



## **CAM-TVI2.0**

### **User's Manual**

ver. 1.0

**Hermetic wireless image transmission  
kit for TVI 2.0 cameras in ISM 5.8 GHz**



Thank you for choosing the CAM-TVI2.0. It is a new line of wireless systems in analog HD technology. The system is designed for wireless, analog transmission of video and sound in professional CCTV systems, wherever the need is of high-quality, stable video connection high resolution TVI technology

## Table of contents

|   |           |
|---|-----------|
| <b>1.Safety and maintenance tips.....</b>         | <b>3</b>  |
| <b>2.R&amp;TTE declaration of conformity.....</b> | <b>4</b>  |
| <b>3.Basic Information.....</b>                   | <b>5</b>  |
| Specification:.....                               | 6         |
| <b>4.Quick Start.....</b>                         | <b>7</b>  |
| Channel settings (dipswitch CHANNEL).....         | 8         |
| a)Terminals / controls:.....                      | 9         |
| RECOMMENDATIONS.....                              | 9         |
| <b>5.General warranty terms.....</b>              | <b>10</b> |
| General warranty terms.....                       | 10        |
| The warranty does not cover.....                  | 10        |
| Declaration of conformity.....                    | 11        |
| Device disposal.....                              | 12        |

The contents of this manual comprise proprietary information of CAMSAT and are intended only for use by purchasers of the equipment described herein. In order to copy or use any part of this manual for purposes other than the application or maintenance of the described equipment, it is required that the customer should first obtain a written consent from CAMSAT.

# 1. Safety and maintenance tips

In order to safely use our device, you should read and observe the tips contained in this instruction manual.

## Safety symbols



The warning about a potential electric shock due to high voltage inside the product's casing.



Note: Essential information



Note: This device can operate within the frequency and power ranges which might be contradictory to laws applicable in selected countries.

Urządzenia nie wymagają żadnych dodatkowych czynności konserwacyjnych. Zalecamy umieszczenie ich na trwałej konstrukcji i takie poprowadzenie przewodów zasilania, aby nie mogły być przypadkowo uszkodzone przez operatora lub osoby postronne.



## Safety tips

This devices have been designed and manufactured with the utmost care for the safety of its installers and users. For safety reasons, observe all the guidelines in this manual and peripheral devices' manuals, such as the PC or IP camera.

Before installing the devices, carefully read the entire instruction manual.

Ensure safe working conditions. The user's own modifications of the device will prevent its legal use and render the warranty null and void. The devices have passed through the mandatory compliance assessment and it meets basic requirements in the European New Approach Directives. The product is CE-marked.



The device is suitable for use in the European Union.



Do not approach the device when it is on at the distance below 30 cm.

## 2. R&TTE declaration of conformity

This device meets requirements of the European directive on radio equipment, telecommunications terminals as well as on their mutual identification and compatibility (Directive 1999/5/CE of the European Parliament and the Council of Europe, March 1999).

The CAM-TVI2.0 module is compliant with provisions related to the safety in using electrical devices. Observe the following guidelines:

- the power outlet must be earthed in compliance with applicable provisions,
- before transferring the device or performing any other technical operations, disconnect the power supply,
- do not use any damaged or worn power supply cables, as they pose a threat to the user's safety,
- installation works must be performed by sufficiently qualified technicians, do not use the device in locations where flammable substances are kept,
- secure the device so that children or unauthorised persons should not gain access to it,
- make certain that the device has been reliably fixed,
- the device is off only after disconnecting its power supply cables and the cables between it and other devices,
- if the device is transferred to a room where the temperature is higher than where it has previously been kept, water vapour may condensate inside its casing, which will prevent its proper use. Wait until the condensed water evaporates.

### Distances and interferences

1. The transmission distance may vary, depending on the frequency, environment, radio waves, buildings, weather conditions, etc.
2. When the transmitter is near such equipment as the TV set, R-LAN wireless network, another transmitter, or when it is placed between other radio devices, then the video stream may be interrupted or the devices might even lose the connection. If this occurs, increase the distance between the interrupted devices and the transmitter.
3. The signal reception may vary, depending on the transmitter's working height and angle. If the signal reception is not stable, optimise the antenna settings.
4. Meteorological radars operating within the frequency ranges of 5,250-5,350 MHz and 5,650-5,850 MHz have the highest priority. These radars can interrupt the device operation or even prevent it entirely

### Warning

The antennas used for the transmission from this transmitter must be installed according to the instruction manual and they must be placed at least 30 cm from all persons. The transmitter is not compatible with another antenna nor transmitter.



