ITSCAM 600's video capture technology includes a video encoder that supports H.264, H.265 and MJPEG formats, as well as a 2MP global shutter sensor with HDR sensor or 2.3MP global shutter sensor on FHD models, optimized to minimize the negative effects of poor lighting and ensure sharper nighttime images. The result is superior image quality, even in challenging weather conditions, providing accurate license plate reading.

In addition, the ITSCAM 600 Family features an open platform that allows video to be captured and processed directly on the device, eliminating the need for computers and routers. Its sturdy metal frame provides excellent heat dissipation, while simultaneous processing of up to 3 lanes, hardware Flash synchronization and low power consumption guarantee superior performance in a variety of applications. The ability to delimit specific areas of interest with the ROI (Region of Interest) function further expands the algorithm's motion detection possibilities.

With flexibility in the choice of lenses, Pumatronix offers a choice of models with CS external lenses, as well as models with LM motorized lenses, all equipped with a CMOS sensor with Global shutter for drag-free images. As a result, the system is able to capture images of vehicles at speeds of up to 180 km/h on models with the 2MP sensor and up to 200 km/h on models with the 2.3MP sensor, providing accurate readings in high-speed scenarios.

With nationwide technical support and the possibility of configuration and installation by a specialized technical team, the ITSCAM 600 from Pumatronix is the definitive choice for the high-speed license plate reading needs. Consult the salesperson to find out more about how this solution can optimize the operations and improve security in the environment.



*Figure 1 - ITSCAM 600 Series  
with CS Mount lenses*



*Figure 2 - ITSCAM 600 Series  
with motorized lenses*



*Figure 3 - ITSCAM 600 FHD  
Series with CS Mount lenses*



*Figure 4 - ITSCAM 600 FHD  
Series with motorized lenses*

## Handling Risks

---



The ITSCAM 600 CS AD IOT (S06L0W1AJP) and ITSCAM 600 LM AD IOT (S06L5W1AJP) models contain the EC25-AUFA-512-STD board and ATWILC3000-MR110UA Anatel approval code 06239-18-07968/0142417-03464.

---



This equipment must be supplied by a direct current (DC) source with a voltage between 9 and 32 VdC. Do not connect any of the inputs directly to the mains (AC)!

---



**Risk of Oxidation:** The electrical and data connections must be protected in a junction box or similar structure to prevent oxidation of the connections and unwanted infiltration of liquids into the cable.

---



This equipment can be accompanied by lenses, which are sensitive to mechanical impacts such as falls and extreme vibrations.

---



**Installation Location:** In cases where the installation specifications cannot be met, it is recommended to consult Pumatronix Technical Support.

---

## Models

Available models	Resolution	Lens Type	Estimated range (in meters)*
ITSCAM 600 CS (S06L0AJP)	1636x1220px HDR	CS Mount Manual	9 a 32m (10-50mm)
ITSCAM 600 CS AD IOT (S06L0W1AJP)		Integrated motorized	10 a 37m (13-55mm)
ITSCAM 600 LM (S06L5AJP)			
ITSCAM 600 LM AD IOT (S06L5W1AJP)			
ITSCAM 600 FHD CS AD IOT (S09L0W1N2AJP)	1920X1200px	CS Mount Manual	4 a 45m (9-40mm) 9 a 32m (10-50mm)
ITSCAM 600 FHD LM (S09L3N2AJP)		Integrated motorized	4 a 45m (4,7-47mm)
ITSCAM 600 FHD LM AD IOT (S09L3W1N2AJP)			

\* The estimated range is defined according to the lens selected and identifies at what distance range the license plate characters remain legible in the OCR reading. When the device is used in conjunction with the illuminator device, the range may be limited to the model applied. For models with a motorized lens, the lens cannot be modified. For *CS Mount* lenses, the lens models shown are for reference purposes only.



**Illuminator Installation: When using an Illuminator in conjunction with the ITSCAM 600 device, check the product specifications for the minimum and maximum distance that must be observed in relation to the position of the object to be illuminated.**

Image sensors	Lens	Antennas	Optional
<b>S06:</b> CCD HDR 1636X1220px	<b>L0:</b> CS Mount manual lens: <ul style="list-style-type: none"> <li>LC1: 10-50mm 8MP 1/1.7"</li> <li>LC3: 9- 40mm SL940a</li> </ul>	<b>W1:</b> Wi-Fi/4G/3G External antennas and integrated GPS	<b>A:</b> Digital Signature (TPM1.0)
<b>S09:</b> CMOS 1920x1200PX	<b>L3:</b> 4,7-47mm		<b>J:</b> Embedded LPR
	<b>L5:</b> 13-55 mm		<b>P:</b> POE Power Supply



**Digital Signature Functionality: The ITSCAM 600 has high security with Digital Signature and Data Encryption, guaranteeing the integrity and confidentiality of the information captured. Further information can be obtained from Technical Support.**

## Summary

1.	Knowing the Product .....	8
2.	Information Generated .....	10
3.	Additional Documentation .....	10
4.	Mechanical Specifications .....	11
5.	Electrical Specifications .....	14
	Electrical Connections.....	17
	Trigger on IOs.....	17
	Ethernet Connection.....	18
	Antenna Connection .....	18
6.	Software Specifications .....	19
	Image Capture Architecture .....	19
	Motion Detector .....	20
	Classifier .....	20
	Multiple Exposures.....	20
	OCR.....	20
	Automatic Transition between Image Profiles .....	21
	Information Security.....	22
	Digital Signature .....	22
	Encryption.....	22
	Plugins Installation .....	23
7.	Licensing .....	23
8.	Initial Setup.....	23
	Installation Prerequisites.....	23
	Equipment Installation Location .....	24
	Necessary Infrastructure .....	24
	Required Conditions for Installation .....	25
	Network Interface Parameterization .....	25
	Wi-Fi Network Setup .....	26
	3G or 4G Mobile Network Setup.....	26
	Installation Infrastructure.....	27

---

9.	First Access .....	27
10.	Care and Maintenance .....	28
	Firmware Update .....	28
	ITSCAM 600 Firmware Update via Web Interface.....	29
	(Restricted Procedure) ITSCAM 600 Recovery by Factory Reset.....	30
	Updating Analytics Licenses .....	30
	Preventive Maintenance of the ITSCAM 600 Device .....	31
11.	General Warranty Conditions.....	31
	Situations in which the Product loses its Warranty.....	31
12.	Privacy Policy.....	32



## 1. Knowing the Product

The ITSCAM 600 line of image capture and processing devices was developed for traffic management, enforcement, Smart City Applications, mobility systems, parking lots and applications that require image capture. The ITSCAM 600's 2MP image sensor allows for up to two range image capture and processing. The sensor is combined with a set of lenses, which can be motorized or fixed (CS Mount standard). In models that support fixed lenses, there are circuits that detect and control the iris of the DC and P-Iris models.

The quality and level of detail of the images captured with ambient and artificial lighting of the ITSCAM 600 comes from additional functionalities to the optical set (image sensor with lenses). There is a proprietary HDR (High Dynamic Range) algorithm to bring out the details of very dark and very light regions of images. *Multiple Exposures* can be captured for each photo request made to the device. This functionality captures and processes more than one sequential image, with automatic variation of capture parameters.

The ITSCAM 600 maintains the standardization of images, even when there are significant variations in lighting conditions. This is made possible by toggling the image setup *Profiles*. Profile changes are made by the equipment, based on image level and time.

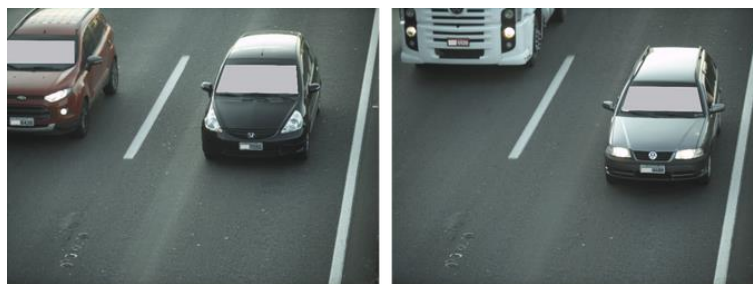


Figure 5 - Examples of daytime images captured with ITSCAM 600



Figure 6 – Example of night images captured with ITSCAM 600

The ITSCAM 600 hardware has 4 input or output ports (IOs) for the installation of external sensors, which identify the moment of image capture (trigger). In addition, these IOs can control artificial lighting (flash), which is usually triggered automatically in low light situations. However, the ITSCAM 600 can capture images without the need for external sensors, by enabling software capture (Motion Detector).

