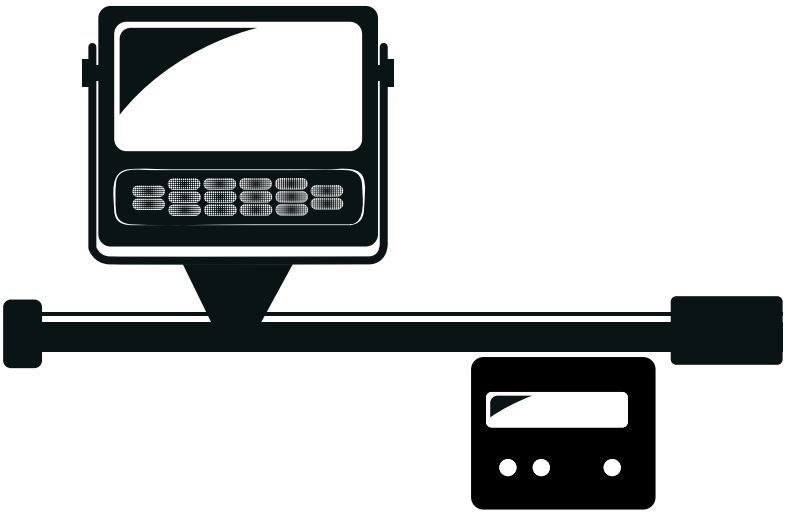
KINOPROKAT

KINOPROKAT
3D-POLAR$^{CP.V3}$ ®

KINOPROKAT 3D-POLAR$^{CP.V3}$
USER MANUAL



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Contents

Introduction

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For the purpose of improvement of the given product, the company preserves the right to upgrade and update user manual without prior written notification. If you faced any problem, please contact KINOPROKAT or the product supplier.

Please take a close look at this user manual before starting the exploitation – it contains technical data on device, step-by-step assembly, set-up and exploitation instructions. KINOPROKAT company is not responsible for malfunction of the device in case recommendations and instructions of this manual are neglected.

1. Technical specification

KINOPROKAT 3D-POLAR$^{CP.V3}$ forms 3D images by projecting polarized light on metallic screen. Polarization module (hereinafter – PM) contains electro-optical LCD polarizer inside and is placed in front of the DCI projector lens. It polarizes each frame for right and left eye individually.

Passive glasses make possible visual perception of the appropriate frames.

KINOPROKAT 3D-POLAR$^{CP.V3}$ is a modern system, which is compatible with all DCI projectors. It allows to demonstrate 3D images on a screen up to 20 meters wide.

Specification:

- PM active surface—234x139 mm;
- polarization—circular;
- power supply —100-240V AC 50-60 Hz;
- preferable ambient temperature—+19°C;
- PM operating temperature—from +10° to +60°C;
- controller operating temperature—from +10° to +40°C;
- storage/transportation temperature—from 0° to +50°C;
- max lens multiplicity—0,90:1;
- contrast ratio—>100:1;
- light efficiency—18%;
- HFR-ready—yes;
- NOC support—yes;
- max lamp power— 6,5 kW.

Benefits:

- completely automatic system;
- simple installation and setup of the system;
- built-in PM cooling system;
- compatible with all DCI projectors;
- Ethernet control and NOC support;
- warranty term—36 months;
- innovative construction for air filter cleaning and changing.

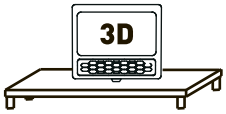
2. Security regulation

Attention! Carelessness may cause damage of the device.

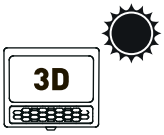
Precautions during device installation

- Device should be placed far from heat sources.

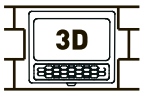
- It is prohibited to use the device in places with high humidity.



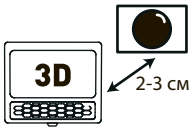
- Device should be placed on a plane and steady surface.



- Device should be protected from direct sunlight.



- Ventilation in operating environment of the device is compulsory.



- Distance between PM and projector lens should be min 2-3 cm.

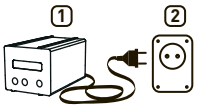
- Make sure correspondent side of PM is placed towards projector, otherwise 3D image won't appear.

- Don't touch polarization glass during PM installation.

Precautions during work with electric current

- Make sure that the socket for power cable is grounded.

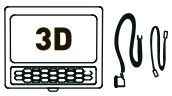
- Don't touch the plug with wet hands.



• Cable should be connected to the device and only then to the electric power network to avoid electric shock.

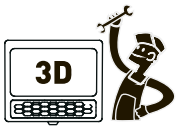
• It is prohibited to bend, squeeze and step on the power cable.

Precautions during device relocation

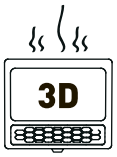


• All the cables should be disconnected from the device before relocation.

Precautions during maintenance of the device



• Device can be dismantled and repaired only by qualified specialists.



• Take the power cable off the socket and contact service center immediately after burning odor appears. Usage of a defective device may cause fire or electric shock.