### 3. Basic Information

The CAM-TVI2.0 device is intended for wireless transmission of an TVI video signal through a radio link in the ISM 5.8 GHz band. It supports 4 channels in the CE frequencies ranging from 5725 MHz to 5875 MHz, and additional 12 channels in the frequencies from 5325 MHz to 5725 MHz that are intended for operation in some non-EU countries.

**The system enables camera image transmission in the following standards:**

- HD-TVI 2.0Mpix (1080p)
- HD-TVI 1.3Mpix (720p)

**Package contents:**

- Video/Audio transmitter with an integrated antenna
- Video/Audio receiver with an integrated antenna
- Zip ties
- User Manual and Declaration of Conformity

#### **Before you begin**

Before you proceed to install the unit on the mast: Check if the device has not been damaged in transportation Select the right location for installation to ensure a full line of sight for the antennas.

Materials and obstructions such as glass, a tree or walls cause significant attenuation of the microwave signal. It is recommended to install the device 3 metres above the highest obstruction in the transmission route. Check the channel settings. The transmitter and the receiver must be set to the same channel. If the settings are not the same, please select them as specified in the table below.

## Specification:

|                              |  |
|------------------------------|--|
| Video standard               | TVI (TurboHD) video standard, TVI 2Mpix (1080p) and 1.3Mpix (720p) cameras   |
| Range                        | over 500 m   |
| Operating frequency          | The frequency of CE from 5725 MHz to 5875 MHz. Frequencies for some countries outside the EU from 5350 MHz to 5875 MHz |
| Bandwidth                    | 20Mhz  |
| Number of operating channels | all: 16, CE EU: 4  |
| Transmitting power           | CE 25 mW (14 dBm) Maximum power in the EU (CE)   |
| Antenna                      | Antenna, directional aerial, 45 ° angle  |
| Audio                        | No audio   |
| OSD control                  | No   |
| Video                        | BNC 1Vp-p (75 Ω)   |
| Receiver sensitivity         | -85 dBm  |
| Modulation                   | FM   |
| Power                        | Transmitter: 12-24V AC/DC/800mA, Receiver: 12-24V AC/DC/800mA  |
| Fastening                    | Clips or mast suspension   |
| Working temperature          | -20 ° C ÷ 55 ° C   |
| Dimensions                   | 230 mm x 132 mm x 45 mm  |
| External use                 | IP 65  |
| Warranty                     | 2 years  |
| Compliance with regulations  | CE, RoHS   |

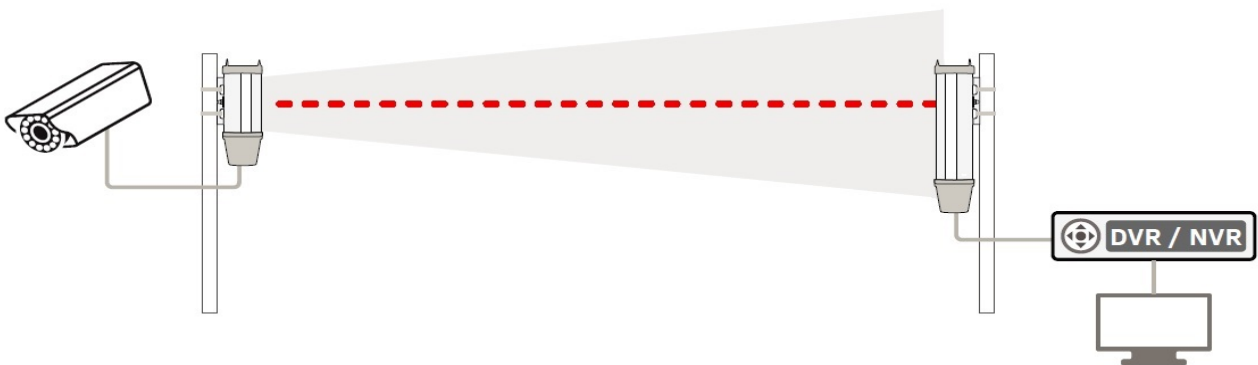
## 4. Quick Start

Secure the device to a mast by using UV zip tie fasteners, and direct the antenna directly to the reception point. Note: The antenna of the transmitter must be in a line of sight with the antenna of the receiving unit (the antennas must be directed onto each other as shown in the drawing below).

