

Measure what you see.

byko-spectra *pro*



Manual

Operation Manual

byko-spectra *pro*

- Read the operation manual carefully before operating this device
- Please keep it for further reference



Please note where this Attention Symbol appears on the equipment and in this manual.

This symbol alerts you to potentially HAZARDOUS SITUATIONS that require your immediate attention.

Security Information

Please read and follow this instruction before assembling, installing and operating the device.

If the equipment is used in manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

NOTE:

1. USE A PROPER POWER SOURCE

Consult the label attached to the back of luminaire for the proper power source. Operation with an incorrect power source that is not specified on the label may generate inaccurate lighting conditions, damage to the device, and cause personal injury.

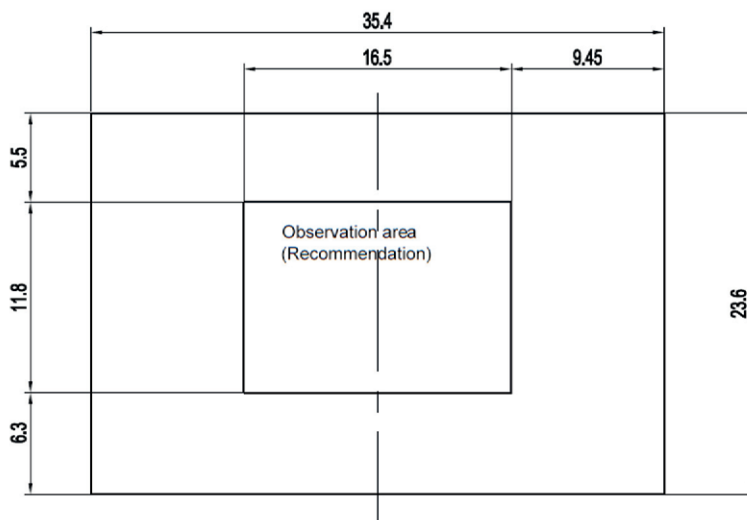
2. RUNNING THE DEVICE IN A PROPER ENVIRONMENT

Ensure the color of surrounding environment of byko-spectra *pro* is of a neutral color (recommended: N5 or N7). Prevent any chromatic reflections from the surrounding environment. Warm up the light source (about 15 mins) before using it to ensure the light source is stable. Do not block the vents. Make sure to leave at least 300 mm free space around the equipment when installing the luminaire, to insure proper ventilation.

3. KEEP AWAY FROM WATER AND MOISTURE

Do not place the equipment under a sprinkler head or any environment that may cause hazards from spilled water. Make sure there will be no liquids or uncontrolled moisture leaks to the device which will result in electric shock.

Recommendation area for observation



(DIMENSIONS ARE IN INCHES.)

Maintenance and Cleaning

Clean properly: Wipe the device with a clean, white lint-free cloth. Do not use any liquid cleaners or agents containing wax, which will change color, reflectance and gloss properties of the device. Clean outer surfaces with a damp cloth containing a mild soap. Do not spray or drop water into the equipment.

Carefully handle the lamp and daylight filter: Wait for the lamps or daylight filter to cool down before handling them. Use lens paper or similar products to handle the lamps since fingerprints and oils will affect the performance of the lamp.

Caution: Please note where these Attention Symbols appear on the equipment and in this manual.

These symbols alert you to potentially HAZARDOUS SITUATIONS that require your immediate attention.



CAUTION! When using the UV light avoid looking directly at the light or exposing skin to rays of the light.



HOT! Diffusion glass, vents, filters and lamps will be very hot during operation. Keep your hands away from the device until it has cooled down.



Electric Shock! Do not attempt to open any parts of the device. Consult with a trained BYK-Gardner technician.

Warranty information

The warranty period for the instrument is 12 months (from the day when you have the invoice). If any fault occurs during this period, as the result of normal use, the repair will be free-of-charge.

The above warranty statement above does not apply when damage was caused by the following operations:

- a) The operating instructions of this manual were not followed.
- b) Using accessories and spare parts, which were not provided by BYK-Gardner.
- c) The device was serviced or repaired by someone other than a BYK-Gardner factory trained technician.

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About Us

Introduction and Assembly

Introduction

byko-spectra *pro* is a new innovative light booth with high quality light sources conforming to international CIE standards. It can be used in the field of color quality management in industries like coatings, inks, textiles, printing and dyeing, pigments, photography, ceramics, packaging, cosmetics, auto and many more.

byko-spectra *pro* can be used to accurately describe the color of goods, match color, identify color and fluorescent substances. It can be used for in-process analysis for sampling, production, quality control, inspection to ensure color quality is met according to customer specifications. Thereby, this product can help to improve product quality and enhance market competitiveness.

Functions and Characteristics

● Eight light sources:

- DL (Daylight) a) D65: Real-time Color Temperature, $MI_{VIS} < 0.25$ (A-Class), CRI(Ra) > 98
 b) D75: Real-time Color Temperature, $MI_{VIS} < 0.25$ (A-Class), CRI(Ra) > 98
- HZ (Horizon) Real-time Color Temperature
- A (Incandescent) Real-time Color Temperature
- CWF Adjustable light levels with auto lux/voltage control
- TL84 Adjustable light levels with auto lux/voltage control
- U30 Adjustable light levels with auto lux/voltage control
- UV Calibrated and adjustable UV level

● Intelligent Switching Power Control

It employs intelligent voltage control to insure constant power supply to all light sources. Especially it assures the sustainability and consistency of daylight source, A light source and horizon light source.

● Intellectual Monitoring System

The built-in sensor is capable of monitoring the changes of color temperature and light intensity of all light sources and the lighting energy of the ultra-violet light simultaneously. It allows users to comprehend working conditions of various light sources visually.

● Real-time clock

Operator can use the real-time clock to set date and time, which will appear on the report.

● Large Color Display

The 4-inch color LCD display shows real-time data of multiple functions and guarantees ease-of-use.

● Intelligent Fluorescent Source Control

It has normalized control on fast automatic switch of groups of fluorescent source. It monitors illuminance value of light source at real time shown on HMI displaying the stability of light

source. Moreover, users can adjust illuminance value of fluorescent sources manually in order to meet their different requirements.

- **Wired Cascade and Remote Control**

Devices can be wired together to reduce repetitive actions when several devices are working together. Remote control can be used to control light sources from a distance of 10 (max) meters in open spaces (without any wall or obstacle).

- **High-Class Stabilized Daylight Source**

To simulate CIE standard illuminants D65 and D75, byko-spectra *pro* employs innovative technology of new halogen lamps, combined with special filter and LED optical compensation. Thus, two high quality daylight sources are guaranteed corresponding to two CIE standard illuminants.

The Metameric Index (MI) of spectral power distribution is able to stabilize in MI_{VIS} class A according CIE Publication 51.2.

- **Uniform Lighting Extent on Color Observation**

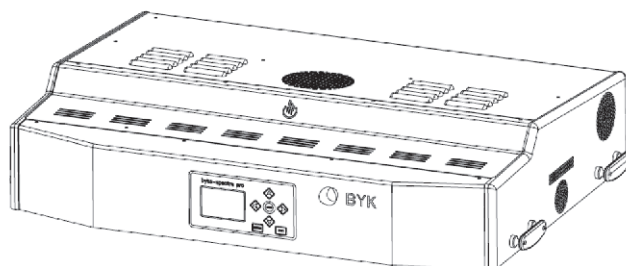
It refers to the central specified area (420mm×300mm) on the floor of viewing booth. For daylight, Incandescent A, Horizon light source, the degree of illumination uniformity exceeds 95%. Thus, it meets the requirements of ISO 105A II (Light source technological standard of color assessment cabinet for the use of color image analysis).

- **Color Quality of Cabinet Surfaces**

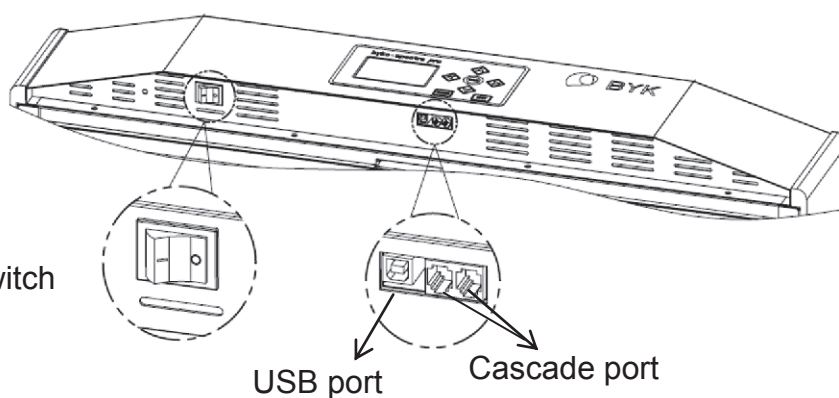
The color quality of the cabinet surfaces conforms to Munsell N5 and N7.

Components

Luminaire



Power Switch



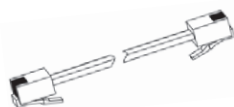
USB port

Cascade port



USB cable

Connect light booth to PC, to update software or get report data.



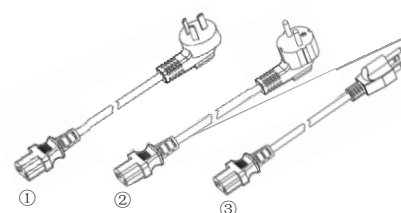
Cascade cable

For cascading light booths to control their performance.



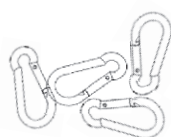
Remote controller

Control light booths remotely.



