

«BIC-INFORM» Ltd

Russian Classification of Production 43 7292

PAN-AND TILT UNIT

PTR-500-Mx

OPERATION MANUAL

Saint Petersburg
2014

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This operation manual is destined to acquaint the staff of the planning, installation and exploiting companies with the specification, structure and operating, installation diagrams and connection layout of the pan-and-tilt unit to provide its proper usage during its operation life.

1. FUNCTION

- 1.1. The pan-and-tilt unit PTR-500-Mx (below - Unit) is destined for placing an IP-camera MOBOTIX M-15 (below – IP-camera) on it and allows remote control of the IP-camera, changing its speed and its position in two axes.
- 1.2. The unit PTR-500-Mx is designed for connection to a LAN. It is equipped with a built-in power adapter PoE, which supports the IEEE 802.3 af Standard, and is used for placing a surveillance device MOBOTIX on it.
- 1.3. The unit is a part of a video surveillance system and meets the Russian State Standard P 51558-2008.
- 1.4. The unit is designed for operating out of doors in macroclimate areas with temperate or cold climate. It has a climate implementation YXJI1.1 according to the Russian State Standard 15150-69, but it can work by the environment temperature $-35^{\circ}\text{C} \sim +50^{\circ}\text{C}$ and relative humidity up to 98 % by the temperature $+25^{\circ}\text{C}$ and below without moisture condensation.
- 1.5. **ATTENTION: THE UNIT IS NOT TO USE IN THE AREAS WITH EXPLOSIVE MIXTURES ACCORDING TO THE RUSSIAN STATE STANDARD P 51330.0-99.**
- 1.6. By the degree of protection of the housing against access to dangerous parts, penetration of outward hard objects and water penetration the pan-and-tilt unit belongs to the IP66 protection class according to the Russian State Standard 14254-96.

2. SPECIFICATION

Rotation angle, degree:

- horizontal..... 360 continuous
- vertical From +90 till -90

Rotation speed, degree/s, no more than:

- vertical 180
- horizontal..... 180

Number of location pre-settings..... 64

Control protocols..... Pelco D, Pelco DE

Positioning error, degree, no more than..... $\pm 0,5$

Max. axial load, kg..... 3

Max. moment of force for the pan-and-tilt unit at the vertical plane, kgs*m..... 0,25

Max. moment of force for the pan-and-tilt unit at the horizontal plane, kgs*m 0,25

Interface type..... Ethernet / USB

Number of addressed receivers on one transmission line, no more then, piece..... 63

Supported connection speed via Ethernet, with function of Auto-negotiation, Mb/s..... 10 / 100

Supported Ethernet Standard protocols..... Auto-MDI/MDI-x; Self-polarity

Supply voltage DC, V..... $24 \pm 10\%$

Power consumption, W, no more than..... 75

Parameters of the built-in PoE source:

- supported Ethernet Standard protocol..... IEEE 802.3 af
- W / a port, no more than..... 8,0

Acoustic noise level of the running unit, dB, no more than..... 50

Operating temperature, $^{\circ}\text{C}$:

- Standard model..... $-35 \sim +50$

• «northern» model.....	-50 ~ +50
Storage temperature, °C:.....	-55 ~ +70
Dust and moisture protection degree of the housing.....	IP66
Dimensions (depth x width x height), mm.....	171 x 112 x 245
Weight, kg, no more than.....	3,7

3. DELIVERY SET

Pan-and-tilt unit PTR-500-Mx (Standard 4372-008-48017748-2014), with connection cables	- 1 piece,
Fixing bolt set	- 1 set,
Certificate ИЮЖК.424311.008-01 ПС	- 1 piece
Operation manual ИЮЖК.424311.008 РЭ	- 1 piece

4. STRUCTURE AND OPERATION OF THR UNIT

4.1. The unit includes the following main components:

- 4.1.1. step motors (for panning and tilting), which provide setting the prescribed direction for the optical axe of the IP-camera installed on the unit's turntable,
- 4.1.2. an operating device with a telemetric receiver for providing remote control of the pan-and-tilt unit, according to the computer system configuration,
- 4.1.3. a smart heating system for an accident-free start of the unit,
- 4.1.4. a build-in voltage regulator 12 V for supplying the IP-camera (or an additional device installed together with the IP-camera inside the camera housing, for example a video transmitting equipment).