All the images captured by the ITSCAM 600 pass through the Quad-Core processor with neural network accelerator, which scans them for vehicles. The identification extends to the distinction between *motorcycle*, *car*, *truck* and *bus*. This function is called *Classifier* and can be performed with high precision, detecting vehicles even in situations where the license plate is missing or the characters are not very distinct. Along with identifying the type of vehicle in the *Classifier*, it is possible to define regions that operate the Virtual Loop in the image (Virtual Trigger Regions). In addition to characterizing the vehicle in the image, Automatic

License Plate *Recognition* is available for the old Brazilian standard and Mercosur (OCR). Contact Pumatronix Sales for OCR availability in other Mercosur countries.

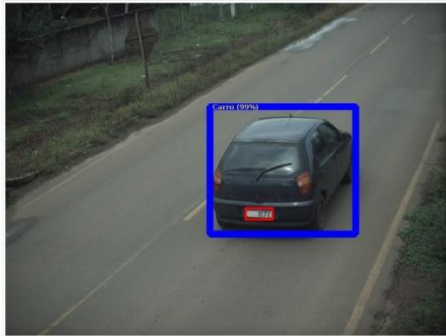


Figure 7 - CLASSIFIER identifies a car



Figure 8 - CLASSIFIER identifies a truck



Figure 9 - CLASSIFIER identifies a bus

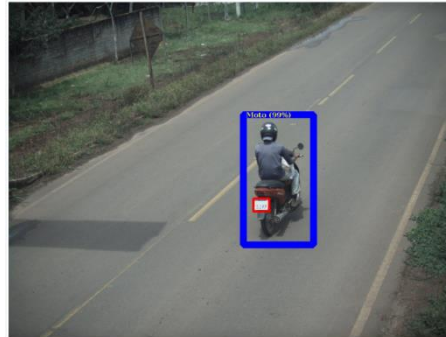


Figure 10 - CLASSIFIER identifies a motorcycle

The ITSCAM 600 delivers photos in JPEG format with a resolution of 1636 x 1220 pixels and the ITSCAM 600 FHD delivers photos in JPEG format with a resolution of 1920 x 1200 pixels. Within these files, the comments field is filled in with data relating to each capture, containing the coordinates of the image location, the license plates recognized, the type of vehicle identified and the instantaneous settings of the equipment.

The ITSCAM 600 series offers 2 Gigabit Ethernet ports (the ITSCAM 600 CS and ITSCAM 600 CS AD IOT models only have the ETH1 network interface) to facilitate connectivity at monitoring points and allow remote and simultaneous access by multiple users. Access can be via the device's Web Interface or applications can connect using the API REST, FTP (File Transfer Protocol), the ITSCAMPRO server or the Lince(R) platform. Access to the device is managed by specifying the network's firewall rules or by specifying *Routes*.

The ITSCAM 600 CS AD IOT, ITSCAM 600 LM AD IOT, ITSCAM 600 FHD CS AD IOT and ITSCAM 600 FHD LM AD IOT feature additional connectivity functions. 4G and 3G mobile cellular technologies are available for connection to the equipment, as well as Wi-Fi and IoT M2M communication. The images captured by these ITSCAM models can be georeferenced automatically, as long as an external antenna is connected to receive the GPS signal.

## 2. Information Generated

The ITSCAM 600 series captures images of up to three lanes in JPEG format and automatically provides the characters of Brazilian license plates (in the old standard and Mercosur). The license plates read in the images, the type of vehicle captured and information about the equipment's configuration are stored within the image files, in the JPEG field for storing comments. The quality of the JPEG files generated is adjustable and the images can be overlaid with a caption with configurable content in each Profile. For each photo request, sequential captures can be sent with changes to the capture parameters (*Multiple Exposures*). The data on the type of vehicle identified by the *Classifier* and the license plates identified in *OCR Recognition* are additionally delivered via the interface using the *Snapshot* function, which displays the captured image and all the image's metadata.

The images captured by the ITSCAM 600 can be redirected via a wired data network (using the independent Gigabit Ethernet ports), via a Wi-Fi network or using 4G and 3G mobile data networks. Using the communication interfaces, ITSCAM 600 images can be sent automatically via the device's Web Interface or applications can connect using the REST API Client, the FTP (File Transfer Protocol) protocol, the ITSCAMPRO server or the LINCE server.

In addition, the operation of the equipment and the captures can be monitored in real time using the Web Interface. The video with the capture images is available in MJPEG, H.264 or H.265 format with adjustable quality, in addition to the live view available in a floating window, which can be scrolled or minimized and which optionally displays only the images of the captures made, with the possibility of adjusting the zoom and focus for the current profile.

Information on the Current Status is available on the home screen, which shows the device's data, such as the Device ID (or Serial Number), the GPS, the installed versions and the 4 Input or Output ports.

## 3. Additional Documentation

Product	Link	Description
Docker	<a href="https://docs.docker.com">https://docs.docker.com</a>	Documents with instructions for using Docker
Docker Engine API	<a href="https://docs.docker.com/engine/api/">https://docs.docker.com/engine/api/</a>	API documentation for interaction with the Docker daemon
ITSCAM 600	<a href="#">Installation and Maintenance Guide</a>	Guide containing the information needed to install and maintain the ITSCAM 600
ITSCAM 600	<a href="#">Integration Manual</a>	Programming and integration manual containing the information needed to integrate ITSCAM 600 with an application
ITSLUX	<a href="#">Product Manual</a>	Manual containing the technical specifications of the ITSLUX product

## 4. Mechanical Specifications

- Material: Aluminum and polycarbonate;
- IP protection: IP40 (requires protective housing for external use);
- Fixing: *Fixing Mechanism* at the bottom of the device

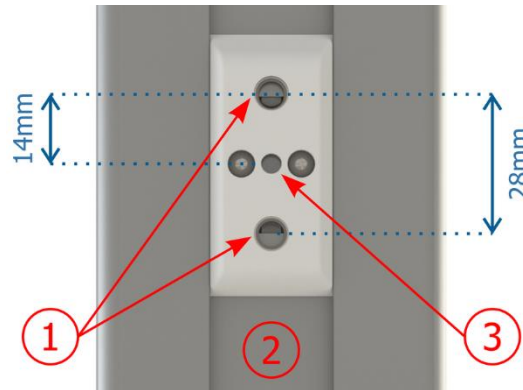


Figure 11 Fixing Mechanism Specifications: 1) Thread for 1/4" screws; 2) Rail for changing the fixing point; 3) Ø4mm hole for guide pin

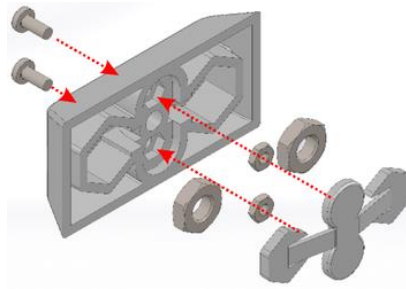


Figure 12 - Assembly of the fixing components installed in the ITSCAM 600

- Interfaces: The ITSCAM 600 shows the connectors available on the rear panel:

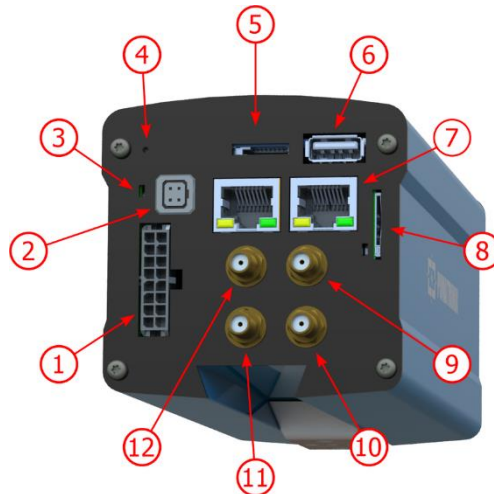


Figure 13 - Interfaces from the ITSCAM 600 series (there may be variations depending on the model)

Interface		Specifications
1	Microfit	power connector, IOs, RS-232, RS-485
2	Auto Iris	connector for DC and P-Iris lenses
3	POWER	Status LED
4	SD BOOT	Reset button
5	SD CARD	for microSD card 2.0
6	USB HOST	2.0 (host)
7	ETH-1 e ETH-2*	RJ-45 connector (EIA/TIA-568A standard indicated)
8	SIM CARD	nano SIM connector (12.3 x 8.8 x 0.67 mm)
9	MOV Antenna	male SMA connector
10	GPS Antenna**	
11	Wi-Fi Antenna**	
12	3G/4G Antenna **	

\*The ITSCAM 600 CS and ITSCAM 600 CS AD IOT models only have the ETH1 network interface.