Power Cord
(one of three)

- ① CHINA Power Cord
- ② Europe Power Cord
- ③ US Power Cord



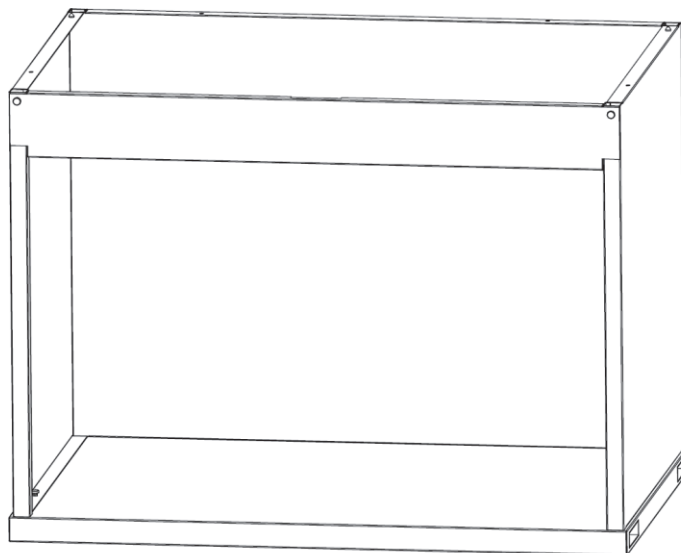
Snap Hook



Backup fuse

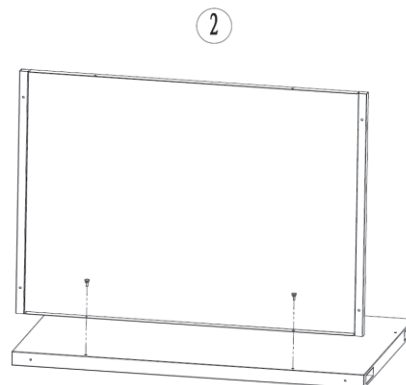
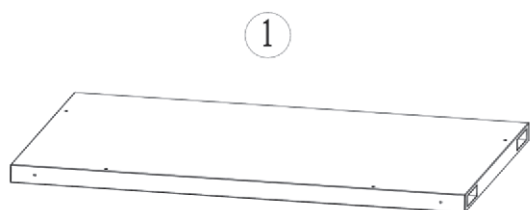
Light Booth Assembly

Choose a smooth surface for installation with sufficient space. Be careful not to scratch the surface of the light booth during installation.

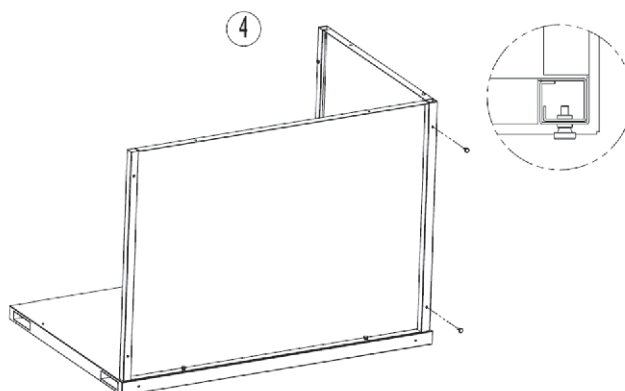
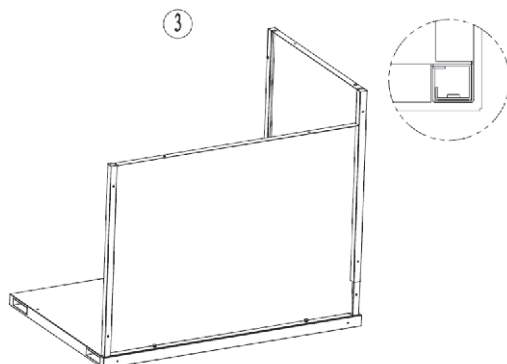


Complete light booth frame

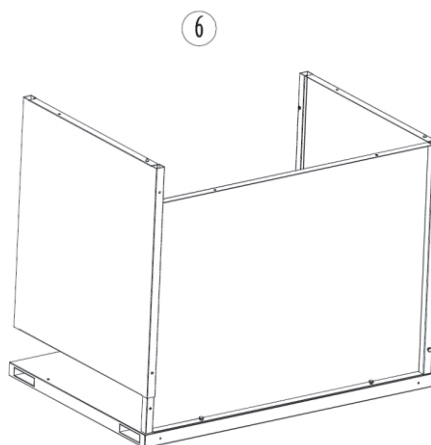
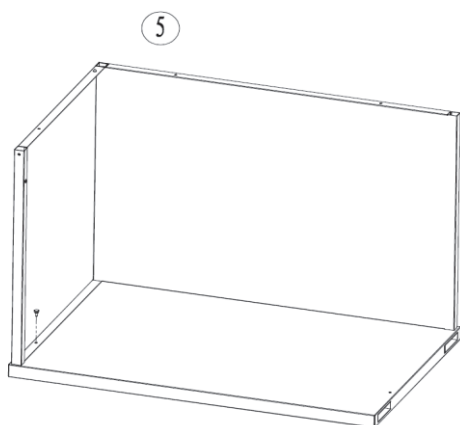
1. Place the floor/base plate in the middle of the table
2. Place the backboard behind the floor/base plate, and use two mounting screws to tighten it.



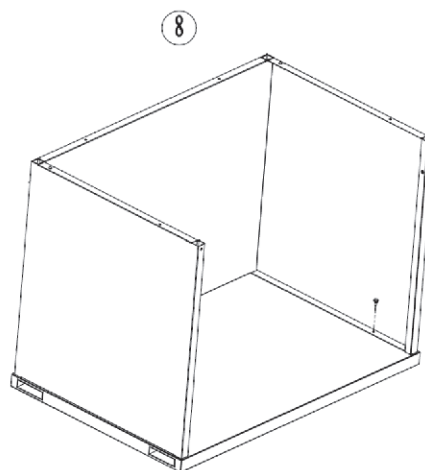
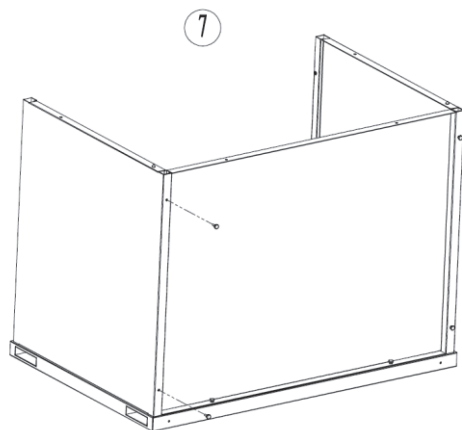
3. Place the left side panel along the guide chute sliding to the bottom as shown in figures 3,4.
4. Fasten the back side screws.



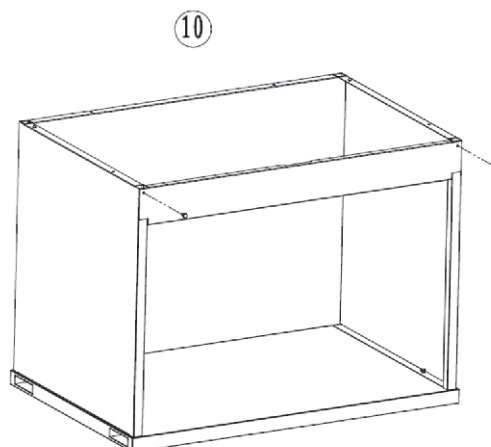
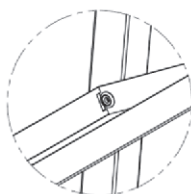
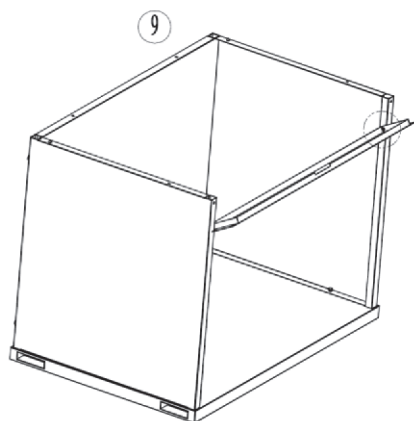
5. Fasten the side screw.
6. Slide the right side panel to the bottom in the same way.



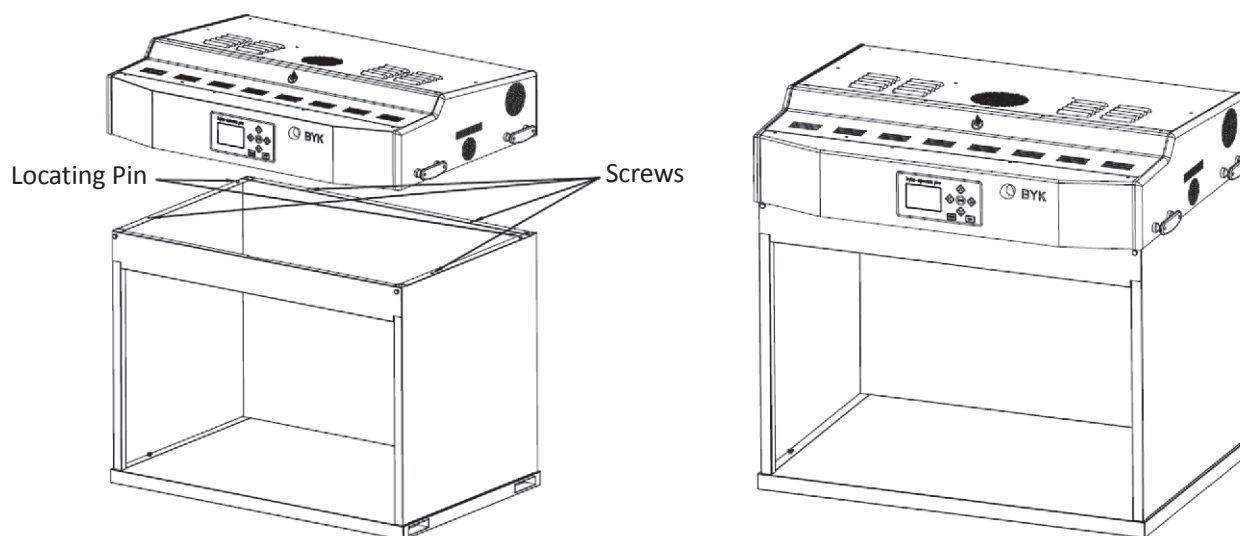
7. Fasten the backside screws on the right side panel.
8. Fasten the side screw inside the right side panel.