4.2. The operating device with a bilingual setting menu (Russian and English) supports the unit working via Pelco D-, Pelco DE-protocols and the IP-camera control.

4.3. The unit can enroll 64 pre-settings (prescribed directions for the optical axe of its turntable) to the memory through the control channel.

4.4. The unit is a component of a CCTV system which includes this pan-and-tilt unit, an IP-camera and a remote control device working via Ethernet / USB - interface. At the commands of the control device and using the pre-settings the unit directs the IP-camera on the watched object remotely.

4. PROPER USE OF THE UNIT

5.1. Installation and connection of the unit at its workplace

ATTENTION: INSTALLING AND CONNECTING THE UNIT CAN BE CARRIED ON ONLY IF THE POWER IS OFF!

ATTENTION: THE UNIT MUST BE CONNECTED IN STRICT COMPLIANCE WITH THE CONNECTION LAYOUT OF THE ANNEXATION C!

ATTENTION: IF THE SUPPLY VOLTAGES EXCEED THE LEGITIMATE VALUES, IT CAN CAUSE DAMAGE TO THE UNIT!

5.1.1. The connection layout for the pan-and-tilt unit is in the annexation C, its overall and fitting dimensions are in the annexation D.

5.1.2. The delivery set of the unit is furnished with a UTP-5E cable connected to the cable input which is placed on the turntable base of the unit (cable No.1) and with two open connectors (a USB-connector and a LAN-connector) which are located structural on the swinging bracket of the unit.

The two connectors are destined for connecting the cables No. 2 and 3 (not supplied) to the installed CCTV system.

5.1.3. Connect the surveillance device (the IP-camera) through the cable connectors of the unit's swinging bracket in accordance with the connection layout (Annexation C) and fasten the camera housing holder to the unit's swinging bracket.

5.1.4. Assignment of the cable No. 1:

«Power supply 24 V»	- Voltage 24V DC for supplying the pan-and-tilt unit.
«TX_D-», «TX_D+», «RX_D-», «RX_D+»	- Ethernet network chain

5.1.5. When installing the unit at its workplace the external cables must be connected to the cable inset and to the power injector which is placed in between the cable inset and the cable No.1 according to the connection layout given in the annexation C.

5.1.6. Switch on the power and make yourself sure that the pan-and-tilt unit is working. Type in the required pre-settings through the control panel or the CCTV system software in accordance with their specifications and operating manuals.

Notes:

1. *After the pan-and-tilt unit is powered on, it runs the self-diagnosis during (10-15) seconds.*
2. *When the pan-and-tilt unit has a temperature below - 15 °C, it will change to the pre-heating mode after powered on. It will be not available for operating for some time. The pre-heating time depends on the temperature and makes from several seconds till 30 minutes.*

5.2. Guidelines to camera cabling

5.2.1. Use a UTP-5E twisted pair cable to transmit the operating signals via Ethernet.

5.2.2. Connect the power supplies with a power cable which provides the transmitting of the required capacity and has a section of the conductors no less than 0,75 mm².

5.2.3. The climate implementation of the input connecting cables must meet the unit's operating conditions.

5.3. Unit's settings

5.3.1. The unit and the IP-camera installed on it are to operate through a digital video surveillance system CCTV.

5.3.2. The system is to set through the «configuration menu».

5.3.3. The opening of the «configuration menu» follows via WEB interface.
The procedure is described in detail in the annexation B.

5.3.4. The commands of the continuous operating – to the left, to the right, up, down, zooming, focusing and iris control – are supported.

5.3.5. The commands of a pre-set working – save, delete and execute – are supported.

5.3.6. An additional command set is supported.

5.3.7. For the Pelco D protocol:

This command can be executed after a pre-setting is called out.

84 AUX-OFF

85 Auto focus on

86 Auto focus off

87 Auto switching of the day/night mode

88 Day mode

89 Night mode

93 Complete clearance of the pre-setting memory

94 System's restart

95 Menu opening

- 96 Scanning off
- 97 Scanning between the first 16 pre-settings with delay 15 s.
- 99 Scanning between the pre-set points

This command can be executed after a pre-setting is saved.