\*\*Only available on the ITSCAM 600 CS AD IOT, ITSCAM 600 LM AD IOT, ITSCAM 600 FHD CS AD IOT and ITSCAM 600 FHD LM AD IOT models.

- Ambient Operating Temperature:
  - DC power supply: -10 to 65 °C with relative humidity of 5 to 95% and no condensation (tests carried out in accordance with IEC 60068-2-2);
  - PoE power supply: -10 to 55 °C.

- Peso:

Model	Weight
ITSCAM 600 CS (S06L0AJP)	535 g + lenses weight*
ITSCAM 600 CS AD IOT (S06L0W1AJP)	575 g + lenses weight*
ITSCAM 600 LM (S06L5AJP)	835g
ITSCAM 600 LM AD IOT (S06L5W1AJP)	875g
ITSCAM 600 FHD CS AD IOT (S09L0W1N2AJP)	589 g + lenses weight*
ITSCAM 600 FHD LM (S09L3N2AJP)	752 g
ITSCAM 600 FHD LM AD IOT (S09L3W1N2AJP)	795 g

\*\*The lens model compatible with the ITSCAM 600 CS supplied by Pumatronix (with a focal length of 8-40 mm) weighs approximately 340g.

- Dimensions:
  - The ITSCAM 600 CS and ITSCAM 600 CS AD IOT models use CS Mount lenses and have the same dimensions, with the overall length depending on the lens model chosen.



Figure 14 – ITSCAM 600 CS and ITSCAM 600 CS AD IOT

\* Using connected antennas, the total length can reach 144 mm.

- The ITSCAM 600 LM and ITSCAM 600 LM AD IOT models feature integrated motorized lenses with a focal length of 13-55 mm and a filter to control the infrared light input.

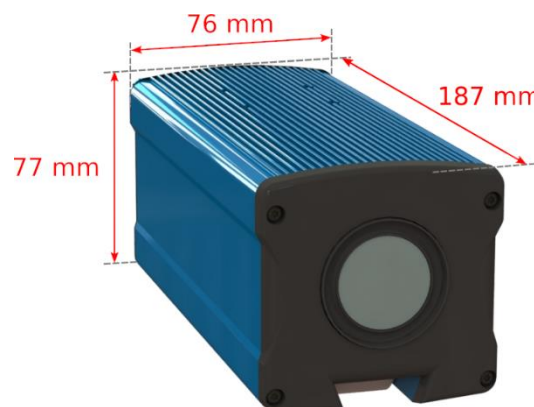


Figure 15 – ITSCAM 600 LM and ITSCAM 600 LM AD IOT

\* Using connected antennas, the total length can reach 211 mm.



- The ITSCAM 600 FHD CS AD IOT model uses a CS Mount lens, with the total length depending on the lens model chosen.



Figure 16 – ITSCAM 600 FHD CS IOT

\* Using connected antennas, the total length can reach 136 mm.

- The ITSCAM 600 FHD LM and ITSCAM 600 FHD LM AD IOT models feature integrated motorized lenses with a focal length of 4.7-47mm and a filter to control the infrared light input.

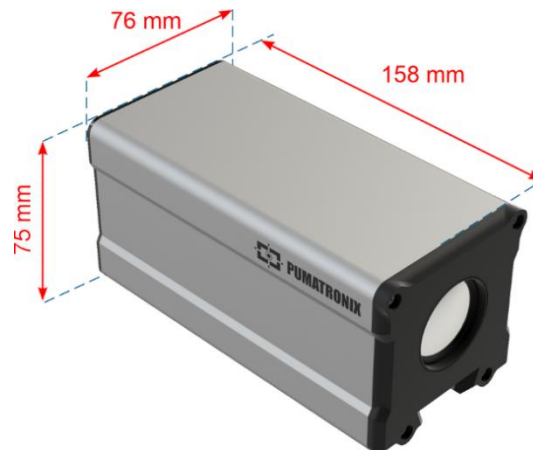


Figure 17 – ITSCAM 600 FHD LM and ITSCAM 600 FHD LM AD IOT

\* Using connected antennas, the total length can reach 182 mm.

## 5. Electrical Specifications

- Power supply: Power over Ethernet - PoE 802.3af (Power 12.95 W/48 V) or with 9~32 Vdc source (recommended 12 Vdc  $\pm$ 20% or 24 Vdc  $\pm$ 20%);
- Minimum consumption: 700 mA (12 V) and 400 mA (24 V);
- Maximum consumption: 1 A (12 V) and 500 mA (24 V);
- Minimum power: 10 W;
- Maximum power: 12 W;
- Typical power for ITSCAM 600 LM, ITSCAM 600 CS and ITSCAM 600 FHD LM models: 7 W (models without RF interface for communication);
- Typical power in the ITSCAM 600 LM AD IOT, ITSCAM 600 CS AD IOT, ITSCAM 600 FHD CS AD IOT and ITSCAM 600 FHD LM AD IOT models: 8.5 W (models with RF interface for communication);

- Protection against reverse polarity: 45 V with 2  $\mu$ s fast response to reverse polarity (ISO 7637-2);
- Overvoltage protection (max.): 36.7 V at 10/1000  $\mu$ s (IEC 61000-4-5:2014);
- Electrostatic discharge protection (DC supply):  $\pm 30$  kV by contact - Level B (IEC 61000-4-2/AEC Q100-002) and  $\pm 30$  kV by air (IEC 61000-4-2/AEC Q100-002);
- Protection against fast electrical transients (EFT) (DC supply): direct current peak at 10/1000  $\mu$ s up to 53.3 A  $\pm 5\%$  (ISO 7637 and IEC 61000-4-4);
- Protection against inrush current: 8 A in 2 seconds (IEC 63129:2020).

ITSCAM 600 interfaces	Electrical Specifications
2 Gigabit Ethernet ports*	5 kVAC dielectric insulation, electrostatic discharge protection of $\pm 30$ kV by contact - Level B (IEC 61000-4-2) and $\pm 30$ kV by air (IEC 61000-4-2), EFT for direct peak current in 5/50 ns up to 40 A $\pm 5\%$ (IEC 61000-4-4) and surge current protection of 4 A (tP = 8/20 $\mu$ s) (IEC 61000-4-5)
USB 2.0 port (host)	Protection against electrostatic discharge of $\pm 8$ kV by contact (IEC 61000-4-2) and $\pm 15$ kV by air (IEC 61000-4-2).
4 inputs/outputs (IOs on Microfit connector)	User-programmable bidirectional 3.75 kV insulated digitals (maximum current 50 mA, maximum voltage 28 Vdc and impedance 10 k $\Omega$ )
RS-485/422 Serial Port (Microfit connector)	2 Half Duplex ports with electrostatic discharge protection of $\pm 8$ kV by contact (IEC 61000-4-2) and $\pm 15$ kV by air (IEC 61000-4-2)
RS-232 EIA/TIA Serial Port (Microfit connector)	2 ports with a maximum transmission rate of 115,200 kbps and protection against electrostatic discharge of $\pm 8$ kV by contact (IEC 61000-4-2) and $\pm 15$ kV by air (IEC 61000-4-2)
External storage	Protection against electrostatic discharge of $\pm 8$ kV by contact (IEC 61000-4-2) and $\pm 15$ kV by air (IEC 61000-4-2);
Wi-Fi**	Protection against electrostatic discharge $\pm 8$ kV by contact (IEC 61000-4-2) and $\pm 15$ kV by air (IEC 61000-4-2) and the high-gain external antenna (2.45 GHz ISM, U-NII, Wi-Fi, WLAN Bundle, 2.4~2.5 GHz 2.8 dBi)
4G and 3G**	Electrostatic discharge protection $\pm 8$ kV by contact (IEC 61000-4-2) and $\pm 15$ kV by air (IEC 61000-4-2) and high gain straight external antennas (850 MHz, 900 MHz, 1.8 GHz, 1.9 GHz, 2.1 GHz CDMA, DCS, EDGE, GPRS, GSM, HSPA, PCS, UMTS, WCDMA, 824~960 MHz, 1.71~2.17 GHz 1.42 dBi, 1.91 dBi, 2.51 dBi, 3.23 dBi, 2.89 dBi) (certificates: GCF, FCC, ANATEL, NCC, RCM, CE)
GPS**	Qualcomm® IZat™ Gen8C Lite Multi-constellation Glonass, BeiDou/Compass, Galileo and QZSS, with 1.57~1.58 GHz 2 dBic external active antenna