The units should be powered on in turns, i.e. one after the other. It is not recommended to power on all transmitters at the same time. Begin by activating the first transmission link, and only once it is fully operational proceed to activate another link in the same way. This will facilitate activating and selecting spur operating channels.

Connect the video cables to the BNC or UTP port and the audio cables (only for PAL/NTSC) as specified in the description. Set the required channel as per the table. Antenna polarisation (vertical installation) and channel number must be the same for both interconnected transmitter-receiver devices.

Set the required channel as shown in the table and select the same channel for the transmitter and the receiver.



Length of coaxial video cable shouldn't be longer than 50m.

If you want to use an 100ohm UTP cables you should apply high quality balun transformer for impedance matching.

Please remember that any transformer or converter will reduce signal quality!

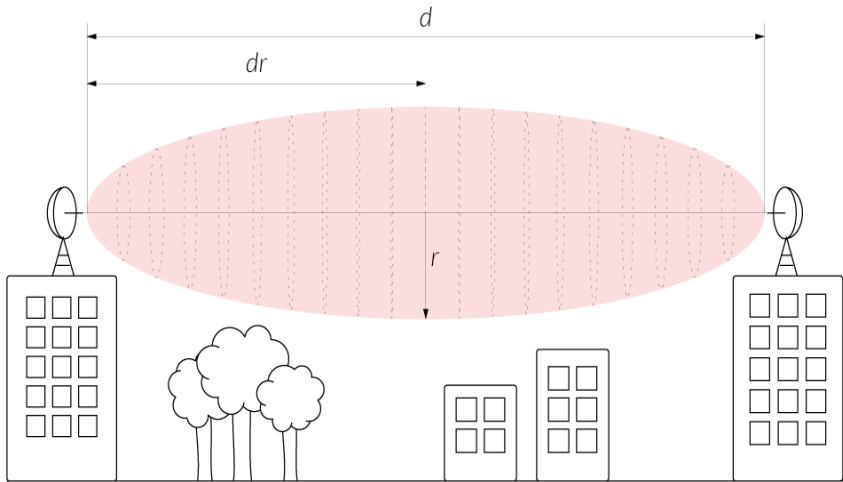
Channel settings (dipswitch CHANNEL)

Note: CAM-TVI2.0 enables using special channels and frequency ranges depending on the country or region! Please follow the standards used in your country. Do not use these settings if you are not sure what standards are used in your region.

| FREQUENCY CHANNEL  |                             |  |  |                             |  |  |                             |  |  |                             |  |   |                             |  |  |                             |  |
|--|-----------------------------|--|--|-----------------------------|--|--|-----------------------------|--|--|-----------------------------|--|---|-----------------------------|--|--|-----------------------------|--|
| 5855 MHz   |                             |  | 5820 MHz   |                             |  | 5780 MHz   |                             |  | 5745 MHz   |                             |  | 5715 MHz  |                             |  | 5680 MHz   |                             |  |
| <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>1</b><br>EU     |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>2</b><br>EU     |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>3</b><br>EU     |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>4</b><br>EU     |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div>  | Kanal<br><b>5</b><br>nonEU  |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>6</b><br>nonEU  |  |
| 5645 MHz   |                             |  | 5610 MHz   |                             |  | 5575 MHz   |                             |  | 5540 MHz   |                             |  | 5505 MHz  |                             |  | 5470 MHz   |                             |  |
| <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>7</b><br>nonEU  |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>8</b><br>nonEU  |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>9</b><br>nonEU  |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>10</b><br>nonEU |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div>  | Kanal<br><b>11</b><br>nonEU |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>12</b><br>nonEU |  |
| 5435 MHz   |                             |  | 5400 MHz   |                             |  | 5365 MHz   |                             |  | 5330 MHz   |                             |  | <div>CHANNEL</div> <div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>1 2 3 4 5 6 7 8</div></div> |                             |  |  |                             |  |
| <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>13</b><br>nonEU |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>14</b><br>nonEU |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>15</b><br>nonEU |  | <div><div></div><div></div><div></div><div></div></div> <div>1 2 3 4</div> | Kanal<br><b>16</b><br>nonEU |  |   |                             |  |  |                             |  |