- 84 AUX-ON
- 92 Set the left scanning limit
- 93 Set the right scanning limit

5.3.8. For the Pelco DE protocol (an advanced Pelco D protocol worked out in the «BIK-INFORM»Ltd):

This command can be executed after a pre-setting is called out.

- 71 Scanning between the pre-settings with delay 10 s.
- 72 Scanning between the pre-settings with delay 20 s.
- 73 Scanning between the pre-settings with delay 30 s.
- 75 Slow-speed scanning between points
- 76 Middle-speed scanning between points
- 77 High-speed scanning between points
- 85 Auto focus on
- 86 Auto focus off
- 87 Auto switching of the day/night mode
- 88 Day mode
- 89 Night mode
- 90 AUX-ON
- 91 AUX-OFF
- 92 System's restart
- 93 Complete clearance of the pre-setting memory
- 94 Auto-iris on
- 95 Menu opening**
- 96 Scanning off
- 97 Scanning between the first 16 pre-settings with delay 15 s.
- 98 Auto-iris off
- 99 Scanning between the pre-set points

This command can be executed after a pre-setting is saved.

- 92 Set the left scanning limit
- 93 Set the right scanning limit

6. MARKING AND SEALING

- 6.1. The unit is marked according to the design rules.
- 6.2. The information about the unit: its nomenclature, model, works number – is placed on the housing of the unit.
- 6.3. The marking must be an industrial, readable and long-living one, with the regard for possible chemical corrosion.
- 6.4. The marking must be in form of a single, undivided labeling.
- 6.5. The unit's marking must be raised impressed on the housing of the unit or on a tag in the way to provide its undamaged state during the whole life cycle of the unit.
- 6.6. The unit's housing is sealed by the manufacturer to prevent it from opening.

7. PACKAGING

- 7.1. Each unit in the delivery must be packed in the consumer container – a three-layered corrugated cardboard box with additional tightening inserts. The units in the consumer containers must be packed in the industrial containers – wooden boxes according to the Russian State Standard 5959-80. Free spaces

between the box walls and the consumer containers must be filled with foam-rubber inserts to provide the units with an additional protection against load impacts when transporting.

7.2. It is allowed to pack max. four units put in the consumer containers in one industrial container.

8. TRANSPORT AND STORAGE

- 8.1. The unit can be transported exceptionally industrially packed, in covered wagons and motor vehicles, in holds of the river transport and pressurized plane and helicopter cabins by temperature within the limits of $-60^{\circ}\text{C} \sim +50^{\circ}\text{C}$ and relative humidity up to 98 % by temperature 25°C .
- 8.2. The warning marking on the industrial package must be followed at every step of good's passage from the consignor to the consignee.
- 8.3. The unit's transport in a consumer container is allowed at every kind of passenger traffic as a hand luggage only.
- 8.4. It is recommended to store the packed unit in storage rooms by the temperature range given in Part 2, by optimal storage temperature of $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$ and monthly relative humidity up to 80 % by temperature 20°C . The air humidity can briefly rise up to 98 % by temperature 25°C , without moisture condensation, and no longer than one month a year.
- 8.5. There should not be any fumes of acids, alkalis or other chemically active substances, which fumes could cause corrosion, in the storage room.

9. MAINTENANCE

- 9.1. The unit is a nonrepairable and unserviceable one when operating.
- 9.2. The complete repair work and routine maintenance should be made in the service center of the manufacturer.
- 9.3. During the whole life time of 10 years the running unit must be preventive repaired and/or reconditioned by the manufacturer every two years to keep the unit working.

10. RECYCLING

- 10.1. The unit has no substances or ingredients which could be injurious to the environment or human health, so there is no need to take special protective measures when recycling the unit.



Annexation B.

Configuration of the PTR-units via WEB-interface. Version 13.02

**Saint-Petersburg
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Type in the IP-address of the pan-and-tilt unit(default address 192.168.0.93) in the address line of the «Opera» or «Internet Explorer»-browser to open the configuration window.