Interface	Connectivity Specifications
2 Gigabit Ethernet ports*	10/100/1000 tri-speed
External storage (SD card)	2.0 microSD card with support for up to 128 GB
Wi-Fi**	IEEE 802.11 b/g/n 2.4 GHz standard, with UDP throughput of 46 Mbps and TCP/IP throughput of 28 Mbps
4G and 3G**	LTE-FDD/LTE-TDD/WCDMA/GSM technologies in the bands: LTE FDD: B1/B2/B3/B4/B5/B7/B8/B28, LTE-TDD: B40, WCDMA: B1/B2/B5/B8,



Interface	Connectivity Specifications
	GSM/EDGE: Quad-band
IoT M2M	150 Mbps downlink and 50 Mbps uplink supported
SIM card	Communication with mobile networks with nano SIM card
Iris control (models with CS Mount lens)	Supports lenses with DC iris and P-Iris type (with automatic model detection)

Component	Image Processing Specifications
CPU	Quad-core ARM™ A53 (1.2 GHz, ARMv8 and NEON support)
RAM	16 Gb LPDDR4 (2100 Mbps and 1050 MHz)
2MP image sensor (ITSCAM 600 CS, ITSCAM 600 CS AD IOT, ITSCAM 600 LM and ITSCAM 600 LM AD IOT models)	2 MP Global Shutter (1636x1220 px), with proprietary HDR technology and Daytime/Nighttime mode (generates daytime color images and nighttime monochrome images) Physical size of the sensor: 1/1.18" Internal frame rate: 15 fps Shutter minimum of 80 µs and maximum of 64000 µs (or 64 ms)
2.3 MP image sensor (ITSCAM 600 FHD CS AD IOT, ITSCAM 600 FHD LM and ITSCAM 600 FHD LM AD IOT models)	2.3 MP Global Shutter (1920x1200 px), with Daytime/Nighttime mode (generates daytime color images and nighttime monochrome images) Physical size of the sensor: 1/2.6" Internal frame rate: 30 fps Shutter minimum of 48 µs and maximum of 30000 µs (or 30 ms)
Internal storage	Up to 8 GB available for user data (total 16 GB)
SD card storage	Micro SD 2.0 card with support for up to 128 GB
Watchdog	on hardware with a period of 50 seconds

\*The ITSCAM 600 CS and ITSCAM 600 CS AD IOT models have only one network interface.

\*\*Only available on the ITSCAM 600 CS AD IOT, ITSCAM 600 LM AD IOT, ITSCAM 600 FHD CS AD IOT and ITSCAM 600 FHD LM AD IOT models.



**The ITSCAM 600 CS AD IOT (S06L0W1AJP) and ITSCAM 600 LM AD IOT (S06L5W1AJP) models contain the EC25-AUFA-512-STD board and ATWILC3000-MR110UA Anatel approval code 06239-18-07968/0142417-03464.**



**Risk of Oxidation: The electrical and data connections must be protected in a junction box or similar structure to prevent oxidation of the connections and unwanted infiltration of liquids into the cable.**

## Electrical Connections

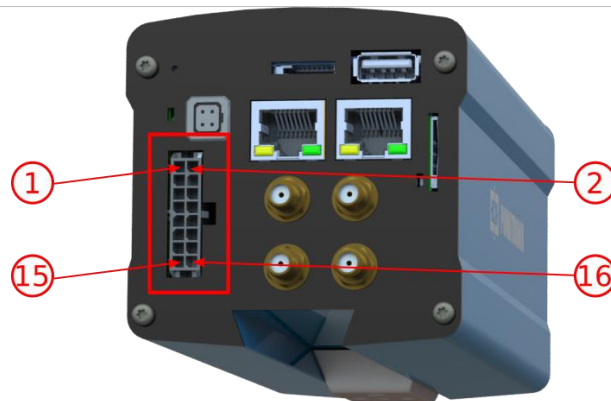


Figure 18 – ITSCAM 600 power supply and signal connector (Microfit)

Pino	Color	Description
<b>1</b>	Green and white	RX RS-232
<b>2</b>	Purple with white	TX RS-232
<b>3</b>	Black and white	GND RS-232
<b>4</b>	Purple	A RS-485
<b>5</b>	White	B RS-485
<b>6</b>	Brown with white	GND RS-485
<b>7</b>	Gray	I/O 4 +
<b>8</b>	Black	I/O 4 -
<b>9</b>	Red with white	I/O 3 +
<b>10</b>	Blue and white	I/O 3 -
<b>11</b>	Green	I/O 2 +
<b>12</b>	Blue	I/O 2 -
<b>13</b>	Orange	I/O 1 +
<b>14</b>	Yellow	I/O 1 -
<b>15</b>	Brown	Negative (GND)
<b>16</b>	Red	Power supply 9~32 Vdc

### Trigger on IOs

The ITSCAM 600 has 4 connections that can be used as inputs or outputs, with IO1 and IO2 being dedicated to controlling the illuminator trigger and IO3 and IO4 being available for the installation of external sensors, such as loops and light barriers, which identify the moment of image capture (trigger). The setup process is done by software, using the device's web interface or communication protocol. ITSCAM 600 ports configured as *Input* can be sensitized by: *Rising Edge*, *Falling Edge*, *High Level* and *Low Level*.



**IO specification: Maximum supported current of 50 mA and maximum supported voltage of 28 Vdc, but it is recommended to activate the circuit with 10 mA.**

## Ethernet Connection

The ITSCAM 600 allows communication with other devices using the TCP/IP protocol. It is recommended to use the EIA/TIA-568A standard for connections. For this connection, the equipment provides two Gigabit Ethernet ports (RJ-45 connector) and on the ITSCAM 600 CS and ITSCAM 600 CS AD IOT models only one Gigabit Ethernet port.

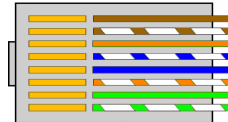


Figure 19 - RJ-45 connector standard EIA/TIA-568A



**Ethernet ETH2 network interface: The ITSCAM 600's second network interface is disabled in the device's default configuration.**

## Antenna Connection

The images captured by the ITSCAM 600 can be geolocated using the equipment's built-in GPS. However, an external antenna must be connected to the protective housing in which the ITSCAM 600 is to be installed. Wi-Fi, 4G and 3G signals can be amplified using an external antenna with an SMA-type connector (male connector, i.e., with a central pin).

The connectors for the Wi-Fi, 4G and 3G signal antennas are only available on the ITSCAM 600 models called ITSCAM 600 CS AD IOT (S06L0W1AJP), ITSCAM 600 LM AD IOT (S06L5W1AJP), ITSCAM 600 FHD CS AD IOT (S09L0W1N2AJP) and ITSCAM 600 FHD LM AD IOT (S09L3W1N2AJP) (For more information, refer to the [model list](#)). The serigraphy on the rear panel of the equipment helps to identify the connectors for the antennas:

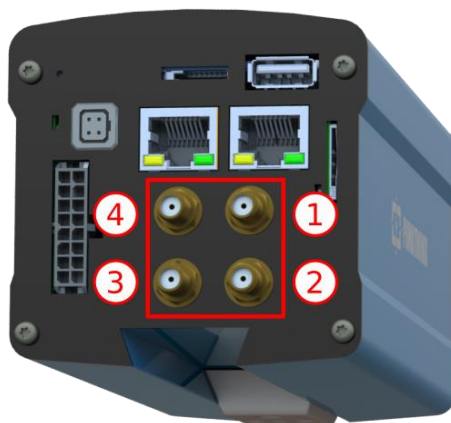


Figure 20 – SMA connectors for the antennas (there may be variations depending on the model)

1	MOV Antenna	3	Wi-Fi Antenna
2	GPS Antenna	4	4G/3G Antenna

The models indicated have antennas for connection: ITSCAM 600 CS AD IOT, ITSCAM 600 LM AD IOT, ITSCAM 600 FHD CS AD IO, and ITSCAM 600 FHD LM AD IOT. In non-standard installation locations where the antenna is not effective in the application, please contact Pumatronix support.