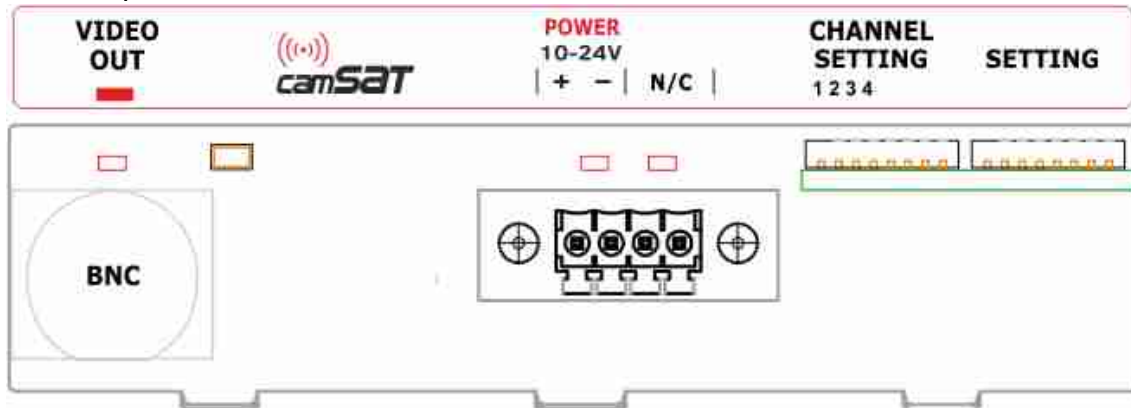
CAUTION

In order to ensure a stable radio connection, the antennas must be in a line of sight. A 100% line of sight must also be provided in the first Fresnel zone. This means that for the frequency of 5.8 GHz and the distance of 600 m, an unobstructed space for a radio beam in the radius of at least 3.9 m (r in the dr point) must be provided.

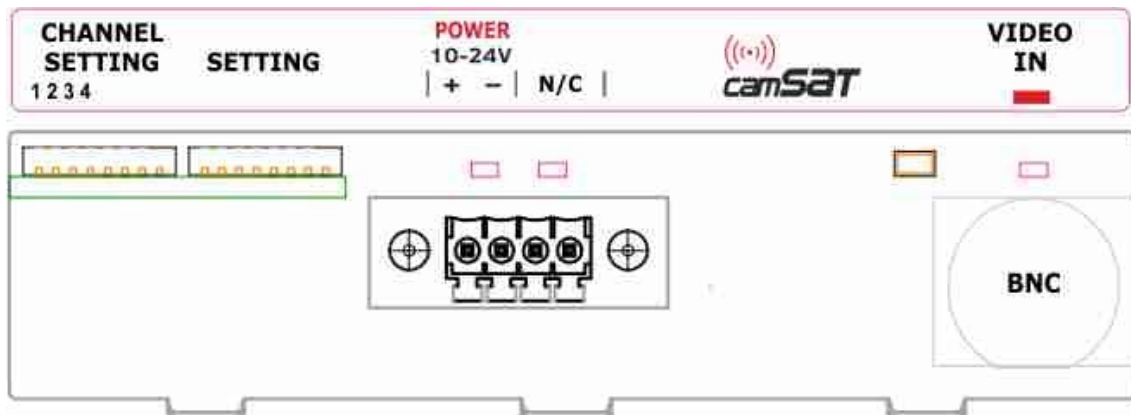


## a) Terminals / controls:

Receiver panel:



Transmitter panel:



## RECOMMENDATIONS

1. Larger systems composed of several sets should be run and set one after the other, ie. Power connection of next set should take place only after the precise alignment and the start of the previous set.
2. Due to the generation of noise it is not recommended to use low-cost and low-quality switching power supply other than the one dedicated by manufacturer, for example: CAMSAT ZS12 / 1A.
3. It is not recommended to connect the transmitter and receiver to a common power supply. It is allowed to connect several transmitters to one power supply and use a separate power supply for multiple receivers.
4. It is recommended to mount the receivers at least 6-7 m away from other wireless digital systems such as GSM, WiFi, CDS-502
5. Use a high quality coaxial cables for video signal transmission.



## 5. General warranty terms

### General warranty terms

The device is supplied with a standard warranty card. The manufacturer declines all other warranties. In no case the producer is liable for any damages (including, without limitation, consequential, special, or incidental damages, or damages for loss of profits, business interruption, loss of business information or other pecuniary loss) arising out of the use or inability to use this product, even if the manufacturer has been advised of the possibility of such damages.