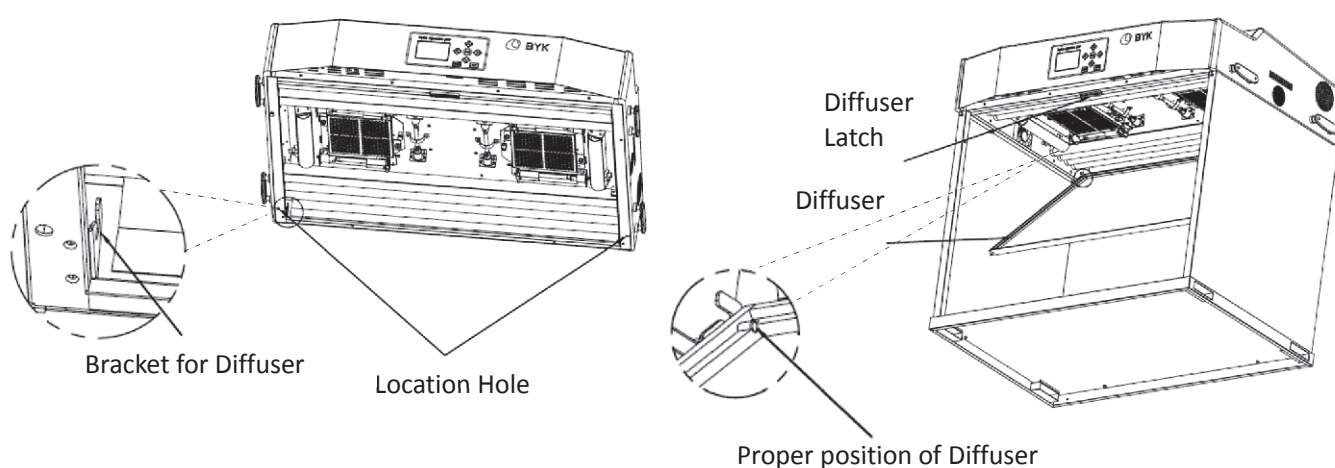
9. Slide the front diaphragm into buckle as shown in the graphic
10. Push up firmly to the side panel, and fasten the screws on both sides.



11. Use the left and right handles on the top of luminaire, position the luminaire into the locating pin as shown below. Then tighten the back, left and right side mounting screws.

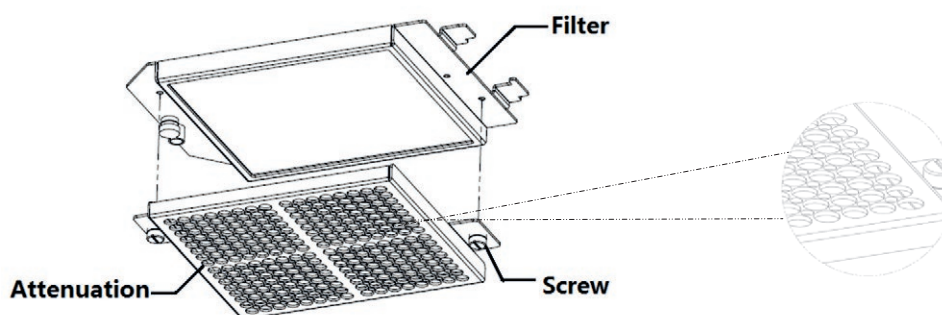


12. Diffuser (Diffuse glass) installation. Refer to the steps 3 through 6 of 'Luminaire Installation'.



If you need to assemble attenuator, please follow figure 11.

11



Luminaire Installation

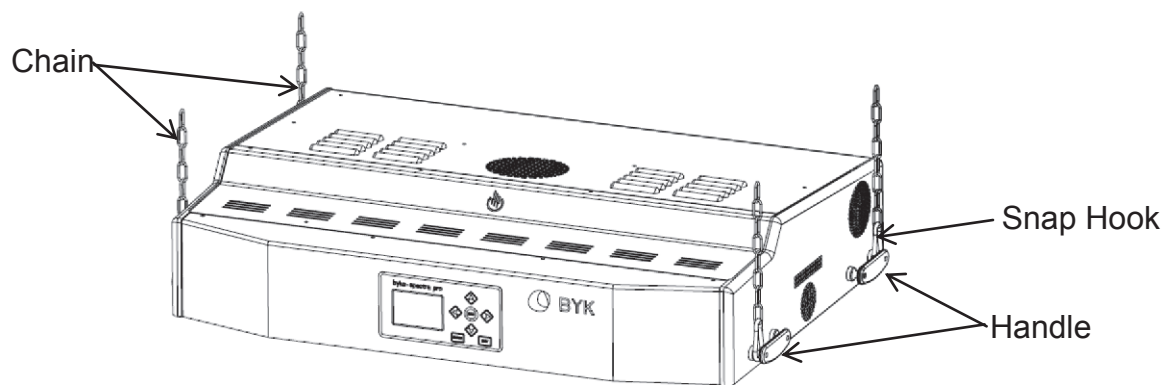
If you need to install a single or multiple overhead luminaires, please follow these steps.

NOTE:

- Do not install overhead luminaire under any fire sprinkler head. Heat generated by the luminaire may activate the sprinkler system.
- Install according to local electrical regulations. A dedicated branch circuit is recommended for each luminaire.
- Make sure there is adequate support for each luminaire. Each luminaire weighs 49 kg (108.1lbs).
- Carefully assemble the diffuser to avoid breaking any of the lamps.

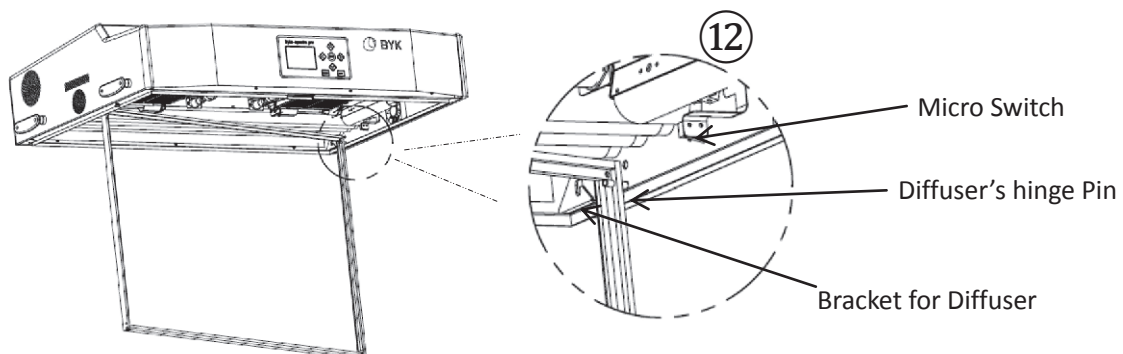
1. Unpack and remove the overhead luminaire and its diffuser from the carton and set aside.

2. Attach supplied snap hooks and chains (not supplied) to each of the brackets and suspend a single or multiple luminaires at the appropriate height and angle over the work area. The device(s) should be installed so that a minimum of 300 mm (11.9 inch) from each other or the wall surface exists.

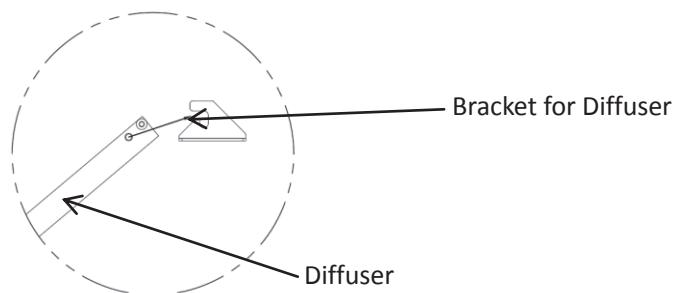


3. Hold the diffuser and ensure its smooth side is facing away from the luminaire.

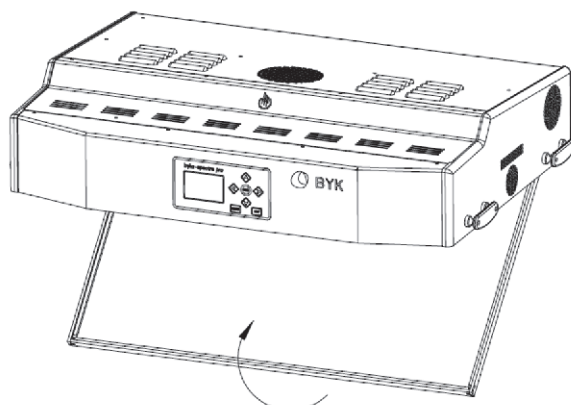
4. Place the right hinge pin of the diffuser between micro-switch and the diffuser bracket. Then, place the left hinge pin of the diffuser into the diffuser bracket. Refer to figure 12.