**Specification of 4G and 3G Technologies: Consult Pumatronix Technical Support for use of the ITSCAM 600 in other countries**

## 6. Software Specifications

The ITSCAM 600 has a web interface for evaluating the images generated and making configurations. Access to the interface requires information

<b>User</b>	<i>admin</i>
<b>Password</b>	<i>1234</i>

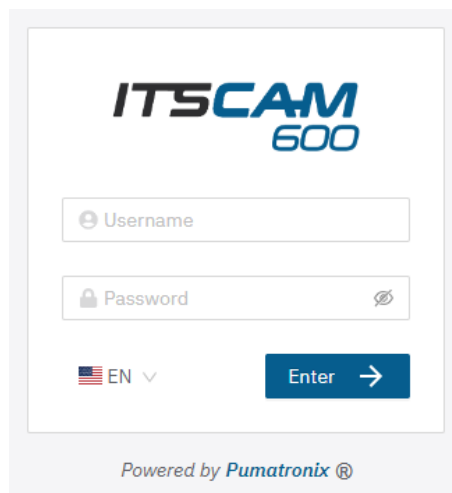


Figure 21 - Home screen

### Image Capture Architecture

To meet the needs of Intelligent Transportation Systems (ITS) applications, the ITSCAM 600 has several features associated with image acquisition. These functionalities make up a general architecture and can be disabled by accessing the device's setting *Profiles*. The image acquisition process begins with how the images are requested (*Trigger*). This request can be made via external sensors connected to one or more ITSCAM 600 ports (IOs configured as *Inputs*). When configuring the ports, it can be specified that the capture trigger will be made by edge (rising, falling or both) or level (high and low).

There is an alternative to using external sensors connected to the ITSCAM 600's inputs, which is to set up a trigger to capture an image that is triggered by software. In this case, it can be triggered at a *Constant* time interval or when the device identifies movement in the image (motion trigger), enabling the *Motion Detector* feature.

Once the ITSCAM 600's image capture workflow has been defined, the *Multiple Exposures* feature can be enabled on request. This technology allows two to eight sequential images to be configured, with the capture parameters varying with each request.

The license plates of the vehicles in the image can be identified by enabling OCR processing, which is available for recognizing license plates from different countries. To increase the accuracy of the reading, the *Majority Voting* feature can be enabled.

The feature that promotes more complete recognition of vehicles in images is the *Classifier*, which is responsible for identifying the type of vehicle detected in the image

## Motion Detector

The definition of movement between two consecutive ITSCAM 600 images depend on the variation parameter configured. In addition to this sensitivity, it is possible to specify the *ROI* (Region of Image Interest) in which the movement will be evaluated. This region corresponds to a polygon with four vertices, which is drawn over a visualization image and the selected region is shaded over the visualization. To display the *ROI* (image Region of Interest), the option to use *Region of Interest* must be enabled

## Classifier

ITSCAM 600 is capable of analyzing captured images in real time and evaluating the content present in the images. This analysis aims to distinguish motorcycles, cars, trucks and buses from images that show only the road. This analysis has a degree of classification certainty, considering the image samples that were used to generate this analytic. It is important to specify the correct type of installation, as the ITSCAM 600 can be used to capture two or three lanes simultaneously, depending on the model used. From two lanes, the *Panoramic* scenario must be chosen. The Classifier's *Enable object tracking* option allows to define regions that operate the *Virtual Loop* (*Virtual trigger regions*), by configuring the direction in which vehicles travel in each lane of the road, with the possibility of creating virtual loops in up to four lanes.

## Multiple Exposures

The ITSCAM 600's *Multiple Exposures* feature generates two to eight sequential images per capture request. This feature can increase the hit rate in automatic license plate identification and identify vehicles that were covered up when the first image was taken. The settings may vary:

- *Flash* intensity, always corresponding to a percentage of the initial shot. This option is available for the Pumatronix ITSLUX range of illuminator devices;
- The exposure time of the image sensor (*Shutter*), generating images with variations in the amount of light captured;
- Digital post-processing (*Gain*), which allows images to be lightened or darkened.

## OCR

ITSCAM 600 can recognize license plates from Brazil (in the Brazilian and Mercosur standards), Argentina, Chile, Mexico, Paraguay, Uruguay and the entire Southern Cone simultaneously. When enabled, recognition is performed on all captured images. Depending on the flow of vehicles and the processing demands of the ITSCAM 600, the number of *Processing Threads* can be changed. It's important to set a *Recognition timeout* in order to discard images where it wasn't possible to read the license plate. The effort spent identifying the plate can be set in *Processing mode*.

OCR allows the definition of a *ROI* (Region of Interest) in the image in order to reduce the processing of regions of the image where it is not desired to find plates. In the ROI visualization image, the size of the

license plate characters can be evaluated by configuring the size of the enabled grid, superimposed on the image visualization.

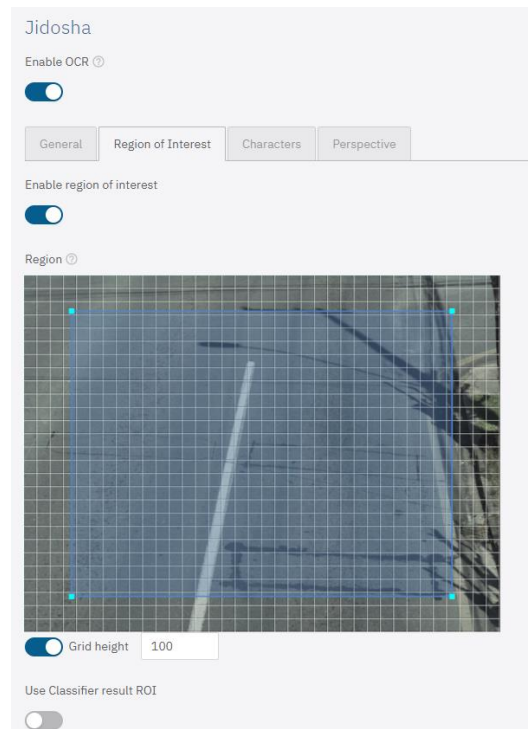


Figure 22 – Web interface for setting the OCR ROI (Region of Interest)

### Majority Voting

The *Majority Voting* is a feature applied to the results of the automatic license plate character reading stage (OCR) and/or the *Classifier*. This analyzer defines which sequence of characters best describes the license plate captured in the image. The algorithm compares the identification *Reliability* of each character, based on the image of the character in perfect reading condition. This analysis can be done only on the set of *Multiple Exposures* images or using sequential images. Simply set the *Maximum different characters* and *Same-plate recognition debounce* parameters. As the vehicle passes through the area monitored by the ITSCAM 600, several images of the same vehicle can be captured for processing. However, the option to *Send only the exposure with best recognition* can be enabled and the other images will be discarded.

### Automatic Transition between Image Profiles

ITSCAM 600 allows to register up to four sets of equipment configurations, called *Profiles*. These settings correspond to image adjustments, framing (zoom and focus) and the Transition conditions between the registered profiles. Switching between profiles is automatic when a time and/or image *Level* value is reached, so it gets optimum image quality in any lighting situation. It is recommended to use one profile for captures with ambient light (daytime) and another for captures with artificial lighting (nighttime). See the Integration Manual for suggested settings for a profile's *Transitions*.

## Information Security

---

Digital Signature and Data Encryption are the information security mechanisms generated by ITSCAM 600 family devices. Digital Signature technology ensures that the information received by the end user can be validated and in the event of an attempt to alter or manipulate the data, it will be promptly identified. Data Encryption ensures that only authorized recipients have access to the images, preventing unauthorized individuals from intercepting or viewing the information.