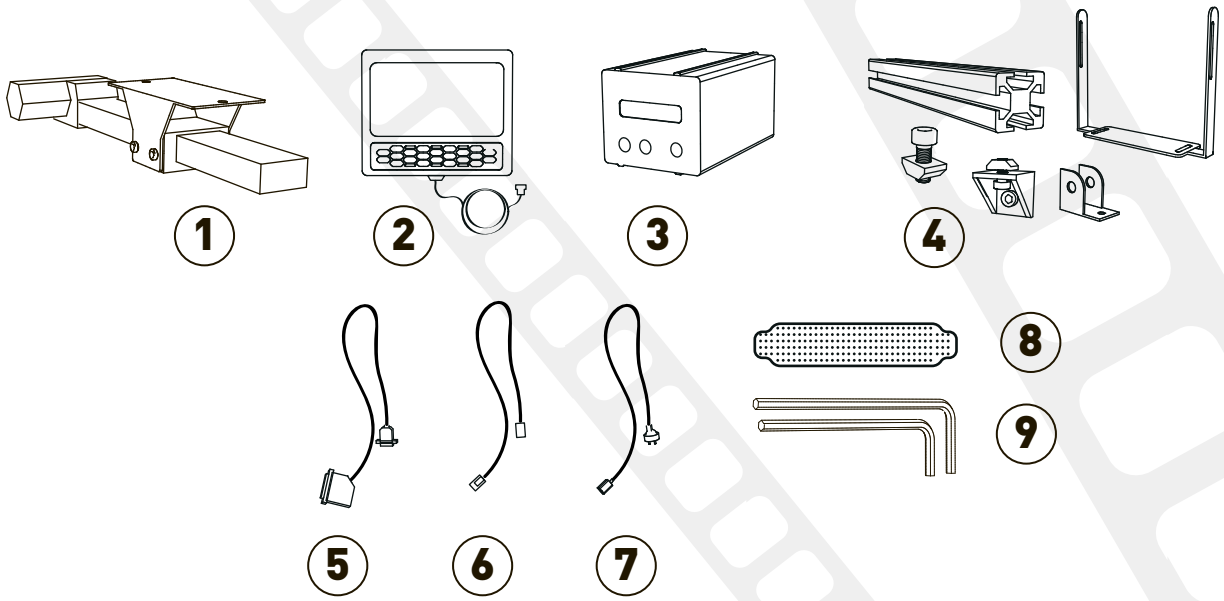
WARNING

Dust loading of the screen, projection glass and PM affects polarization, subsequently causing poor 3D image quality.

3. System installation

3.1 Components

Please make sure the full list of components is available.
Complete set consists of the following elements:



Elements:

1. Actuator.
2. PM.
3. Controller.
4. Fastening parts.
5. Synch cable.
6. Ethernet cable.
7. Power cable 100-240V.
8. Spare air filter.
9. Set of hex keys.

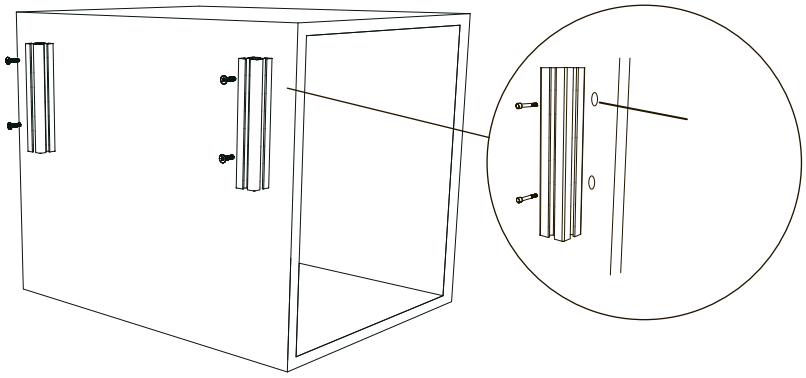
• Pictures in the manual and instructions may vary from the real device and its components.

• Please remove protective film off the PM glass before exploitation.

3.2 System assembly

Assembly of 200 mm aluminum extrusion to the projector pedestal

Please mark the extrusion assembly area and drill 6.5 mm pilot holes.
Extrusion is fastened to the pedestal with bolt joint.
See **pic. 1**



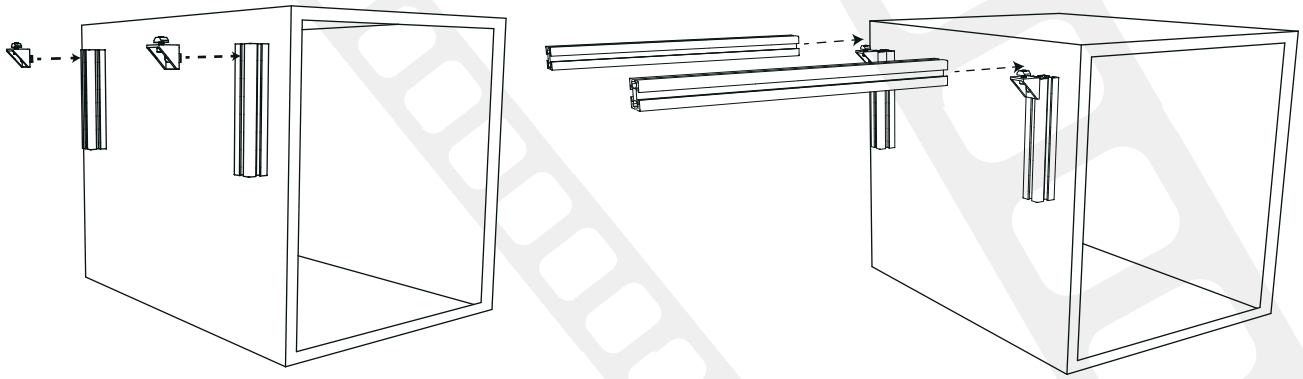
Pic. 1

Assembly parts (package 1, 9):
1. 5 mm hex key.
2. M6x65 bolt – 4 pcs.
3. 6x1.5 metal washer – 4 pcs.
4. M6 nuts – 4 pcs.

Assembly of 300 mm aluminum extrusion

Fasten an extrusion with the angular connector with t-nut placed in an extrusion slot, and a bolt using 4 mm hex nut.