5. Smoothly push the diffuser until it's locked in the slot of the bracket.

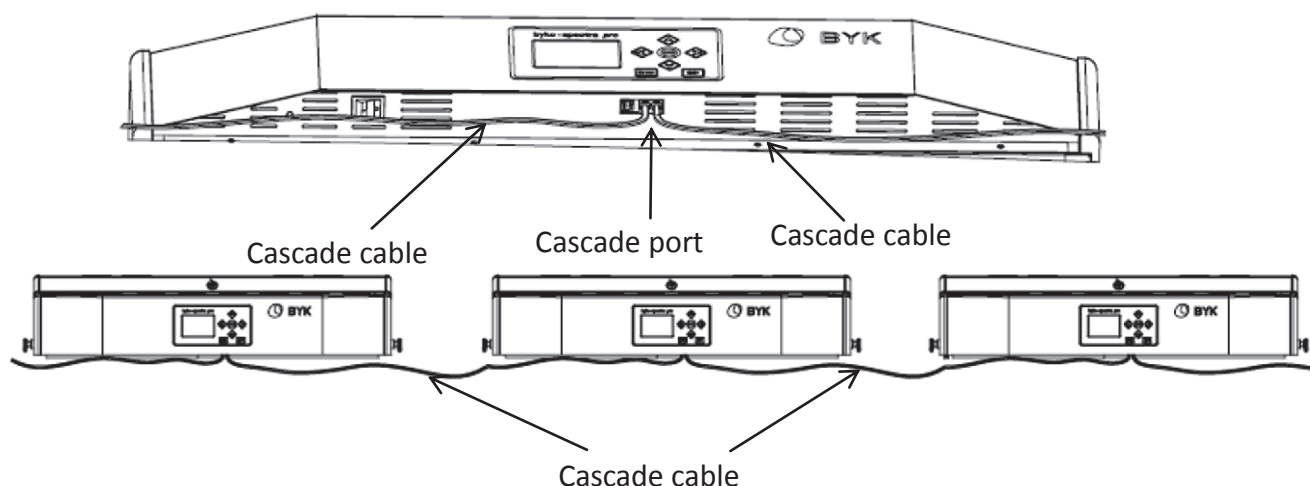


6. Rotate the front of the diffuser up until it's locked with the latch.



7. For a single luminaire installation, please go to step 10. For multiple luminaire installations, repeat steps 2 through 7 and then go to step 8.

8. Connect each device with Cascade cables.



9. Only after the installation of overhead luminaire(s) is completed, the device(s) can be plugged into an AC wall outlet.

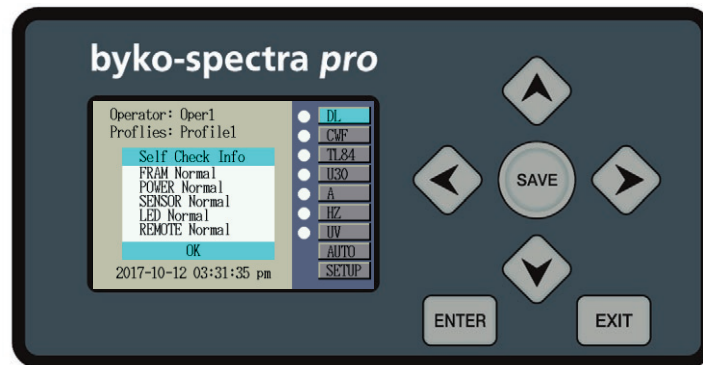
10. Refer to 'System Setup' for information on powering up, usage, and daisy chain configuration.

Power On

Toggle the power switch (ON/OFF) under the front edge of the panel on the left side.



Immediately after the power is ON, the device will go through a brief system self-test. The main menu will then appear on the screen with the testing report. Press ENTER to close the report window, or wait for 5 seconds until the window closes automatically.

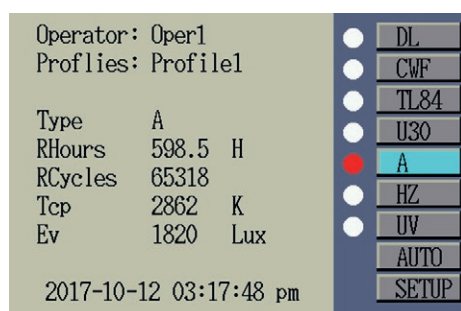
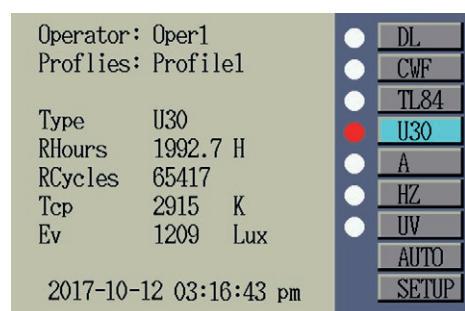
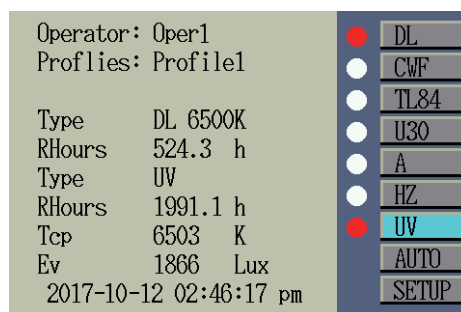
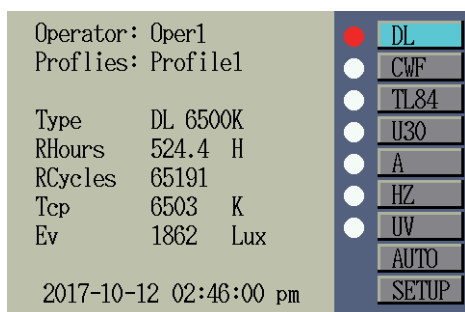
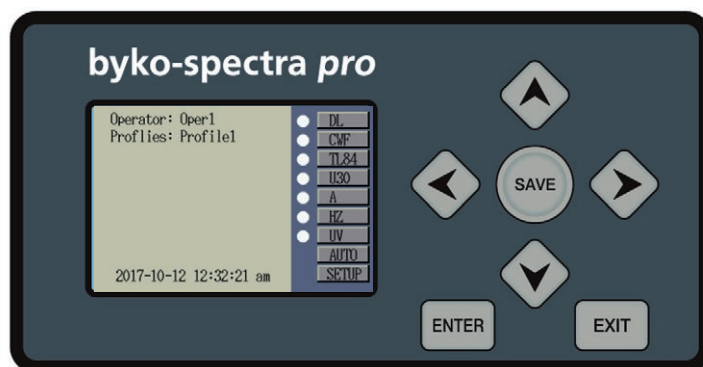


NOTE: When the power is turned OFF, please wait at least 5 seconds before you turn power ON again. This operation enables the firmware and hardware to properly shut off. If you attempt to turn on the power within less than 5 seconds after the power was turned off, the device may not switch on. If this occurs, please turn OFF the power again, wait at least 5 seconds, and then turn it on using the power switch.

Main Menu

Use the left(◀), right(▶), up(▲), and down(▼) arrow button on the right of the panel to go through functions and options or adjust values. Items will be highlighted when selected. Use ENTER to confirm and save changes.

For example, use up(▲) and down(▼) arrow button to select 'DL', and press ENTER, the white point will turn red while the daylight simulator turns on. If you want to turn it off, press ENTER again.



NOTE: After the lamp is switched on, please allow time to system to retest the value of T_{cp} and Ev.

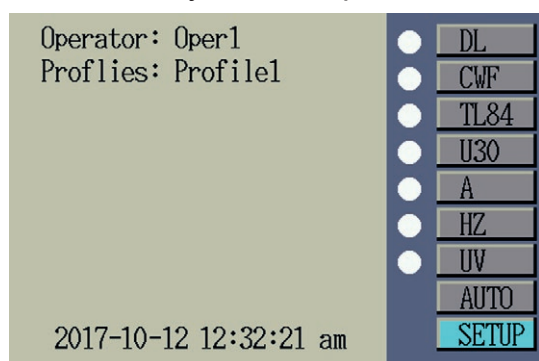
System Setup

Setup mode is used to adjust and scan the device settings. For first-time usage, you should set and scan the settings. You can go back and modify these settings anytime. Each setting is explained on the following pages.

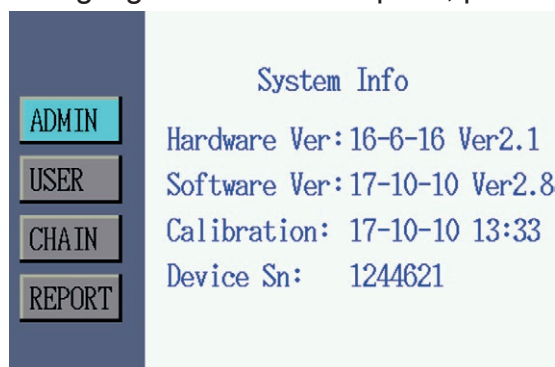
Administration (ADMIN)

The ADMIN menu is used to configure owner, system, profile, operator and time settings, to replace lamps and do a factory reset.

1. Use up(▲) and down(▼) arrow button to highlight 'SETUP' option, press ENTER button to access the system setup.



2. Highlight the 'ADMIN' option, press ENTER button to access the administration screen.



ADMIN_OWNER

1. Highlight 'OWNER' option and press 'ENTER' button to access the owner screen.



The following are descriptions of the owner options

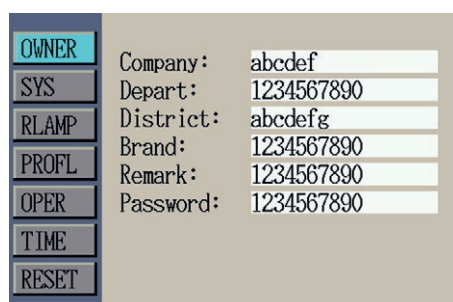
Owner Options	Text Entry	Factory Default	Description
Company	Text		Enter company name with a maximum of 15 characters. The name appears on the reports.
Department	Text		Enter department name with a maximum of 15 characters. The name appears on the reports.
Location	Text		Enter location name with a maximum of 15 characters. The name appears on the reports.
Brand	Text		Enter brand name with a maximum of 15 characters. The name appears on the reports.
Remarks	Text		Enter a note with a maximum of 15 characters. The remarks appear on the reports.
Admin Password	Text		Enter a new password with a maximum of 15 characters. Password protection can be activated or deactivated in the systems settings.

2. Use the up(▲) and down(▼) arrow button to highlight the desired option.
3. After the option is highlighted, press the ENTER button to access the editing screen.
4. Enter required text or select desired option. Refer below for additional information about text editing.