### Digital Signature

To sign the images there is an asymmetric software encryption mechanism in which it is possible to generate a key automatically, or provide a signing key in PEM or P12 format.

When the ITSCAM 600 converts the captured image into JPEG format, it calculates the hash of the image using the SHA-256 algorithm. This hash is then signed by the RSA algorithm with a key of 1024, 2048 or 4096 bits. In the final image, which will be transmitted over the network, the following fields are appended to the image:

- Sign: RSA hash signature;
- ExpoentRSA: exponent used to calculate the signature;
- ModuloRSA: module used to check the signature;
- Sha256: SHA-256 hash of the image.

To ensure high security, the exponent used is always 65537.

This data is appended, in text format, to the comment field of the JPEG image, defined in the "FF FE" marker according to the ISO/IEC 10918 specification. To check the signature, carry out the following procedure:

1. Remove the texts referring to Sign, ExpoenteRSA, ModuloRSA and hash (Sha256) from the comments field;
2. Calculate the hash of the image with the text specified in "a" removed;
3. Extract the hash from the signature (Sign field) considering the exponent (ExpoenteRSA) and the modulus (ModuloRSA);
4. Compare the hash obtained in "b" with the hash obtained in "c". If it gets the same hash in both cases, the image is authentic. Otherwise, the image has been tampered with.

### Encryption

Encryption is the security mechanism that can be configured for accessing the device and sending data to servers via secure protocols such as *https*, *FTPS* and *SFTP*, which are responsible for data security when *TLS/SSL* encryption is applied. This technology ensures that only authorized recipients have access to the images, maintaining the confidentiality of the data generated by the ITSCAM 600 family devices.



## Plugins Installation

The ITSCAM 600's processing capacity and infrastructure make it possible to run embedded applications in the device's virtualized environment. *Docker* is the virtualization technology used, which allows the third-party application to run in an isolated environment using a *container*.



**The plugin added to the interface will be available with the use of an SD Card formatted via the interface and connected to the ITSCAM 600, the purpose of which is to store the data generated by the plugin.**

Access to the plugin uses a specific port for each type. The installation of plugins requires the relevant license and the file with a *.tar* extension installed on the system via the interface:

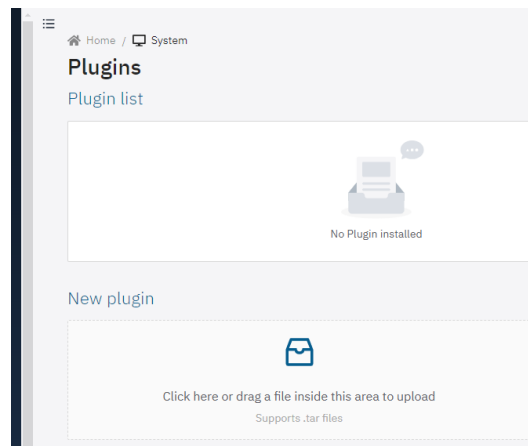


Figure 23 – Web interface for installing plugins

## 7. Licensing

The ITSCAM 600 license includes the hardware of the image capture and processing device, with automatic on-board recognition of the license plate of the vehicles present in the images (OCR) in the old Brazilian and Mercosur standard, in addition to the functionalities presented in this manual. New features and bug fixes are made available in new firmware versions, provided by Pumatronix Technical Support.

## 8. Initial Setup

### Installation Prerequisites

The conditions at the monitoring site, prior to installation, are essential for the operation of the equipment.

If the ITSCAM 600 is to be installed on a side structure, attention must be paid to the restrictions on positioning equipment in places where vehicles circulate. When choosing this type of installation, the equipment should be located at the closest and safest distance from the lane. The height of the equipment must consider the maximum vertical angle of 45° and the possibility of covering. This covering of vehicles caught in the far lane is done by large vehicles traveling in the near lane.



## Equipment Installation Location

To extract the best performance from the ITSCAM 600, it is recommended that it be installed parallel to the lane and with little horizontal inclination. Parts of the image should not be obscured by objects such as trees or vehicles in other lanes.

The zoom and focus adjustment aims to produce images in which the characters on the license plate are approximately 20 pixels high. However, the height of the characters can vary from 15 pixels to 30 pixels, with the best recognition rates corresponding to a height of 20 pixels.

The ITSCAM 600 line can be installed in urban and road environments, and the framing can be adjusted to capture up to three lanes of the road. When installing on the road, the minimum height limits specified for the location must be respected, as must the maximum vertical inclination angle of 45°. Higher angles of vertical inclination generate significant deformations in the images, which implies a reduction in the automatic recognition rate of the license plates of the vehicles captured in the images. The distance from the ITSCAM 600 to the vehicle crossing point varies for models with a CS Mount lens, depending on the lens used. In models with a motorized lens, the applied distance varies from 10 to 50 meters. During nighttime operations, this distance varies according to the model of illuminator device used.

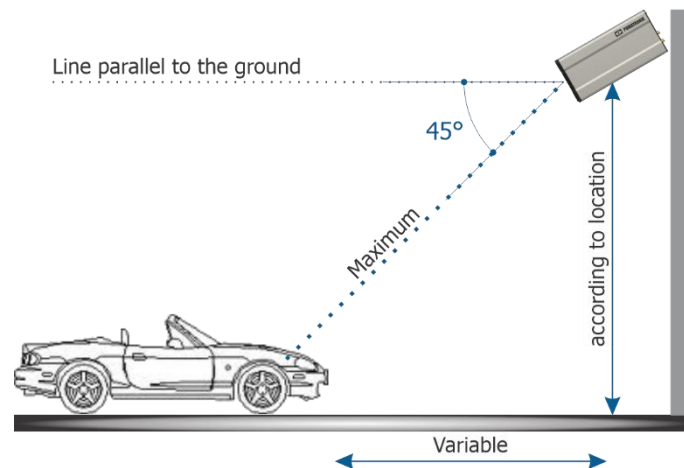


Figure 24 - Side View of the installation



**Installing the ITSCAM 600 without following the stated distances compromises the quality of the images captured and reduces OCR recognition. If the requirements cannot be met at the installation location, it is recommended to consult Pumatronix Technical Support.**



**Illuminator Installation: When using an Illuminator in conjunction with the ITSCAM 600 device, check the product specifications for the minimum and maximum distance that must be observed in relation to the position of the object to be illuminated.**

## Necessary Infrastructure

- DC power supply point (if DC power supply is chosen and not PoE) near the installation point of the equipment;
- Connectivity to the data network near the point where the equipment is installed (based on the chosen mode);
- Sheltered location for cable splices, e.g., junction box, close to the equipment installation point;
- Hole for fixing the protective box bracket;
- Appropriate screws for fixing the ITSCAM 600 protection box to the installation site;

- Availability of an *Auxiliary Configuration Device* (for checking framing and image adjustments), with the Google Chrome browser (version 85 or higher) installed.

## Required Conditions for Installation

To extract the best performance from the ITSCAM 600, installation should be carried out with a low horizontal inclination and avoiding parts of the image being obscured by objects such as trees or vehicles in other lanes.

Check in the Installation and Maintenance Guide how to make the necessary connections.



**Installation Location: In cases where the installation specifications cannot be met, it is recommended to consult Pumatronix Technical Support.**

## Network Interface Parameterization

The ITSCAM 600 has two network interfaces: *ETH1* and *ETH2*\*. In the factory default configuration, the first network interface (ETH1) has the configuration shown and the second network interface (ETH2) is disabled:

ETH1 Port Setup	Default value
IP Address	192.168.0.254
Maintenance IP address	192.168.254.254
Netmask	255.255.255.0

\*The ITSCAM 600 CS and ITSCAM 600 CS AD IOT models only have the ETH1 network interface.



**Connectivity of ITSCAM 600 CS AD IOT (S06L0W1AJP), ITSCAM 600 LM AD IOT (S06L5W1AJP), ITSCAM 600 FHD LM AD IOT(S09L3W1N2AJP) and ITSCAM 600 FHD CS AD IOT (S09L0W1N2AJP) models: Check in [Wi-Fi Network Setup](#) how to configure the Wi-Fi, 4G and 3G network interfaces as they are disabled in the device's factory default settings.**

In situations where the ITSCAM 600's network settings are different from the standard it is advisable to change the settings before physically installing the equipment on site. The changed network setting is saved in the flash memory, but is effectively applied after the device has been restarted. When the change is made via the web interface, the restart is automatic once the change has been confirmed.