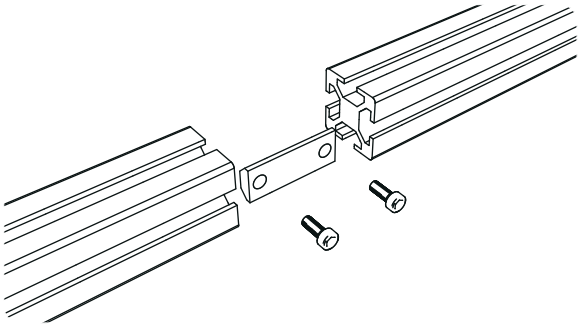
See **pic. 2**



Pic. 2

Assembly parts (package 2, 9):

1. 4 mm hex key.
2. Angular connecting kit – 2 pcs.



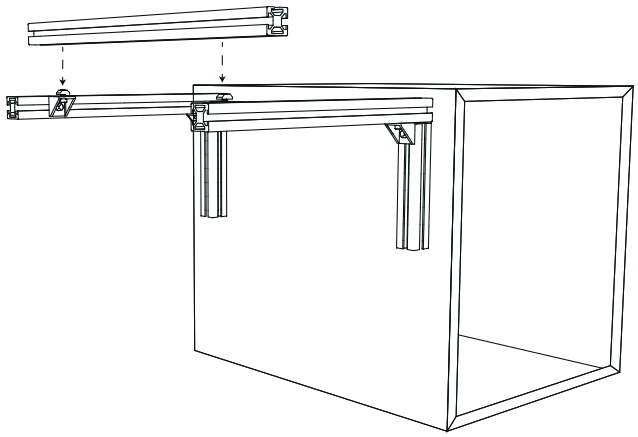
Pic. 3

• Construction should be extended with additional 300 mm aluminum extrusion by a slot stone (package 3) as connecting element and assembly parts, in case PM is placed too close to the projector lens (package 9).

See pic. 3

Assembly of 650 mm aluminum extrusion

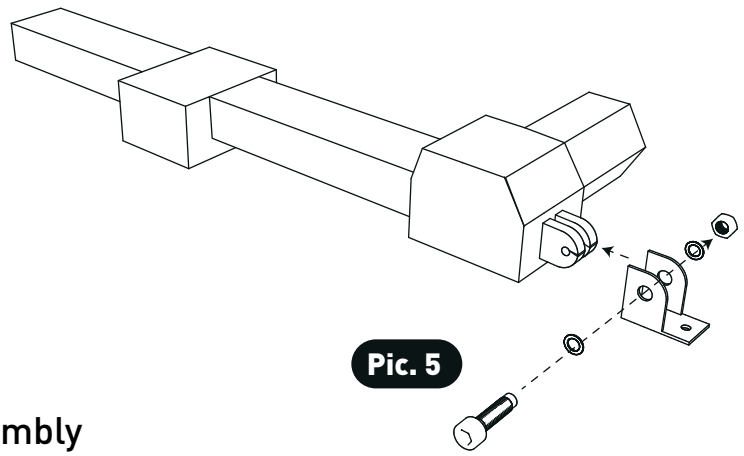
Assembly an extrusion using instructions for the 300 mm extrusion.
See **pic. 4**



Pic. 4

Assembly parts (package 2, 9):

1. 4 mm hex key.
2. Angular connecting kit – 2 pcs.



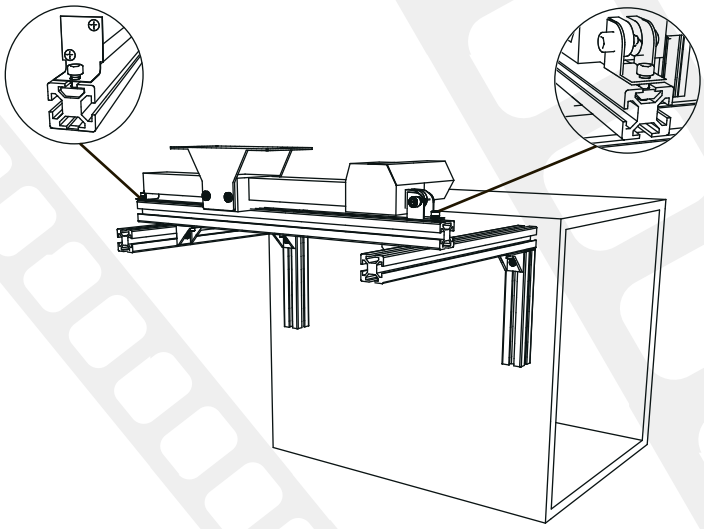
Pic. 5

Actuator assembly

Assembly parts (package 4, 5, 9):

1. Metal bracket – 1 pc.
2. Fastener assembly – 2 pcs.
3. M10x40 bolt – 1 pc.
4. M10x1.5 plastic washer – 1 pc.
5. M10 nut- 1 pc.

Put metal bracket onto actuator eye and fasten it with M10x40 bolt.
See **pic. 5**

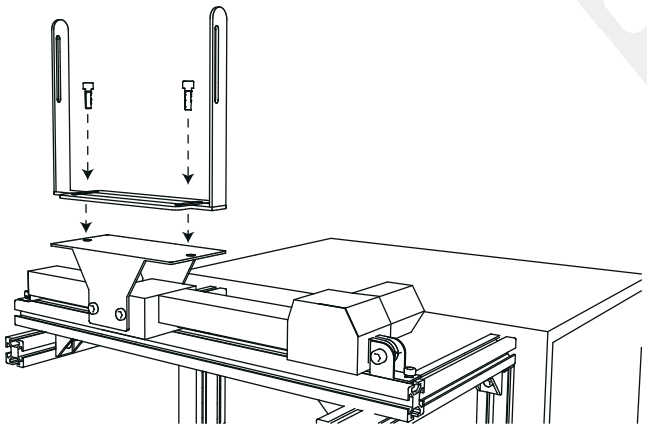


Pic. 6

Assembly an actuator using fastener assembly.
See **pic. 6**

Assembly of U-shaped PM holder

Place holder on top the PM stand and fasten it with M6x12 bolts, prior put plastic washers on them.