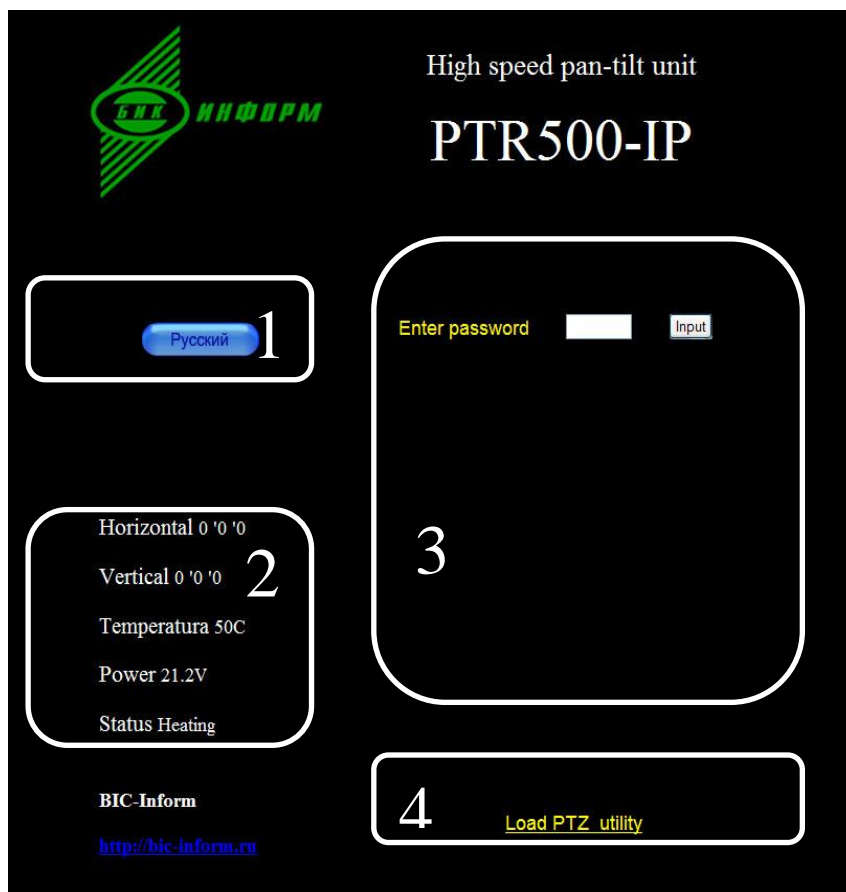


Fig.1. Configuration window.

The configuration window has some fields:

1. The button to change the interface language - Russian/English.
2. The field to show dynamic data.
3. The field for configuration data.
4. The link to the utility for the net operating of the pan-and-tilt unit.

All the subsequent actions and descriptions applies to field 3.

Enter the password to get access to the main menu of the configuration.

The default password is **pass**.

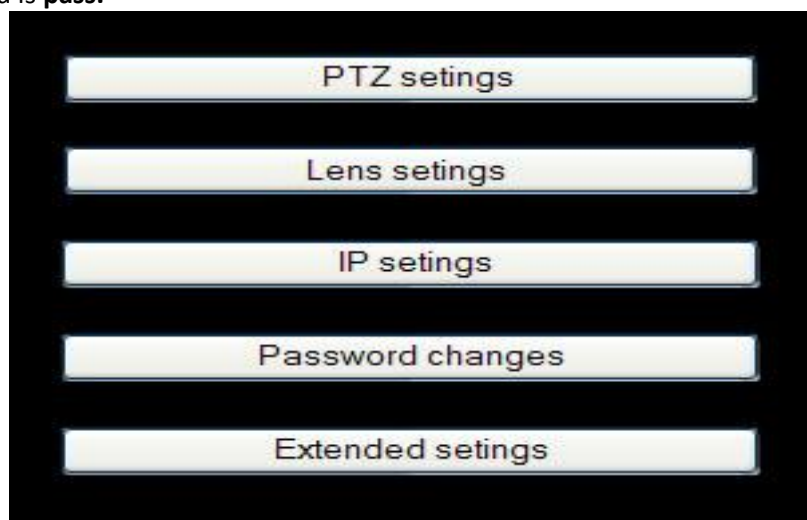


Fig .2. Main menu.

PTZ settings– to set the parameters for the pan-and-tilt unit.

Lens settings - to set the parameters of the motorized lens.

IP settings – to set the LAN parameters.

Password change – to change the password for access to the main menu.

Extended settings – advanced settings.

PTZ-settings.