- Use the left(◀), right(▶), up(▲) and down(▼) arrow button to highlight the letter/number in the soft keyboard.
- Press ENTER to add the character to the editing field.
- Press EXIT to delete one character at one time.
- Continue with additional letter/number until the editing field is complete.
- Press SAVE to save the editing field when finished.

5. When finished with owner options, press the EXIT to exit the owner screen.



ADMIN_SYS

1. Use the up(▲) and down(▼) arrow button to highlight 'SYS' option. Then press ENTER to access the system screen.

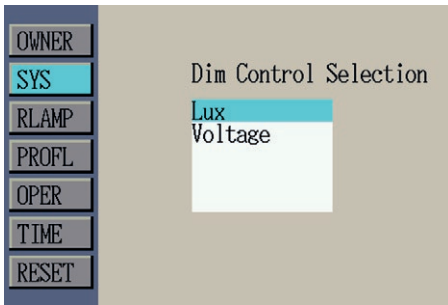


The following are descriptions of the system settings.

System Settings	Value or Option Selection	Factory Default	Description
DL+UV	Auto, Manual	Auto	Automatically add UV to Daylight or manually add UV to Daylight.
Dim Control	Voltage, Lux	Lux	Set fluorescent lamp dim control by lux or by voltage. UV is always dimmed by voltage.
End of Life(EOL) PWarning	Off, 80%, 85%, 90%, 95%	90%	Set end of life (EOL) pre-warning percent.
Time Format	12H, 24H	12H	Set time format.
Password EN	Enabled, Disabled	Disable	Enable or disable password protection for the Administration (ADMIN) Setup.
RF Remote EN	Enabled, Disabled	Disable	Enable or disable the use of the remote control.
LR KEY (Left and right button)	Dim Lux, Tech Data	Dim Lux	Set left or right button to dimming control or inquire technical data. (This is only suitable for Fluorescent lamps)
RF Remote Add	1 to 8	0	Set Remote Control address code to match the remote control dipswitch setting. Refer to the 'Remote Control' section later in this manual to setup the remote control.
Standby Time	0 to 999	0	Set the amount of time in minutes that the device goes to standby during non-use. Any switch pressed on the display panel will wake up the device.

2. After the option is highlighted, press the ENTER button to access the editing screen.

3. Enter required text or select desired option or value for system settings. Refer below for additional information about editing the system settings.

To select option:

- Use the up(▲) and down(▼) arrow button to highlight the desired option.
- Press ENTER to save the selected option/value.

To enter text/value:

- Use the left(◀), right(▶), up(▲), and down(▼) arrow button to highlight the letter/number in the soft keyboard.
- Press ENTER to add the character to the editing field.
- Press EXIT to delete one character at one time.
- Continue with additional letter/number until the editing field is complete.
- Press SAVE to save the editing field when finished.

When finished with editing field options, press 'EXIT' to exit the system screen.

ADMIN_RLAMP

The RLAMP screen displays the hours and cycles remaining for each lamp in the system. From this screen, the user can reset hours/cycles, select type of lamp, change EOL parameters and add lamp serial numbers.

1. Use the up(▲) and down(▼) arrow button to highlight the 'RLAMP' option. Then press ENTER to access the lamp replacement screen.
2. Using the up(▲) and down(▼) arrow button to highlight each lamp to view the detail of them, such as the type of lamp, the hours/cycles remaining and the lamp serial number.

OWNER		DL
SYS	LType: DL 6500K	CWF
RLAMP	RHours: 524.3	TL84
PROFL	RCycles: 65191	U30
OPER	SN# Left 123456789	A
TIME	SN# Right 123456789	HZ
RESET		UV

OWNER		DL
SYS	LType: DL 6500K	CWF
RLAMP	RHours: 524.3	TL84
PROFL	RCycles: 65191	U30
OPER	SN# Left 123456789	A
TIME	SN# Right 123456789	HZ
RESET		UV

Selecting Type of Lamp

Select the lamp type installed from the list. If the lamp type is not in the list, please consult our technical support.

NOTE: If D75 illuminant is used, the attenuator must be installed and the option of user setting should be modified. Refer user settings in 'System Setup'.

OWNER		DL
SYS	LType: DL 6500K	CWF
RLAMP	RHours: 524.3	TL84
PROFL	RCycles: 65191	U30
OPER	SN# Left 123456789	A
TIME	SN# Right 123456789	HZ
RESET		UV

1. Using the up(▲) and down(▼) arrow button to highlight desired lamp.
2. Use ENTER to confirm the lamp, then highlight the type of lamp by pressing the up(▲) and down(▼) arrow button.
3. Press ENTER to access 'Type of Lamp' screen.
4. Use the up(▲) and down(▼) arrow button to choose the desired type DL6500K or DL7500K.
5. Press ENTER to save.

Resetting Hours/Cycles

This option is used to reset the lamp hours and cycles after a new lamps are installed.

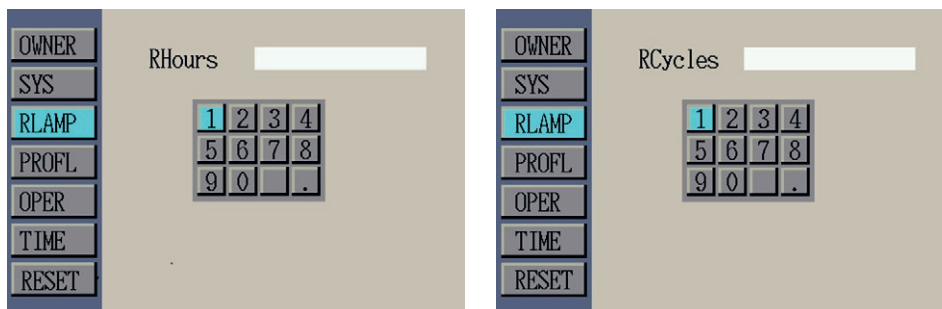
1. Use the up(▲) and down(▼) arrow button to highlight desired light source.
2. Use ENTER to confirm, then highlight the lamp hours and cycles by pressing the up(▲) and down(▼) arrow button.

OWNER		DL
SYS	LType: DL 6500K	CWF
RLAMP	RHours: 524.3	TL84
PROFL	RCycles: 55191	U30
OPER	SN# Left 123456789	A
TIME	SN# Right 123456789	HZ
RESET		UV

OWNER		DL
SYS	LType: DL 6500K	CWF
RLAMP	RHours: 456.4	TL84
PROFL	RCycles: 55869	U30
OPER	SN# Left 123456789	A
TIME	SN# Right 123456789	HZ
RESET		UV

3. Press ENTER to access the 'Remaining Hours' or 'Remaining Cycles' screen.
4. Reset lamp settings.

Refer below for additional information about editing of the reset.



- Use the left(◀), right(▶), up(▲), and down(▼) arrow button to highlight the number in the soft keyboard.
- Press ENTER to add the number to editing field.
- Press EXIT to delete one character at one time.
- Continue with additional letter/number until the parameter is complete.
- Press SAVE to save the parameter when finished.

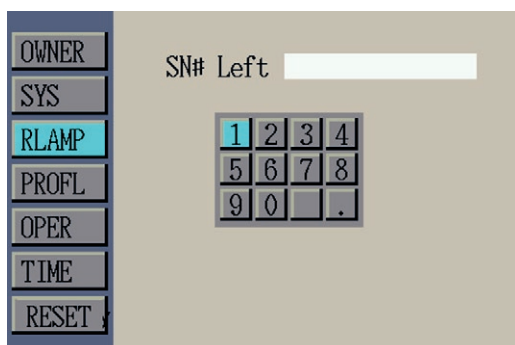
Entering a lamp serial number

A lamp serial number can be a maximum of 15 characters. The number to enter is printed on the lamp or the lamp packaging.

1. Using the up(▲) and down(▼) arrow button to highlight desired lamp.
2. Use ENTER to confirm the lamp, then highlight the lamp Left/Right serial number by pressing the up(▲) and down(▼) arrow button.



3. Press ENTER to access 'Left/Right serial number' screen.
4. Enter the lamp serial number.



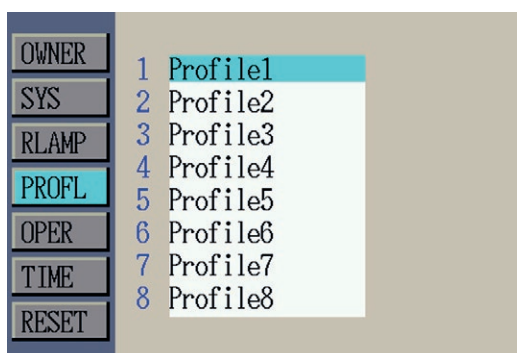
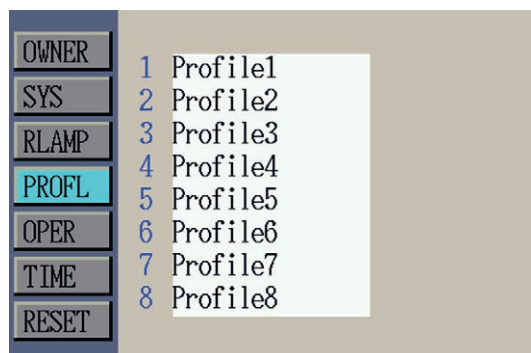
- Use the left(◀), right(▶), up(▲) and down(▼) arrow button to highlight the number in the table.
- Press ENTER to add the number to SN#.

- Press EXIT to delete one character at one time.
- Continue with additional letter/number until the parameter is complete.
- Press SAVE to save the parameter when finished.

ADMIN_PROFL

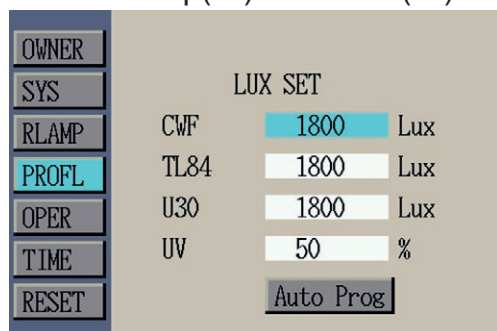
The profile screen is used to create up to 8 profiles. Once created, you can customize the switches and setup an auto sequence. Individual profiles are then selected through the user screen.