Camsat grants a 24 month warranty for the CAM-TVI2.0 transmission kit

1. If the device is not be operating properly, make sure, before returning the device for servicing, that everything was done according to the operating manual
2. If the faulty device is returned or send in for repairs, a thorough written description of the signs of the device's faulty operation, including the operating environment and the manner in which they appear, should be enclosed
3. The prerequisite for exercising the warranty rights is enclosing the proof of purchase, including the purchase date and description of damage, with the faulty device
4. Warranty repairs cover only faults occurring due to reasons inherent to the sold device
5. Warranty repairs will be carried out in the shortest possible amount of time not exceeding 14 days, counting from the moment of accepting the device for servicing. If parts need to be imported, the repair deadline may be extended. After the repairs have been carried out, the warranty period will be extended by the repair time
6. The warrantor is not responsible for the loss of the device configuration settings resulting from device repair or malfunction
7. The warrantor may refuse to carry out warranty repairs or terminate the warranty if it is determined that the seals placed on devices or components comprising it are damaged
8. All remarks concerning the service and resulting from the warranty are made only in the service of the Camsat company.

### The warranty does not cover

1. Mechanical damage of devices and failures occurring due to fortuitous events, such as substances.
2. Damage occurring due to: improper handling of the device, using the device against its intended use or the operating manual, customer's negligence, improper use
3. Claims on account of the technical parameters, if they are consistent with those indicated by the manufacturer
4. Marks created during usage, such as scratches, soiling and localised wear are not covered by warranty. In cases not regulated by the terms of this warranty sheet, the appropriate provisions of the Civil Code are applicable.

Warranty does not cover the traces generated during operation as scratches, dirt, wipe.

# Declaration of conformity



## DEKLARACJA ZGODNOŚCI DECLARATION OF CONFORMITY

Niżej podpisany, reprezentujący firmę:  
*The undersigned representing the manufacturer:*

**CAMSAT Przemysław Gralak**  
ul. Ogrodowa 2a, 86-050 Solec Kujawski  
Polska/Poland

niniejszym deklaruje z pełną odpowiedzialnością, że urządzenie:  
*herewith declares under our sole responsibility that the product:*

Nazwa urządzenia: *Hermetyczny, bezprzewodowy zestaw przesyłu obrazu dla kamer TVI w paśmie ISM 5,8 GHz*

Product name: *Hermetic wireless image transmission kit for TVI cameras in ISM 5.8 GHz.*

Typ: **CAM-TVI2.0**  
Model:

*jest dopuszczone do pracy na terenie EU i jest zgodne z zasadniczymi wymaganiami oraz innymi stosownymi postanowieniami dyrektywy 1999/5/WE*  
*is allowed to work in EU and it is in conformity with the provisions of the following 1999/5/EC directives:*

| Wymagania<br><i>Essentials requirements</i>  | Zastosowane normy<br><i>Applicable standards</i>     | Ocena<br><i>Result</i>        |
|--|--|-------------------------------|
| Kompatybilność Elektromagnetyczna – art.3.1b<br><i>Electromagnetic compatibility</i>           | ETSI EN 301 489-1 V1.6.1<br>ETSI EN 301 489-3 V1.4.1 | Zgodność<br><i>Conformity</i> |
| Efektywne wykorzystanie Zasobów częstotliwości – art.3.2<br><i>Effectively RF spectrum use</i> | ETSI EN 300 440-1 V1.4.1<br>ETSI EN 300 440-2 V1.2.1 | Zgodność<br><i>Conformity</i> |



Osoba odpowiedzialna:  
*Name of responsible person*  
Stanowisko:  
*Position*  
Podpis/Signature

**Przemysław Gralak**  
właściciel/owner

Miejscowość i data:  
Solec Kujawski 15.05.2017  
*Place and date*



Hereby, CAMSAT Gralak Przemysław declares that the product series CDS-6IPeco meets the essential requirements and other relevant provisions of Directive 1999/5 / WE. The device is CE marked, which indicates compliance with the guidelines of the Directive. The device can be sold and used for transmission in the 5 GHz band. The frequency range can be adjusted using the settings in accordance with legal regulations in every country. It is your responsibility to be adequate settings of the complying with the applicable laws in the country or region.

## Device disposal



The mark presented to the left informs that this electrical or electronic device, after its use has ended, cannot be thrown together with household refuse. The device should be delivered to a specialised collection point. Detailed information about the closest collection point is available from local authorities.

The proper disposal of this device allows for preserving precious resources and avoiding the negative impact on health and environment, which may be endangered if the waste is handled improperly. Improper waste disposal is subject to penalties provided for in the appropriate regulations.

Producer  
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