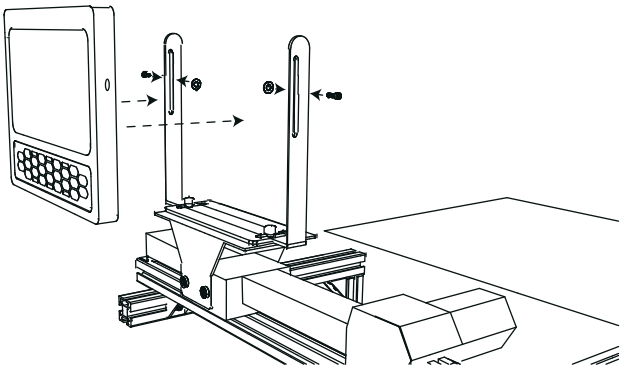
Pic. 7

Assembly parts (package 6, 9):
1. 5 mm hex key.
2. M6x12 bolt – 2 pcs.
3. M6x1.5 washer – 2 pcs.

Assembly of PM

Put PM into U-shaped holder and fasten it with DIN 464 pressure screws. Use plastic washers between PM and holder.

See **pic. 8**



Pic. 8

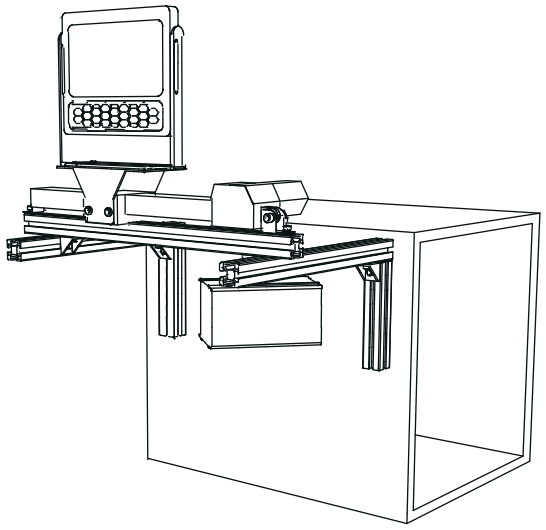
Assembly parts (package 7):

1. Pressure screw DIN 464-M4 – 2 pcs.
2. M4x1.5 washer – 2 pcs.

Assembly of controller

Fasten the controller to aluminum extrusion from the suitable side of projector.

See **pic. 9**



Pic. 9

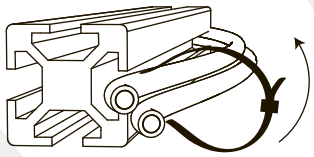
Assembly parts (package 8, 9):

1. 4 mm hex key.
2. Angular connecting kit – 1 pcs.

Controller connection

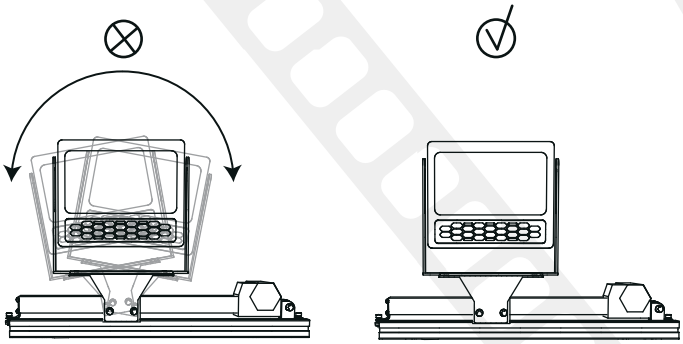
Connect all cables to the controller, considering their titles (on the package or on the sticker near the socket) and the titles on the rare panel of the controller (see paragraph 3.4).

It is required to fasten all cables after device is connected. Please use fastener assembly (package 10)

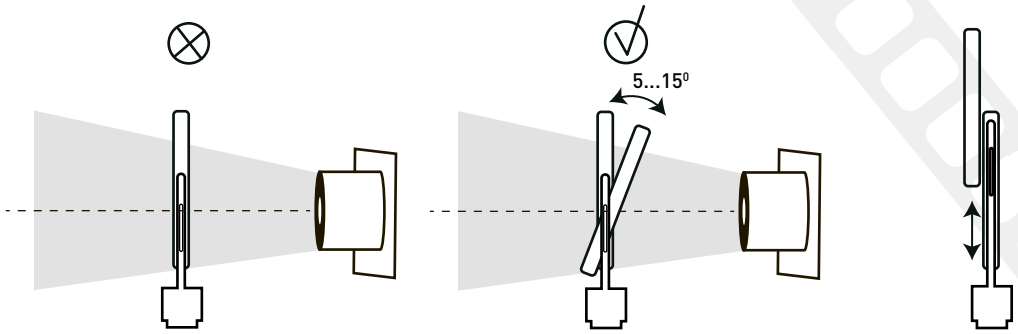


3.3 PM placement instruction

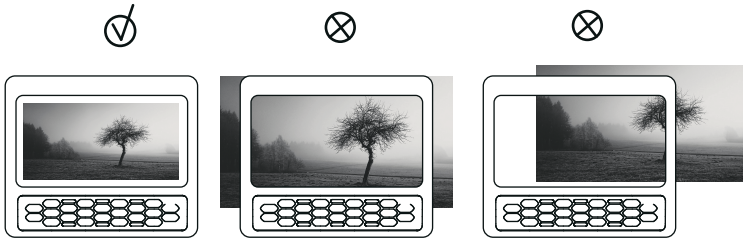
PM should be placed on horizontal surface.



Positioning: PM shouldn't be placed at right angle to lens optical axis.