1. From the ADMIN menu, use the up(▲) and down(▼) arrow button to highlight PROFL option. Then press ENTER to access a list of all profiles.
2. Use the up(▲) and down(▼) arrow button to highlight a profile, then press ENTER to open.

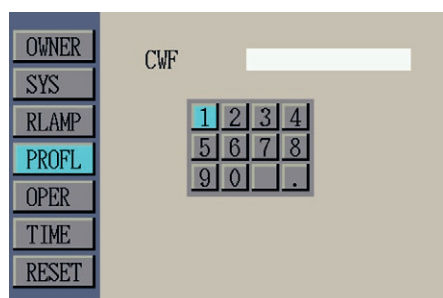


Lux setting review/edit

1. From the PROFL menu, use the up(▲) and down(▼) arrow button to highlight the desired profile and then press ENTER to access the editing screen.
2. Use the up(▲) and down(▼) arrow button to highlight the desired type of lamp.



3. Set the light intensity:



- Press ENTER to access the editing illuminance screen.
- Use the left(◀), right(▶), up(▲) and down(▼) arrow button to highlight the number in the soft keyboard.
- Press ENTER to add the number to editing field.
- Press EXIT to delete one number at one time.
- Continue with additional letter/number until the parameter is completed.
- Press SAVE to save the parameter when finished.

NOTE: The settings are valid when the function of 'ADMIN → SYS → LR KEY' is set to Tech Data.

Customize Auto Sequence Mode

1. Use the up(▲) and down(▼) arrow button to highlight 'Auto Prog', and then press ENTER to access the editing profile screen.

Step	Light	Time(S)	Light(Lux)
1	DL	30	N/A
2	A	30	N/A
3	CWF	30	1800
4	OFF	N/A	N/A
5	OFF	N/A	N/A
6	OFF	N/A	N/A
7	OFF	N/A	N/A
8	OFF	N/A	N/A
9	OFF	N/A	N/A

2. After highlighted the option, press ENTER to access the desired profile parameter.

3. Select the light source and enter time or lux output of this profile.

Step	Light	Time(S)	Light(Lux)
1	DL	30	N/A
2	A	30	N/A
3	CWF	30	1800
4	OFF	N/A	N/A
5	OFF	N/A	N/A
6	OFF	N/A	N/A
7	OFF	N/A	N/A
8	OFF	N/A	N/A
9	OFF	N/A	N/A

Select Light Source:

DL
CWF
TL84
U30
A
HZ
UV
DL+UV
OFF

- Use the up(▲) and down(▼) arrow button to highlight the desired type of lamp.
- Press ENTER to save.

Enter Time and Light (Lux) value

Step	Light	Time(S)	Light(Lux)
1	DL	30	N/A
2	A	30	N/A
3	TL84	30	1800
4	OFF	N/A	N/A
5	OFF	N/A	N/A
6	OFF	N/A	N/A
7	OFF	N/A	N/A
8	OFF	N/A	N/A
9	OFF	N/A	N/A

Step	Light	Time(S)	Light(Lux)
1	DL	30	N/A
2	A	30	N/A
3	TL84	30	1800
4	OFF	N/A	N/A
5	OFF	N/A	N/A
6	OFF	N/A	N/A
7	OFF	N/A	N/A
8	OFF	N/A	N/A
9	OFF	N/A	N/A

Light Time:

1	2	3	4
5	6	7	8
9	0	.	

Light Lux:

1	2	3	4
5	6	7	8
9	0	.	

- Use the left(◀), right(▶), up(▲) and down(▼) arrow button to highlight the number in the soft keyboard.
- Press ENTER to add the number to the editing field.
- Press EXIT to delete one number at one time.
- Continue with additional letter/number until the parameter is complete.
- Press SAVE to save the parameter when finished.

NOTE: Illuminance values can be adjusted only for CWF/TL84/U30 (up to 2000 Lux). In case of ultra-violet light, the intensity can be set (0-100%).

ADMIN_OPER

'OPER' menu is used to record up to 8 operator descriptions, which will appear in the reports.

1. From the ADMIN menu, use the up(▲) and down(▼) arrow button to highlight 'OPER', and then press ENTER to access the editing screen.

OWNER	1 Oper1
SYS	2 Oper2
RLAMP	3 Oper3
PROFL	4 Oper4
OPER	5 Oper5
TIME	6 Oper6
RESET	7 Oper7
	8 Oper8

OWNER	Name	Oper1
SYS	ID	
RLAMP	Gender	
PROFL	Age	
OPER	FM100 Test	
TIME	Ishihara Test	
RESET	Other Test1	
	Other Test2	

2. Use the up(▲) and down(▼) arrow button to highlight the desired option.
3. Select the desired option/value and enter text.

OWNER	Name	Oper1
SYS	ID	12345
RLAMP	Gender	Male
PROFL	Age	30
OPER	FM100 Test	
TIME	Ishihara Test	
RESET	Other Test1	
	Other Test2	

The following are descriptions of the Operator Options.

Operator Options	Text Entry, Value or Option	Factory Default	Description
Name	Text		Enter operator name with a maximum of 15 characters.
ID	Text		Enter operator ID with a maximum of 15 characters. The ID appears on the reports.
Gender	Male/Female		Select operator gender.
Age	0 to 99		Select operator age.
FM100 Test	0 to 99		Munsell Fansworth FM100 Hue Test FM200 is 'Total Error Score'. A perfect score is 0. Some US apparel brands require a score of 0-16 for staff/partners who evaluate color.
Ishihara Test	0 to 99		Ishihara Test consists of a number of colored plates. The plates are graded individually and it is the series of plates that results in the overall assessment.
Option Test 1	0 to 99		User defined
Option Test 2	0 to 99		User defined

Entering text:

- Use the left(◀), right(▶), up(▲) and down(▼) arrow button to highlight the letter/number in the soft keyboard.
- Press ENTER to add the number to blank.
- Press EXIT to delete one number at one time.
- Continue with additional letter/number until the parameter is completed.
- Press SAVE to save the parameter when finished.

ADMIN_TIME

The time screen is used to set the current time and date for the system.

NOTE: You need to initially set the date and time so that any lamps can operate.

OWNER	Year:	2017
SYS	Month:	9
RLAMP	Date:	20
PROFL	Hour:	15
OPER	Minute:	12
TIME	Second:	26
RESET		

1. Use the up(▲) and down(▼) arrow button to highlight the 'TIME' option. Then press ENTER to access the time settings.

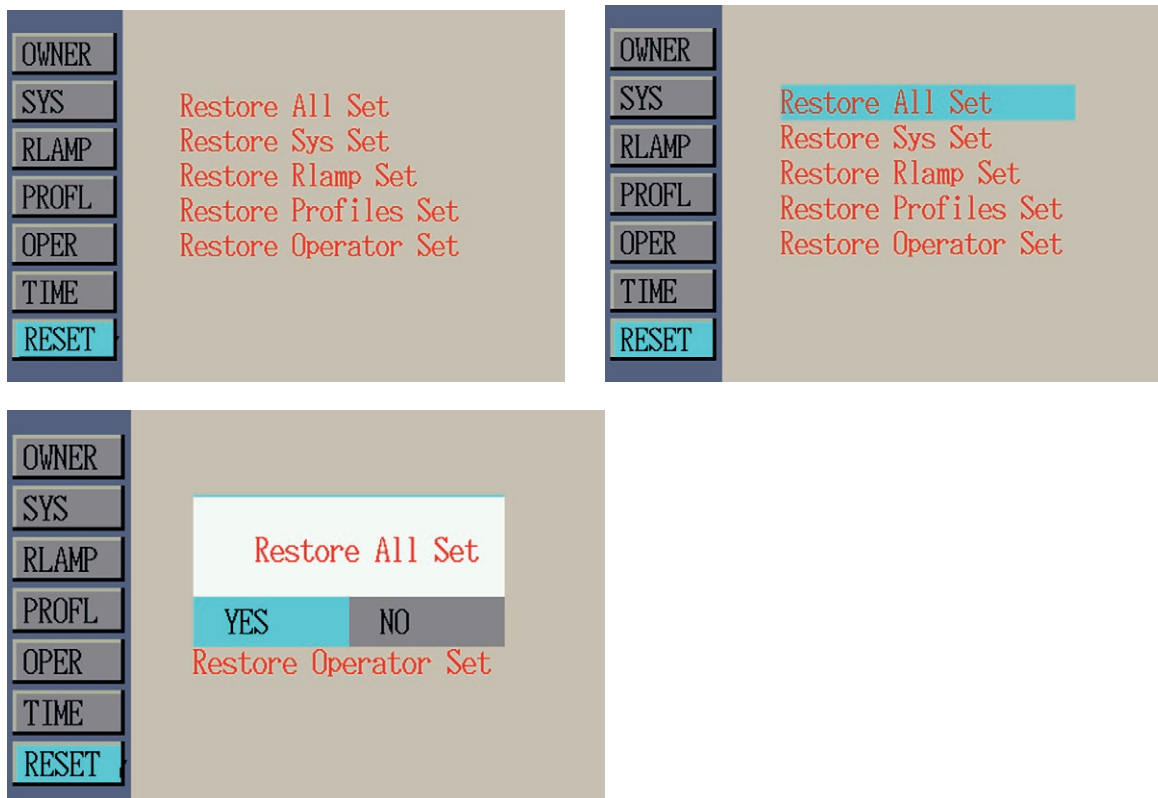
2. Use the up(▲) and down(▼) arrow button to highlight the desired parameter.
 3. Press ENTER to access the time parameter settings screen.
- Use the left(◀), right(▶), up(▲) and down(▼) arrow button to highlight the number in the soft keyboard.
 - Press ENTER to add the number to parameter.
 - Press EXIT to delete one number at one time.
 - Continue with additional number until the parameter is complete.
 - Press SAVE to save the parameter when finished.
4. Continue with additional parameters.
 5. Press EXIT button to exit the 'TIME' screen when finished.