The screenshot shows the PTZ settings menu with the following items:

- Address unit**: 1
- Input protocol**: Pelco DE
- Rate input port**: 2400
- Output protocol**: Pelco D
- Rate output port**: 2400
- Speed from scale**: No
- Reset coordinates**: Reset
- Load input port**: On
- Limit vertical**: + -90 -
- Save** and **Return** buttons at the bottom.

Fig 3. PTZ-settings.

Address unit – the address of the unit (the address to be typed in through the control panel).

Input protocol – the type of the protocol for operating the pan-and-tilt- unit.

- *Pelco D* – Pelco D protocol.
- *Pelco DE* – Pelco DE protocol (an advanced one worked out by the "BIK-INFORM" Ltd)

Rate input protocol – the rate of the operating port for the pan-and-tilt unit.

- 2400
- 4800
- 9600

Output protocol – the type of protocol for operating the camera.

- *Pelco D* – Pelco D protocol.
- *Pelco DE* – Pelco DE protocol (an advanced one worked out by the "BIK-INFORM" Ltd)
- *CNB* – CNB protocol.
- *Visca* – Visca protocol (Sony).
- *Techwin* – Techwin protocol (Samsung).
- *Hem (None)* – no protocol to operate the camera.

Rate out protocol – the rate of the operating port for the camera.

- 2400
- 4800
- 9600

- 38400
- 57600

Speed from scale – moving speed limitation depending on the image zooming. It works not with all camera models.

- Да (Yes)
- Нет (No)

Reset coordinates – when this option is on, the current coordinates will be considered as the "null" ones. This function applies to the coordinates presented in degrees only.

Load Input port – to control the load (120 Ohm) of the RS485-port for operating the pan-and-tilt unit. If there is the only device on the operating line, the function must be on.

- Вкл. (On)
- Выкл. (Off)

Limit vertical – to limit the max. tilt angle.

- $-5^{\circ} \sim -90^{\circ}$, adjusting step 5° .

Lens settings.

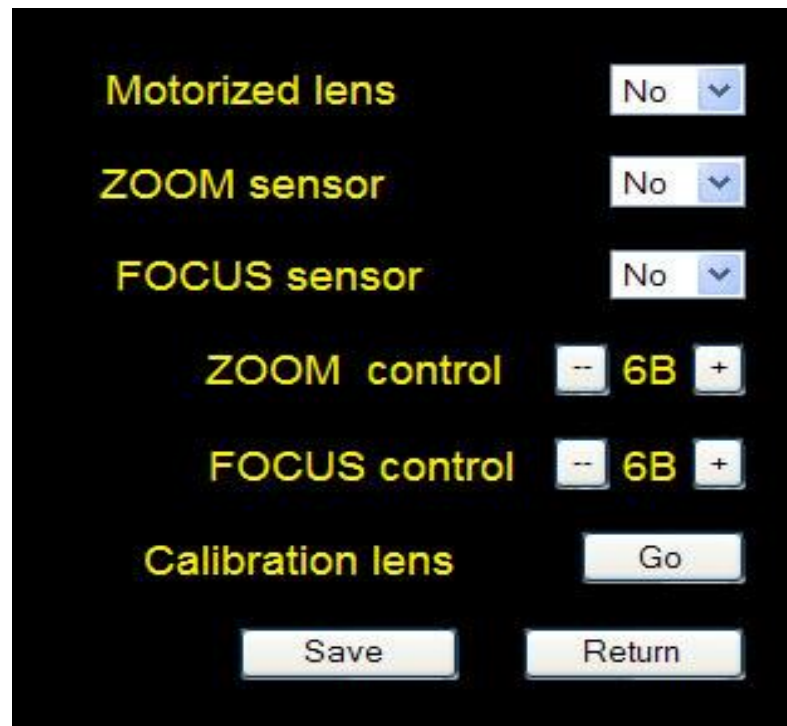


Fig.4. Lens settings.

Motorized lens – to enable/disable the control over the motorized lens.

- Да (Yes) – the control function is on.
- Нет (No) – the control function is off.

ZOOM sensor – to enable / disable the ZOOM sensor of the lens.

- Да (Yes) – the sensor is on.
- Нет (No) – the sensor is off.

FOCUS sensor – to activate the lens focusing sensor.

- Да (Yes) – the sensor is on.
- Нет (No) – the sensor is off.