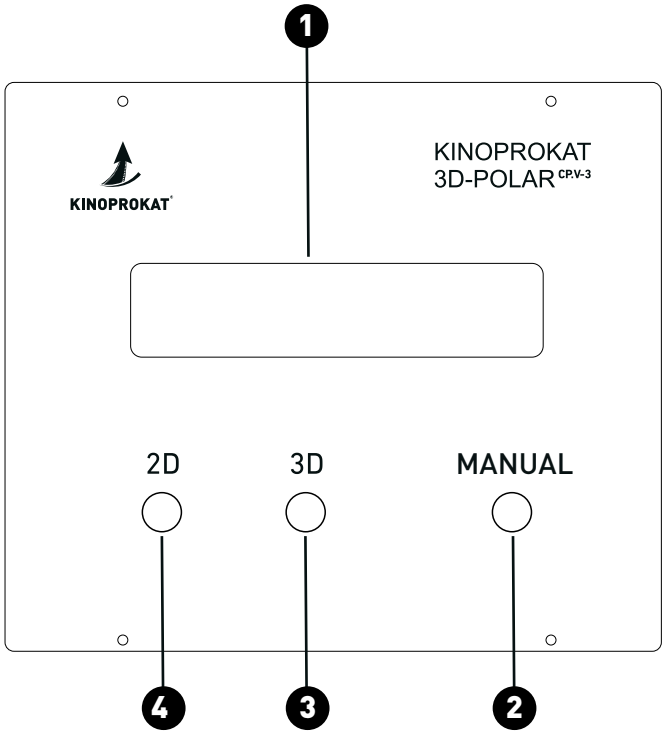


Make sure projected image takes max 90% of the PM screen and is positioned in the middle. The distance between lens and PM depends on lens.



3.4. Controller configuration

Indication and command units on the controller front panel.



1. Display.

Shows current working mode whilst controller is switched on.

2. Manual button.

Switches PM modes (manually or automatically). In Manual mode the built-in indication button glows permanently and in Auto mode it doesn't glow.

3. 3D button.

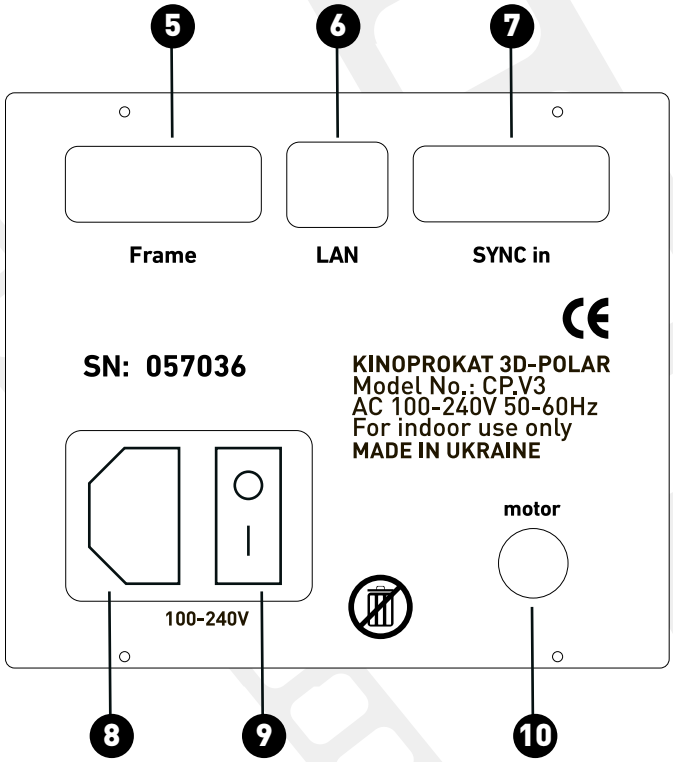
Switches PM to3D mode when Manual mode is on. *

4. 2D button.

Switches PM to 2D mode when Manual mode is on. *

* Buttons don’t respond in Auto mode.

Indication and command units on the controller rear panel.



5. Frame socket.

DE9M socket. It is meant for PM cord connection to for signal distribution and power supply.

6. LAN socket.

RJ45 socket. It is meant for LAN cord connection from router for Ethernet connection receipt.

7. SYNC in socket.

DE2F socket. It is meant for connection of synchronization cord from projector.

8. Power jack 100-240V.

IEC-320-C14 socket. It is meant for connection of the power cable from 100-240V network for controller voltage supply.

9. Power button.

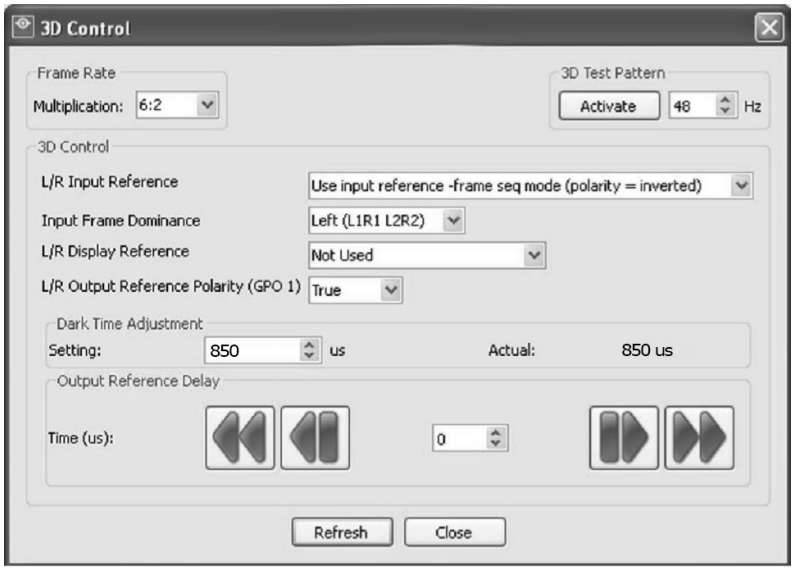
ON position lights red indicator – it means controller is switched on. OFF position switches controller off.