ADMIN_RESET

Restoring factory settings is used to initialize the parameters.

NOTE: Once restoring factory settings, all previous settings will be cleared.

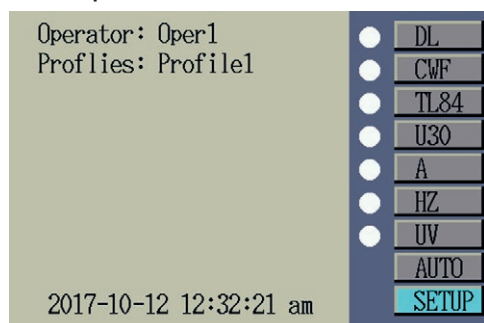
1. Use the up(▲) and down(▼) arrow button to highlight the 'RESET' option. Then press ENTER to access the factory reset screen.
2. Use the up(▲) and down(▼) arrow button to highlight the desired option.
3. Press ENTER to select the desired option and then press ENTER to confirm.



User

The user menu is used to configure operator, profile, attenuator and language settings.

1. From the main menu, use the up(▲) and down(▼) arrow button to highlight the 'SETUP' option. Then press ENTER to access its screen.



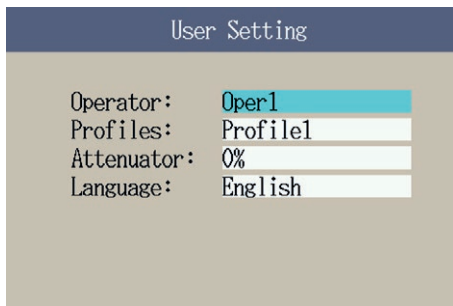
2. Use the up(▲) and down(▼) arrow button to highlight the 'User' option, and then press ENTER to access the User Settings screen.



The following are descriptions of the user settings.

User Settings	Value or option selection	Factory Default	Description
Operator	Oper1-Oper8	Oper1	Select the operator from the list. Operator name will appear in the main menu.
Profile	Profile1-Profile8	Profile1	Select the profile from the list. Profile name will appear in the main menu.
Attenuator	25%, 0% NOTE: 0% attenuation is 100% lux output 25% attenuation is 75% lux output	0%-D65	NOTE: When daylight is set to be D75, attenuator should be set as 25%; when set to be D65, attenuator should be set as 0% (no attenuator). Make sure the settings fit together, otherwise the system will not work properly.
Language	中文 , English	English	Select operating language

3. Use the up(▲) and down(▼) arrow button to highlight the desired option.



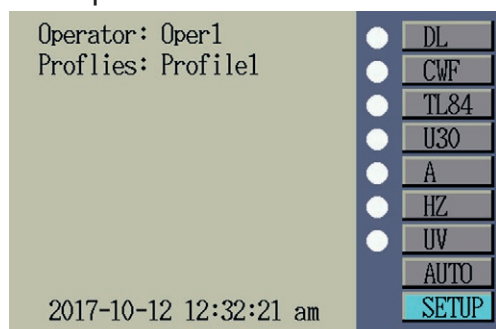
User Setting	
Operator:	Oper1
Profiles:	Profile1
Attenuator:	0%
Language:	English

4. After the option is highlighted, press the ENTER to access the editing screen.
5. Select desired option or value for the user settings.
 - Use the up(▲) and down(▼) arrow button to highlight one option or select a value.
 - Press ENTER to save the selected option/value.
6. When finished with the user settings, press EXIT to exit the 'User Settings' screen.

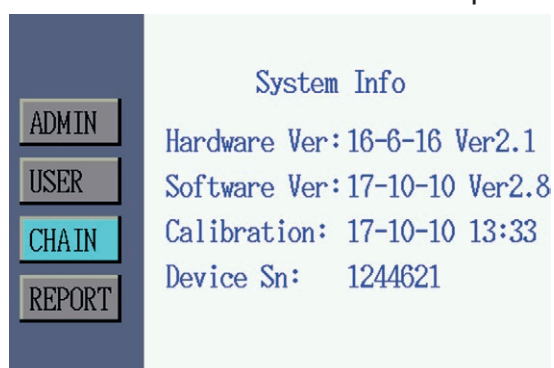
Chain

The daisy chain screen is used to configure the lighting viewing booths or luminaires that are connected together. A maximum of 32 luminaires can be daisy chained.

1. Connect all luminaires that you need to control together.
2. From the main menu, use the up(▲) and down(▼) arrow button to highlight the 'SETUP' option. Then press ENTER to access 'SETUP' screen.



3. Use the up(▲) and down(▼) arrow button to highlight the 'CHAIN' option, and then press ENTER to access the chain setup screen.



The following are descriptions of available daisy chain settings.

Chain Settings	Option selection	Default	Description
Chain	Enabled, Disabled	Enable	Enable or disable daisy chain operation.
Address Mode	Broadcast, Group, Device	Broadcast	Set addressing mode option for the luminaires. Broadcast covers all connected device. Group covers the selected group and Device is for an individual device.
Group	Group 1 to Group 8	Group 1	Set the active group for group addressing.
Device	1 to 32	0	Set the luminaire location for device addressing.

Chain Setting	
Chain En:	Enable
Add Mode:	Broadcast
Group:	Group 1
Device:	6

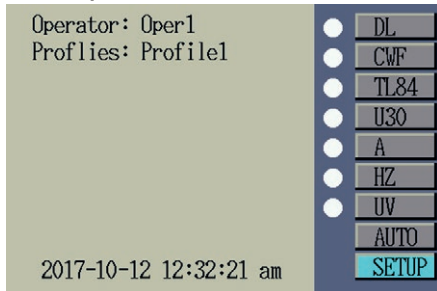
4. Use the up(▲) and down(▼) arrow button to highlight the desired option.
5. After the option is highlighted, press ENTER to access the editing screen.
6. Select desired option form the available daisy chain settings.

To select option:

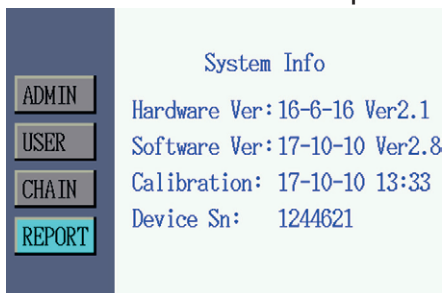
- Use the up(▲) and down(▼) arrow button to highlight the desired option or select a value.
- Press ENTER to save the selected option/value.

Report

1. From the main menu, use the up(▲) and down(▼) arrow button to highlight the 'SETUP' option. Then press ENTER to access its screen.



2. Use the up(▲) and down(▼) arrow button to highlight the 'REPORT' option, and then press ENTER to access the report screen.

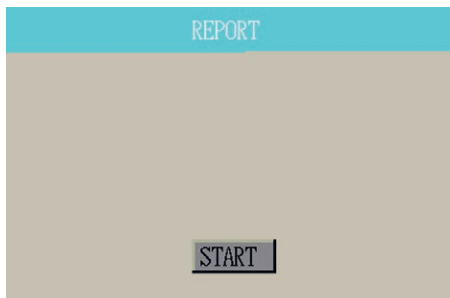


System Report

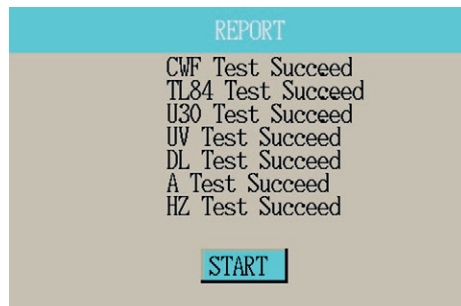
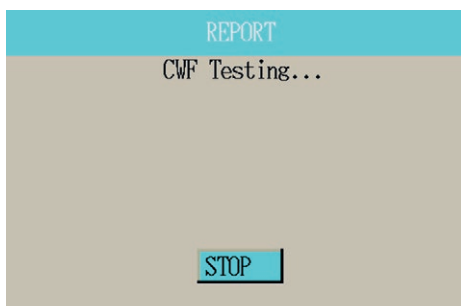
Running System Report can create a report for the conformance and lamp on the system.

NOTE: Keep the viewing booth empty when running the system report program.

1. Use the left(◀), right(▶) arrow button to highlight the 'REPORT'.



2. Press ENTER to run the lamp test.

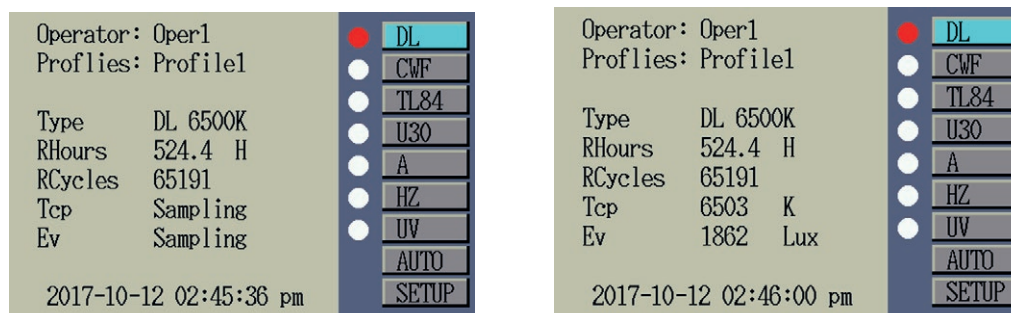


3. When the test finished, the device will record the message automatically.

Operation

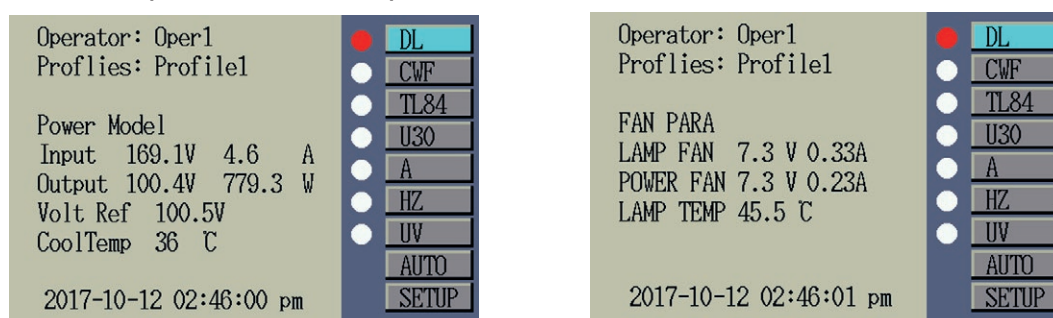
Choose the light source

Use up(▲) and down(▼) arrow button and press ENTER button. The light source will continue to light on until you choose another light source or press the light switch again. (The red point on the left of a light source name means the light is switched on.)