The ITSCAM 600 has a recovery IP address (*192.168.254.254*) for cases in which the user changes the IP address by mistake and loses connection with the device. The use of this IP address for access recovery is only available in a point-to-point connection with the device, when connected to the ETH1 port



**The ITSCAM 600 maintenance IP address (192.168.254.254) is deactivated when the primary IP address conflicts with it. Therefore, when manually configuring the device's network interface (Ethernet), values other than the maintenance IP must be applied, as there will be no way to recover the connection in extraordinary situations when the primary IP is lost.**

The most common situations in which the primary and maintenance IP addresses conflict are:

- Primary IP of ITSCAM 600 in the 192.168.254.x range and netmask 255.255.255.0
- Primary IP of ITSCAM 600 in the 192.168.x.x range and netmask 255.255.0.0
- Primary IP of ITSCAM 600 in the 192.x.x.x range and netmask 255.0.0.0
- Netmask set to 0.0.0.0

## Wi-Fi Network Setup



**ITSCAM 600 Connectivity: The Wi-Fi, 4G and 3G network interfaces are disabled in the device's default factory settings.**

- 1) Access the device's web interface with the data entered in the network interface parameterization;
- 2) Go to the *Equipment > Network* menu under the *Wi-Fi* tab;
- 3) Select *Station (STA)* Operation Mode to connect to an existing Wi-Fi network;
- 4) Click on the *SSID* field and the nearby Wi-Fi networks available for connection are listed for selection;
- 5) Select the Authentication Protocol to be used: *Open (without authentication)*, *WEP* or *WPA/WPA2 PSK*;
- 6) Enter the password to access the selected Wi-Fi network;
- 7) Click on the *Apply* button at the top of the page when validating the data entered.

Select the *Access Point (AP)* Operation Mode only when the device is to be used as an access point to an available Wi-Fi network:

- 1) Enter the identification data (SSID), the Country, the Channel and the Authentication Protocol that will be used to distribute the Wi-Fi connection;
- 2) Enter the IP Address and Subnet Mask of the DHCP Server to determine the address range for the devices connecting to the Access point.



**Use an IP address for the DHCP server that is different from the one used to access the ITSCAM 600 device in order to avoid conflicts and malfunctioning of the data network**

## 3G or 4G Mobile Network Setup

Some mobile internet operators require manual configuration of network data:

- 1) Access the device's web interface with the data entered in the network interface parameterization;
- 2) Go to the *Equipment > Network* menu under the *Mobile* tab;
- 3) Click *Enable* and the setting fields will be visible;
- 4) Enter custom data whenever it is necessary to set up operator information. By default, the information is:
  - a. APN: http://[operator name].com.br;
  - b. User: [operator name];
  - c. Password: [operator name];
- 5) Click *Apply* to save the network settings.

## Installation Infrastructure

- 1) Fit the ITSCAM 600 into the protective housing support, leaving the lens as close to the support glass as possible;
- 2) Once the ITSCAM 600 positioning distances have been respected (as indicated in [Equipment Installation Location](#)), attach the protective housing. When fixed to the roof (upside down), the equipment can be configured to Rotate the image by 180° via the web interface;
- 3) Adjust the positioning of the protective housing so that images of the area where vehicles are traveling are captured. If necessary, it is possible to crop the image, selecting only the region of interest (ROI) of the image where the vehicles are actually visible for image generation. With this option, the conversion time to JPEG is improved and does not affect Streams or live viewing;
- 4) Connect the Microfit connector harness to the ITSCAM 600, if DC power or the device's IOs are used:

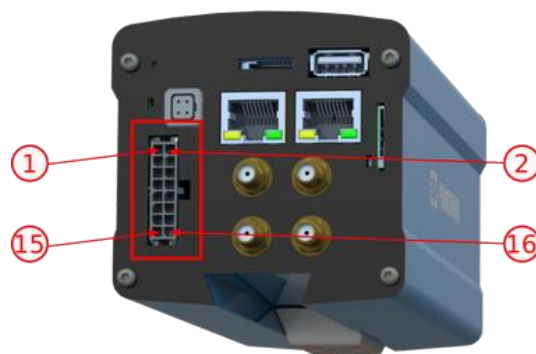


Figure 25 - ITSCAM 600 power supply and signal connector (Microfit)

## 9. First Access

The ITSCAM 600's web interface can be used to quickly check the status of the equipment and the location being captured in the images. However, the equipment must be energized, following the [Electrical Specifications](#). *Auxiliary Configuration Equipment* must be used (for checking framing and image adjustments) with the Google Chrome browser (version 85 or higher) installed.

In addition, the *Auxiliary Configuration Equipment* must be on the same data network as the ITSCAM 600 (with a network configuration compatible with that of the ITSCAM 600). If a point-to-point connection is used, the ITSCAM 600 can be accessed via the maintenance IP address *192.168.254.254*. When entering the IP address of the ITSCAM 600 in the address bar of the *Auxiliary Configuration Equipment's* browser, it must be entered:

<b>User</b>	<i>admin</i>
<b>Password</b>	<i>1234</i>

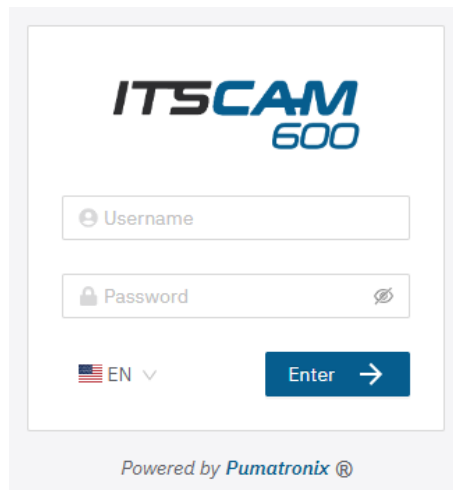


Figure 26 - Login screen

## 10. Care and Maintenance

Certain precautions are necessary to ensure the product's performance and extend its life span.



**Product Risks:** The use of the product presents risks, which are presented in the [Handling Risks](#) section.

### Firmware Update

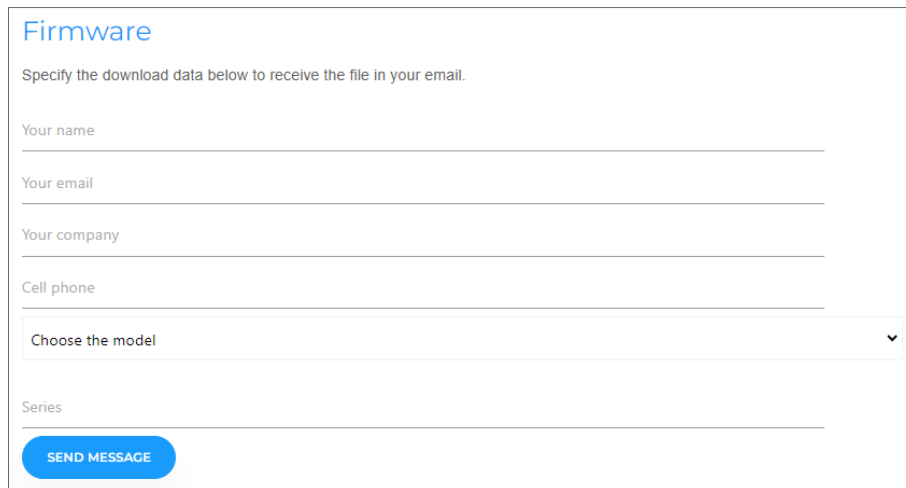
Pumatronix periodically\* provides updates for the ITSCAM 600 with defect corrections and feature additions, by contacting Technical Support on the Pumatronix website. The process of updating the device requires an *Auxiliary Configuration Equipment* to connect to the device and can be done directly through its web interface using one of the web browsers

- Microsoft Edge 109 or higher;
- Google Chrome version 85 or higher;
- Firefox version 21 or higher;
- Opera 25 or higher;
- Safari 8 or higher.

Updating the ITSCAM 600 firmware requires some security measures during the procedure to prevent the file from being corrupted and the ITSCAM 600 device from stopping working:

- 1) Keep the ITSCAM 600 device inactive during the update process, ensuring that it is not requested by any service or other equipment on the network where it is installed;
- 2) Keep the ITSCAM 600 device switched on at all times while the update is running, taking the necessary steps to prevent it from restarting or being switched off.