10. Motor socket.

Mini XLR socket. It is meant for actuator power supply.

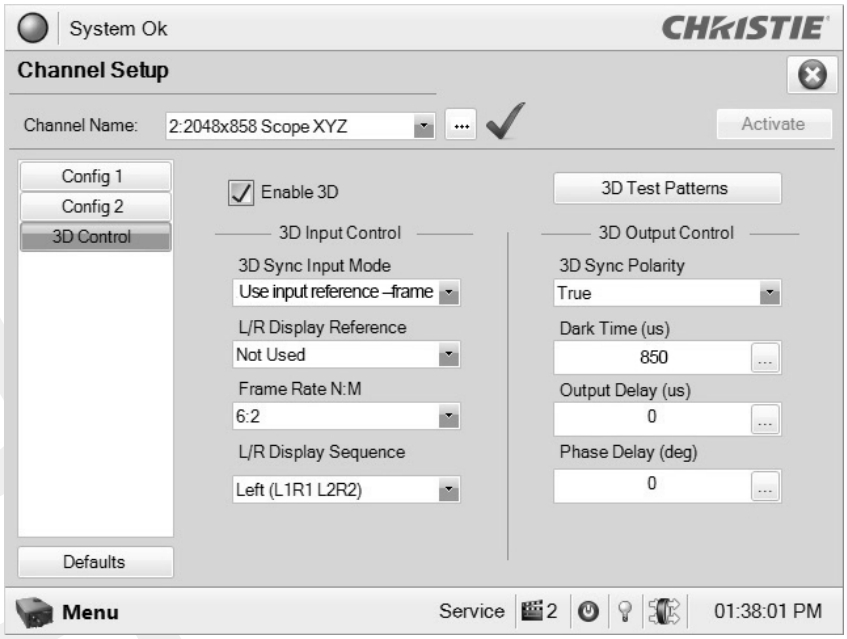
4. Recommended settings for Projectors

1. Settings for Barco Projector



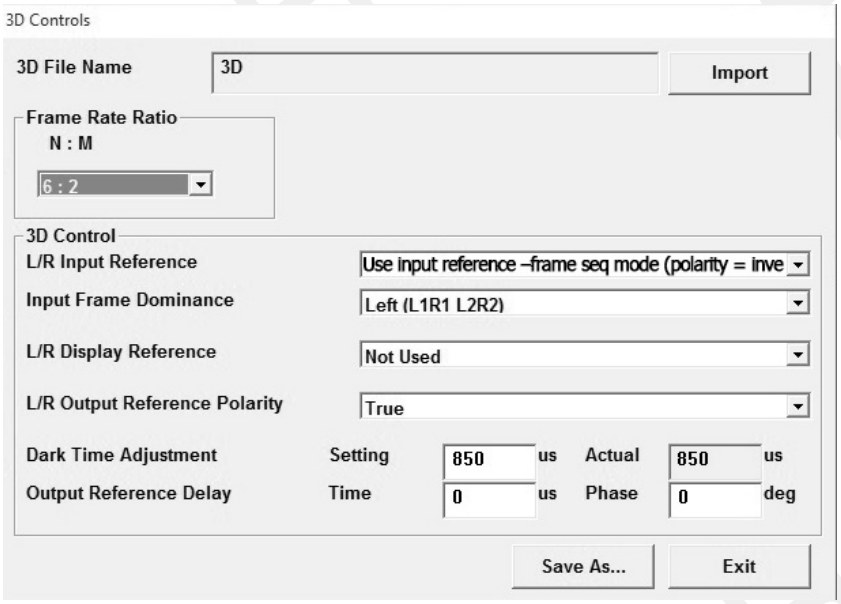
Multiplication	6:2
Activate	48 Hz
L/R Input Reference	Use input reference –frame seq mode (polarity = inverted)
Input Frame Dominance	Left (L1R1 L2R2)
L/R Display Reference	Not Used
L/R Output Reference Polarity	TRUE
Dark Time adjustment Setting	850 us *
Output Reference	Delay Time:0

2. Settings for Christie Projector



Multiplication	6:2
Activate	48 Hz
L/R Input Reference	Use input reference –frame seq mode (polarity = inverted)
Input Frame Dominance	Left (L1R1 L2R2)
L/R Display Reference	Not Used
L/R Output Reference Polarity	TRUE
Dark Time adjustment Setting	850 us *
Output Reference	Delay Time:0 Phase: 0

3. Settings for NEC Projector



Multiplication	6:2
Activate	48 Hz
L/R Input Reference	Use input reference –frame seq mode (polarity = inverted)
Input Frame Dominance	Left (L1R1 L2R2)
L/R Display Reference	Not Used
L/R Output Reference Polarity	TRUE
Dark Time adjustment Setting	850 us *
Output Reference	Delay Time:0 Phase: 0

*** The values of the settings are advisory and can be changed by the projectionist.**

Network control in 3D-Polar CP.V3 is performed by correspondent commands.
It is necessary to add network device with following parameters:
1. Controller IP-address **2.** 55555 port **3.** UDP protocol
Command syntax:
"2D": transfers PM in 2D position
"3D": transfers PM in 3D position
"Auto": returns controller to the automatic control of the PM position
Please note: valid for 1.1 firmware version and later

5. Operation modes of the main system

General provisions and operating principles

• Main operation mode

Controller shows current software version briefly on the display when power is supplied.

Then controller IP-address appears briefly

After that controller launches PM transition in 2D mode. PM transition takes ~ 20 sec. Signals aren't routed to all outputs.

Then controller goes into AUTO mode.