ZOOM control – operating voltage for the drive of the zoom motor.


- 1V ~ 12 V, adjusting step 1V.

FOCUS control – operating voltage for the drive of the focus motor.

- 1V ~ 12 V, adjusting step 1V.

Calibration lens – to turn on/off the function of the lens calibration. When the function is on, the pan-and-tilt unit will save the border positions of the lens drives. This function is useful for working with preset positions. The execution timeout makes up to 5 minutes. After finishing a message informing about the execution result will be displayed.

IP settings.



IP address 192.168.0.93

IP mask 255.255.255.0

UDP port 6000

Save

Exit

Fig.5. Net settings.

IP address– to change the IP address of the unit.

IP mask – to change the net mask.

UDP Port – to change the UDP port.

Password change.



New password

Confirm

Save

Exit

Fig.6. Password change.

New password – to type in a new password. No more than 8 characters.

Confirm – to confirm the new password. No more than 8 characters.

Save – to save the changed data.

Exit – to go back to the main menu.

Attention! Keep the password safe. The lost password can be recovered by technical support only.

Extended settings.

This option lets change the unit's default settings which need a special heed. Consult your dealer to get the password for access to the additional settings.

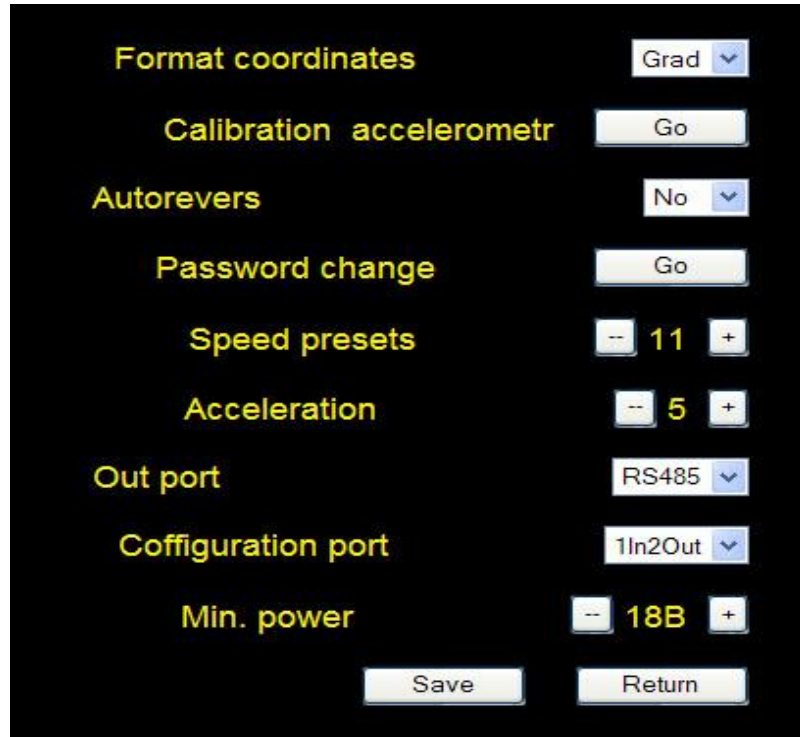


Fig.7. Additional settings.

Format coordinates – the format for displaying the coordinates in the field of the dynamic data.

- *Град (Degree)* – displaying in degrees.
- *Шаг (Step)* – displaying in drive's steps.

calibration accelerometer – the enter into the menu of the accelerometer settings. The function is available for the PTR-5XX models.

Autorevers – the auto reversing for operating the pan-and-tilt unit by its overturn. The function is available for the PTR-5XX models.

Password change– to change the password to enter the section «Дополнительные настройки» ("Additional settings").

Speed preset – a pre-setting moving speed. It depends on the load of the pan-and-tilt unit.

- *1~11, with step1.*

Acceleration – a moving acceleration. It depends on the load of the pan-and-tilt unit.

- *0~5, with step 1.*

Out port– the port type for operating the camera.