Request the firmware file by filling in the form available in the *Technical Support* menu on the [Pumatronix](#):



**Firmware**

Specify the download data below to receive the file in your email.

Your name

Your email

Your company

Cell phone

Choose the model

Series

**SEND MESSAGE**

Figure 27 – Firmware Request Form

In case of any questions, please contact Technical Support via e-mail [suporte@pumatronix.com](mailto:suporte@pumatronix.com) or WhatsApp +55 (41) 9203-8327

\*Pumatronix will provide versions with bug fixes or security improvements for up to 3 years after the product is discontinued and removed from the portfolio.

## ITSCAM 600 Firmware Update via Web Interface

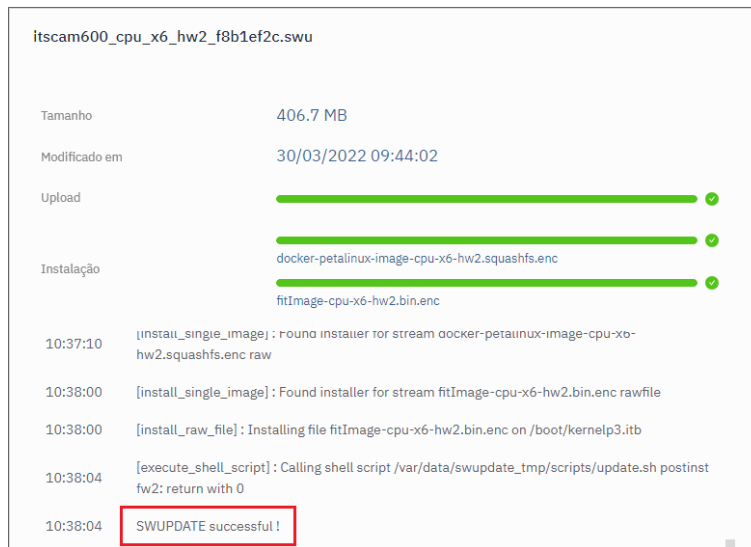
- 1) Download the firmware file received by e-mail (which starts with the name itscam600 and has the extension .swu) to the *Auxiliary Configuration Equipment* that will be used to connect to the ITSCAM 600;
- 2) Connect the *Auxiliary Configuration Equipment* on the same data network as the ITSCAM 600;
- 3) Open the *Auxiliary Configuration Equipment* browser;
- 4) Enter the IP address of the ITSCAM 600 (the default IP address is 192.168.0.254 and point-to-point connections can be made via 192.168.254.254);
- 5) Enter username and password;
- 6) Go to the *System > Updating* menu at ITSCAM 600 web interface;



- 7) Select or drag the firmware file (the update starts automatically and takes place in three stages, which are signaled by the progress bar);
- 8) Monitor that the *Upload* reaches 100%, and then the Installation, making sure that the device is not restarted or disconnected and that it is not being requested by any service or other equipment on the network during the process. This security is necessary when carrying out

this procedure to prevent the update from corrupting the firmware and the equipment from stopping working;

- 9) Check the *SWUPDATE successful!* message, which indicates that the installation is complete



- 10) Click on the *Restart ITSCAM 600* button;
- 11) Wait for the device to restart so that the new firmware changes are applied;
- 12) Finish the update procedure by checking the firmware version indicated in the top bar of the page.

## (Restricted Procedure) ITSCAM 600 Recovery by Factory Reset



**Loss of Information: All files, images and settings stored on the ITSCAM 600 are lost when performing the *Recovery* procedure.**

The ITSCAM 600 recovery procedure requires an SD card with a minimum capacity of 4 GB that can be formatted.

- 1) Download the ITSCAM 600 recovery file (file with .tar extension) (contact Pumatronix Technical Support for access to the file);
- 2) Format the SD card using FAT32;
- 3) Unzip the recovery file onto the formatted SD card;
- 4) Disconnect the ITSCAM 600 from the power supply;
- 5) Insert the SD card into the ITSCAM 600;
- 6) Keeping the RESET button pressed, energize the ITSCAM 600;
- 7) Release the RESET button when the status LED is green;
- 8) Check the status LED flashing red, which indicates that the recovery process is in progress;
- 9) Check the status LED flashes green, which indicates that the recovery is complete;
- 10) Switch off the ITSCAM 600;
- 11) Remove the SD card from the slot and turn the device back on.

## Updating Analytics Licenses

Licenses for the *Classifier* and OCR image analytics libraries can be updated directly via the web interface. When receiving the .lic file provided by Technical Support, access the *System > Licenses* menu in the interface and drag it to the indicated region:



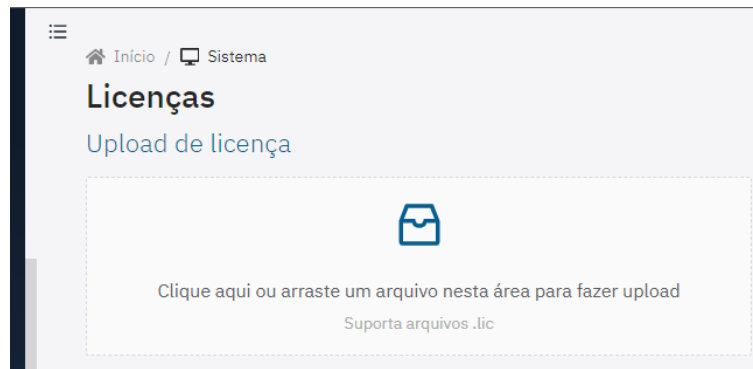


Figure 28 – Web interface for updating licenses

## Preventive Maintenance of the ITSCAM 600 Device

The ITSCAM 600 image capture and processing device must provide artifact-free images. However, if there is any dirt on the outside surface of the lenses or housing, the cleaning procedure should be carried out:

- 1) Spray lens cleaning liquid on the surface of the lenses or water on the glass of the protective case, so that excess dirt adhering to the surface can be removed.
- 2) Use a soft, lint-free cloth to remove dirt, moving the cloth in one direction only
- 3) Wipe with a dry cloth to finish cleaning and do not use force as this can damage the surface.

## 11. General Warranty Conditions

Pumatronix ensures the product against any defect in material or manufacturing process for a period of 1 year from the date of issue of the invoice, provided that, at the discretion of its authorized technicians, it is found to be defective under normal conditions of use.

The replacement of defective parts and the execution of services resulting from this Warranty will only be carried out at Pumatronix Authorized Technical Assistance or a third party expressly indicated by Pumatronix, where the product must be delivered for repair.

This Warranty will only be valid if the product is accompanied by a *Maintenance Form* that has been duly completed and has not been erased and is accompanied by an Invoice.

### Situations in which the Product loses its Warranty

- 1) Use of software/hardware not compatible with the specifications in the Manual;
- 2) Connecting the product to the mains outside the standards set out in the product manual and installations with excessive voltage variation;
- 3) Infiltration of liquids from opening/closing the product;
- 4) Damage caused by natural agents (electric shock, flooding, salt spray, excessive exposure to climatic variations, among other factors) or excessive exposure to heat (beyond the limits established in the Manual);
- 5) Use the product in environments subject to corrosive gases, excessive humidity and/or dust;
- 6) Show signs of tampering with security seals;
- 7) Show signs of opening and modification by the Customer in places of the product not authorized by Pumatronix;
- 8) Damage caused by accidents/falls/vandalism;
- 9) Display tampered and/or removed serial number;



- 10) Damage resulting from the Customer's transportation and packaging of the product in conditions incompatible with it;
- 11) Misuse and not in accordance with the Instruction Manual.

## 12. Privacy Policy

---

In compliance with the General Data Protection Law (LGPD) - Law No. 13709, dated August 14, 2018, this product has programmable functions for capturing and processing images that may infringe the LGPD when used in conjunction with other equipment to capture personal data.

The equipment does not collect, use or store personal information, whether sensitive or not, for its operation.

Pumatronix is not responsible for the purposes, use and handling of the images captured, and control of the information and ways of operating the product are the sole decision of the user or purchaser of the product.





[www.pumatronix.com](http://www.pumatronix.com)