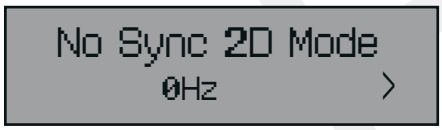
AUTO mode is an operation mode in which recognition of sync signal from the projector, and all the operations for its processing including PM transitions, are made automatically. Buttons 2D and 3D are disregarded in this mode.

When there are no pulses from the projector, controller remains in 2D mode. There is "No sync 2D mode" message on the display.

Frequency of sync pulses from the projector are automatically recognized immediately after they were detected. If the frequency is 0 to 52 Hz (by default, but it can't be changed in the settings within 30-120 Hz), input pulses are disregarded and controller remains in 2D mode.

PM is transited to 3D position, if sync pulses frequency is higher than threshold one (52 Hz by default).

PM transition is followed by the characters "<" and ">" on the display.



Controller starts its work in 3D mode after PM is transited in required position. There are "3D Polar Sync" and "XX Hz" messages on the display,

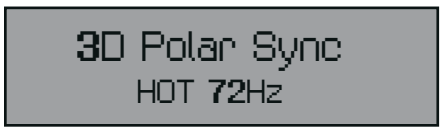
where XX is actual frequency. Cooling fan of the PM launches when 3D mode is on.

Controller pauses (it can be adjusted within 3-30 seconds, 3 seconds by default) when sync signal (in 3D mode) disappears or its frequency becomes lower than threshold one. If it doesn't happen, controller goes to 2D mode.

MANUAL button can be pushed any time – it will transfer controller to manual mode. This mode is equal to AUTO mode, except for PM transition control doesn't depend on sync frequency, but from pushing 2D and 3D buttons. Repeated pushing of the button switches-off MANUAL mode.

The troubleshooting guide

Built-in LED-light starts blinking, when the module temperature is higher than it was stipulated in settings. HOT message appears on the display.



PM voltage of the output pulses in 3D mode is under constant control. It should be at the set level or higher (24V by default). If there is no voltage at any channel, the number of defective channel will appear on the display.

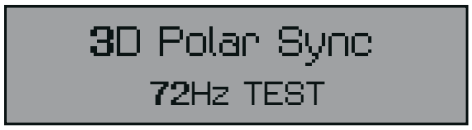
Current voltage of the output cascade appears on the display in case power voltage of the output cascade is below set value (24V by default).

Service operation modes

There are two service operation modes in addition to the main one.

• TEST – Test mode. Switch on power and hold MANUAL button to set this mode.

TEST mode is similar to the main mode, but signal formation is timed by the built-in variable frequency oscillator (72 Hz by default). It is used to check controller operability.



• SETUP – Service menu. This mode launches when the power is on and 3D button is pressed. It is used for manual change of controller settings.

SETUP mode is present by two-level menu.

- Top level shifting is performed by clicking 2D (to the left) and 3D (to the right) buttons. Auto-repeat launches, if buttons are held for too long.

- Access to lower level menu allows to setup selected parameters. It is performed by clicking MANUAL button. Access to editing mode is displayed by double angle brackets “<<”, “>>”.

- Editing of the selected parameter in the given range of values is performed by 2D (reduction) and 3D (increasing) buttons. Auto-repeat launches, if buttons are held for too long.

- Access to the top level menu without saving is made by short pushing MANUAL button.

- Changed parameter can be saved by holding MANUAL button until message "Saved» appeared on the display. Sub-menu in the top level menu will be left afterwards.

Variables in SETUP mode:

• DAC [0...3] – adjustment of the PM discharge voltage (influences coverage level and depends on the screen type). It varies within 0-255 and corresponds to discharge voltage change in 3D signal within 0÷8V, as referred to virtual zero (step ~ 31mV).

• Recogn Freq – 3D mode detection frequency (30 - 120 Hz, 52 Hz by default).

• Recogn Time – pulse recognition period during transition from 2D to 3D mode (within 1-30 seconds, 3 seconds by default).

• Offset time – delay time of the signal switch in all channels, referred to the sync pulse front or droop (200 ms by default, adjustment range – 100-500 ms).

• Motor time – period of actuator launching for PM transition from 2D to 3D position and vice versa (20 sec by default).

• Test Freq – frequency of the inner test generator. Adjustment range – 30-150 Hz (72 Hz by default).

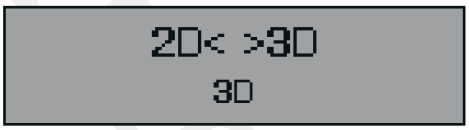
• Sync signal – menu for manual sync signal selection.

- EXT TAKT – external sync signal.

- INT TEST – internal generation.

• Position 3D – PM position by default. It can be switched to 3D – it depends on projector model.

• 2D <> 3D – sub-menu of manual PM transition from 2D to 3D position and vice versa in settings.



• ADCT – a threshold for glass overheating within 30°-80°C (60°C by default).

• ADCh – a threshold for 27V drop-off indication in OUT [1...4] channels, adjustable threshold range is 12-30V (24V by default). General setup for all output channels.

Ethernet configuration

Settings are changed by sequential selection of values. Long hold of MANUAL button (>1 sec) saves the chosen parameter. Short hold switches to another value without change. In the end of the setting list you will be redirected to the sub-menu of top level.

Following settings should be made to operate the controller via Ethernet network:

• IP ADDRESS – 192.168.0.22 by default. The last byte of MAC-address changes automatically as a result of IP-address change*.

• Subnet – 255.255.255.0 by default.

• Gateway – 192.168.0.1 by default.

• MAC ADDRESS – 00:08:DC:AB:CD:22 by default. Last three values can be changed within 0:00:00 - FF:FF:FF.

* Previously connected controller may need some time (~ 1 min) for its registration in the network, after MAC address was changed.