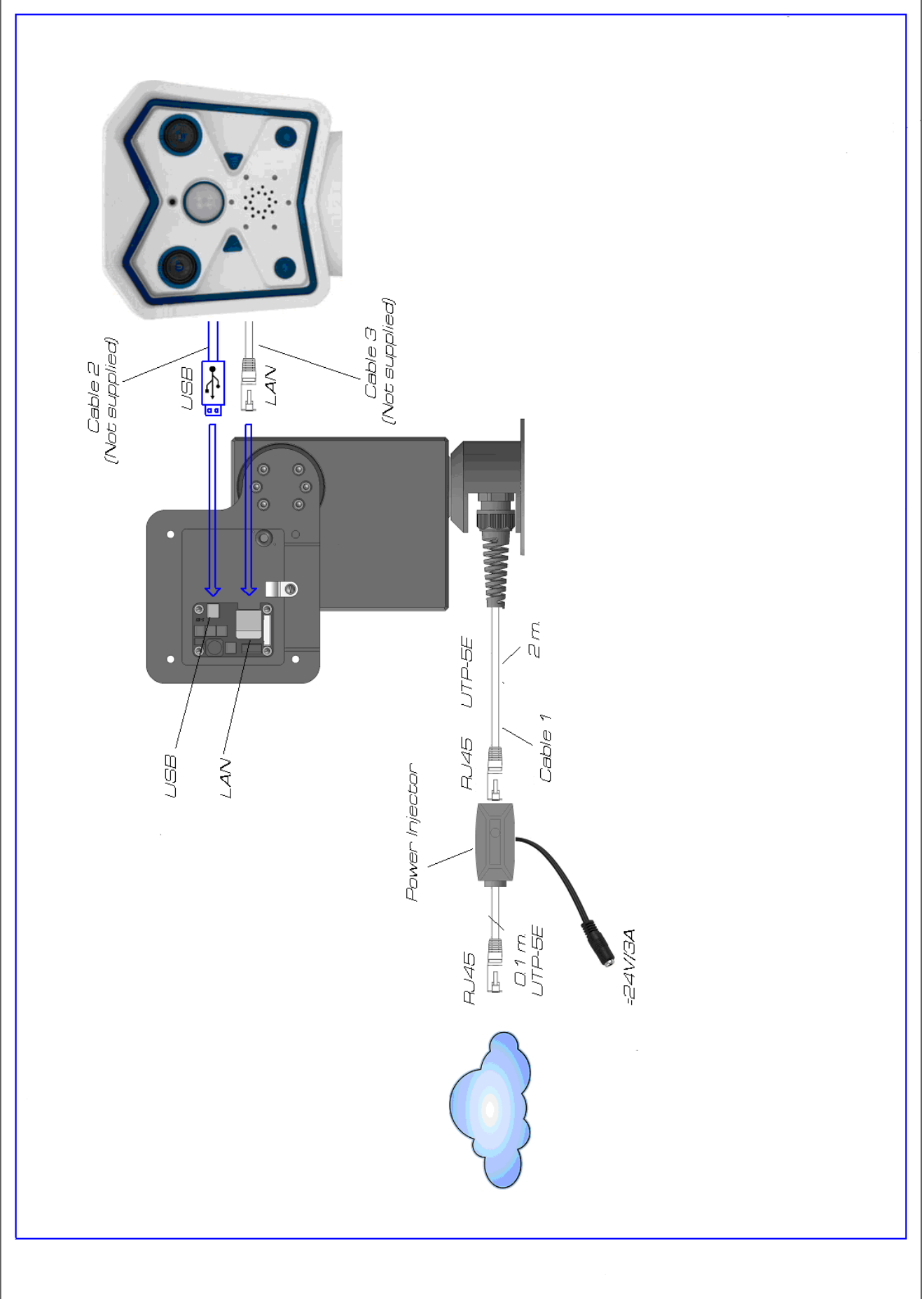
- *RS485* – RS485 port (semiduplex).
- *RS232* – RS232 port (3V). It can be designed as a RS232-port (12V).

Configuration port– to change the function of the port operating the camera.

- *1Bx/2Bых (1I/2O)*– the camera operating mode. The transmitter mode.
- *1Bx/2Bx (1I/2I)* – the pan-and-tilt unit operating mode. The receiver mode. It lets operate the pan-and-tilt unit through the camera.

Min. power – the minimum supply voltage. If it is exceeded, the system will be blocked.

12V ~ 20V, adjusting step 1V (default is 18).



Annexation D

Overall Dimensions and connections