Factory reset can be made in sub-menu.

• Load Default – Long hold (>1 sec) of MANUAL button will set default settings.

6. Software operation

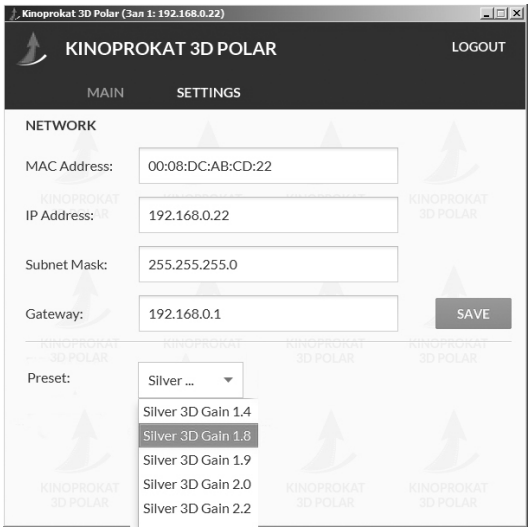
Make sure controller and computer have physical Ethernet connection.

Main program window:

Insert controller IP address or to select its address from the list to sign in (login – user, password – user by default).

Program opens controller status window after successful sign in.

Settings bookmark



Current software version can be downloaded from our web-site www.kinoprokat.com

7. Maintenance instructions

It is required to clean PM from dust regularly (once a month) for its durable and efficient work. Please adhere maintenance instructions for dust elimination.

- Don't touch the surface of polarization glass, because it has special anti-glare covering.
- We recommend to use cotton gloves during PM cleaning.
- You can use any light source for dust detection.

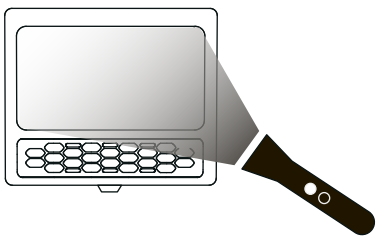
Dust elimination

Recommended tools:
- flashlight;
- blowing device.

Procedure:
1. Disconnect PM.
2. Blow off dust from both sides of PM using any blowing device.
3. Check glass purity using flashlight.

Elimination of fingerprints and stains from the surface

Recommended tools:
- flashlight;
- microfiber cloth or optic cleaning wipes.



Procedure:

1. Disconnect the polarizing module.
2. Carefully wipe down fingerprints and dirt from PM surface using microfiber cloth or optic cleaning wipes in circular or linear motions.
3. Check polarizing glass purity using flashlight.

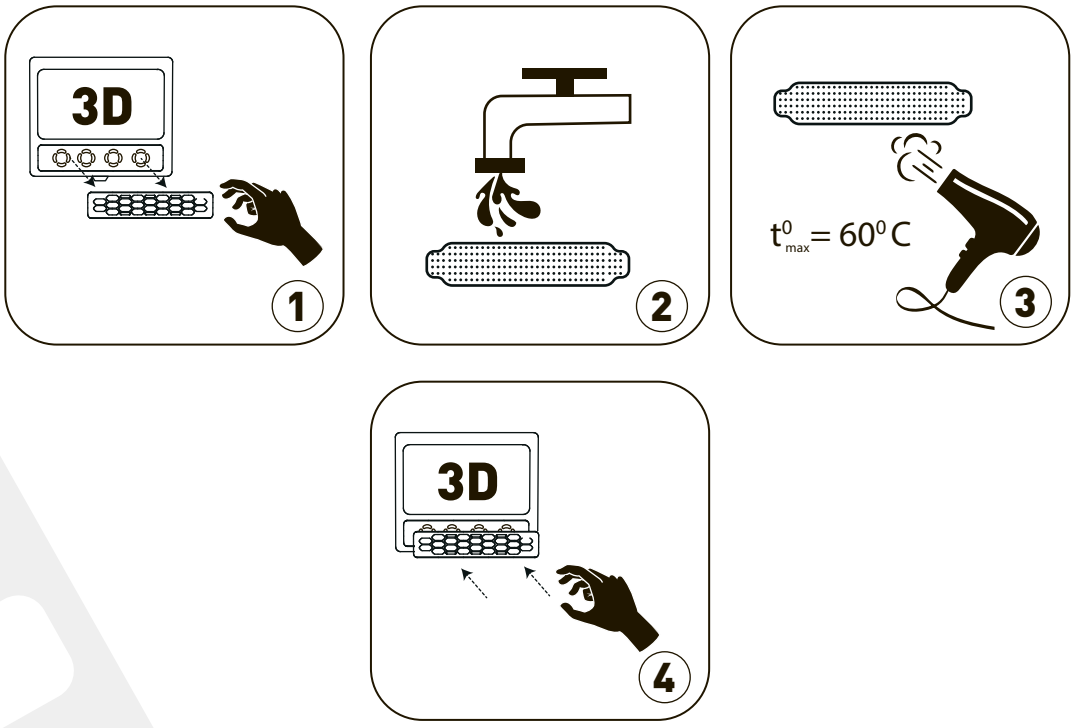
If you aren't sure in your actions as to the cleaning of polarizer surface, contact specialists from KINOPROKAT company or product supplier.

Filter maintenance

Procedure:

1. Carefully remove the filter unit. *
2. Wash the filter in water.
3. Dry up the filter.
4. Assembly the filter unit in its initial position.

If it's necessary, the filter can be replaced (package (8))



* Filter unit is fastened by neodymium magnets, which allows to remove it easily.

8. Warranty terms and conditions

Warranty term is a period during which the manufacturer assume liabilities as to charge-free repair or replacement of certain product.

Warranty term starts from date of transfer of goods to the buyer if other isn't stipulated by the contract.

KINOPROKAT company provides 36-month warranty.

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