Dimming control can increase or decrease the intensity or voltage of fluorescence and UV light source. After activating the light source, press the left(◀) or right(▶) arrow button. When adjusting the light source, all of the configured settings will exit.

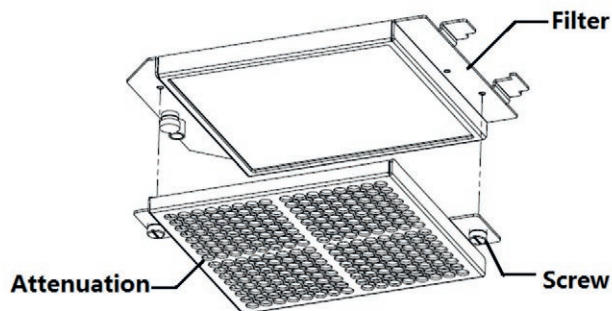
For other light sources, pressing the left(◀) or right(▶) arrow button will review all kinds of sensor data as input data and temperature.



Main Menu Switch	Description
DL	Switch on/off daylight D65 or D75
CWF	Switch on/off CWF
TL84	Switch on/off TL84
U30	Switch on/off U30
A	Switch on/off Incandescent A
HZ	Switch on/off HZ (Horizon)
UV	Switch on/off ultra-violet light
AUTO (short press)	Run the auto sequence mode (Please refer to section 'Auto Sequence' below)
AUTO (long press)	Edit the auto sequence mode (Please refer to section 'Auto Sequence' below)
SETUP	Enter the configuration menu (Please refer to 'System Setup' part in this instruction)

NOTE: When you choose to run Daylight 7500K, please follow below operation steps.

A) Assembling the attenuator to the daylight filter which inside the device.



B) SETUP → ADMIN → RLAMP → DL → LType → DL7500K

OWNER		DL
SYS	LType: DL 7500K	CWF
RLAMP	RHours: 599.2	TL84
PROFL	RCycles: 59994	U30
OPER	SN# Left 123456789	A
TIME	SN# Right 123456789	HZ
RESET		UV

C) SETUP → USER → Attenuator → 25%

User Setting	
Operator:	Oper1
Profiles:	Profile1
Attenuator:	25%
Language:	English

D) Turn back to main menu, turn on DL light source.

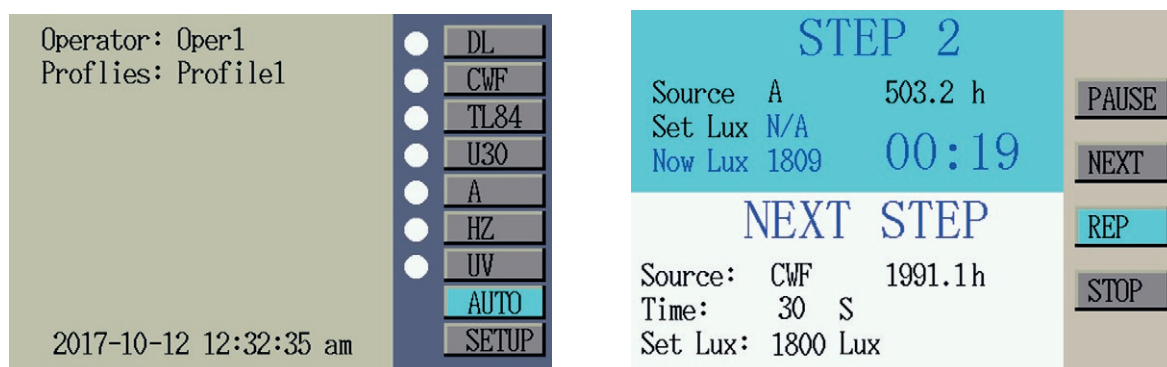
Operator: Oper1			● DL
Profiles: Profile1			○ CWF
Type	DL 7500K	25%	○ TL84
RHours	573.4	H	○ U30
RCycles	65196		○ A
Tcp	7504	K	○ HZ
Ev	1803	Lux	○ UV
			○ AUTO
2017-10-12 03:29:03 pm			○ SET

Auto Sequence

Run a light source sequence automatically. Specific time (1 to 5999 seconds) for each light source and specific illuminance (1 to 2000 Lux) for fluorescent lamp can be set in each file. The programming is very useful to evaluate samples and focus on their appearance under multiple sources continuously, rather than manually switching between light sources.

Run Automatic Sequence

Use up(▲) and down(▼) button and move to 'AUTO', press ENTER button. After the time for last light was running out, the power supply will shut off.



Switch description of auto programming menu

PAUSE: To pause the procedure, and keep the current light open. Press the 'PAUSE' again, return to the procedure. If you want to leave a light opened much longer than the set time, this operation is very useful.

NEXT: To enter the next light source of this procedure.

REP: When completed, repeat the procedure.


STOP: Stop the procedure and exit.

To set up the auto sequence move to 'AUTO' then press and hold ENTER button until the settings menu opens.

For customized auto sequence programs, please refer to the 'SETUP → ADMIN → PROFL' part in this instruction.

Remote Control

The remote control can be used to turn on light sources from a distance of 10 meters (without any wall or obstacle). If more than one remote control is used for multiple devices, the address code for the remote and the device will need to be changed. Refer to the 'SETUP → ADMIN → SYS → RF Remote Add' part for the procedure to change the address code.

- Press the RED AWAKE switch  to turn on the remote control.
- Press button to turn on the desired light source. When you press the switch again, the lamp will be turned off.

NOTE: a) The remote control will turn to sleep status without any action in 30s.

Awake it by pressing the RED AWAKE switch  while Green LED twinkle.

- b) Signal send succeed – GREEN LED twinkle
- c) Signal send failed and there is no device – RED LED twinkle



Remote Address Code

The address code that is set in the system settings must be paired with the proper dipswitch settings on the remote control for proper operation. The dipswitches are located on the back of the remote control.

The default address code for the system settings is '1'. This setting requires dip switches (1) on the remote control to be set to the 'ON' position. If remote address is set to be '2', please set dip switches (2) to the 'ON' position.

A total of 8 address codes can be used in the system setting configuration. Refer below for specific address code and dipswitch settings. (From left to right)

Address	A1	A2	A3	A4	A5	A6	A7	A8
1	✓							
2		✓						
3			✓					
4				✓				
5					✓			
6						✓		
7							✓	
8								✓



Appendix

General Maintenance

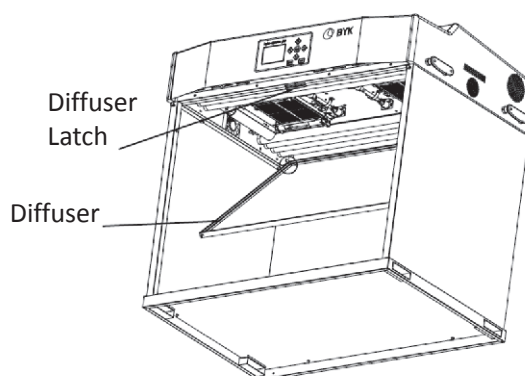
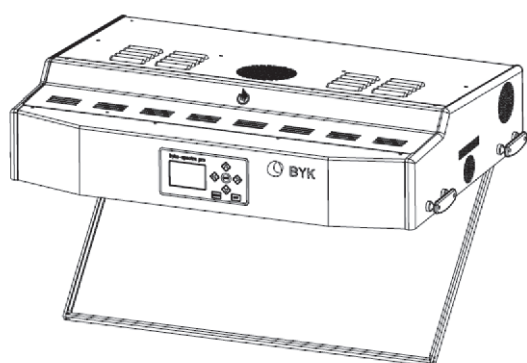
Cleaning

1. Turn off the power switch and unplug AC line cord before proceeding with any maintenance procedure.

CAUTION: The daylight filters and incandescent lamps get very hot during normal operation. Do not touch the filters or lamps; allow time for them to cool down before cleaning.

Cleaning the Diffuser

1. Remove the front panel.
2. Hold the diffuser and release the latch to slowly lower down the diffuser.
3. Wash the interior of the diffuser glass with water containing a mild detergent; rinse thoroughly, and air dry.
4. Hold up the diffuser and lock the latch
5. Wash the exterior of the diffuser glass with water containing a mild detergent; rinse thoroughly, and air dry.



Cleaning the Fluorescent and Halogen lamp

1. Remove dust from all lamps with a clean, dry, lint-free cloth.
2. Remove dust from all reflectors with a clean cloth dampened with warm water or an ammonia-based window cleaner. Allow all components to air dry.

Cleaning the daylight filter

1. Remove the front panel
2. Hold the diffuser glass while releasing the latch, and slowly lower the diffuser glass.
3. Hold the filter pack, pull up the fastener-cover and rotate it to cover the thumb screw, then release it to lock the screw. Refer to following figure 1.
4. Release thumb screws and detach the filter. Remove the filter glass out. Refer to figure 2.
5. Wipe dust from filter with a clean, dry, lint-free cloth dampened with some mild detergent. Allow to air dry.

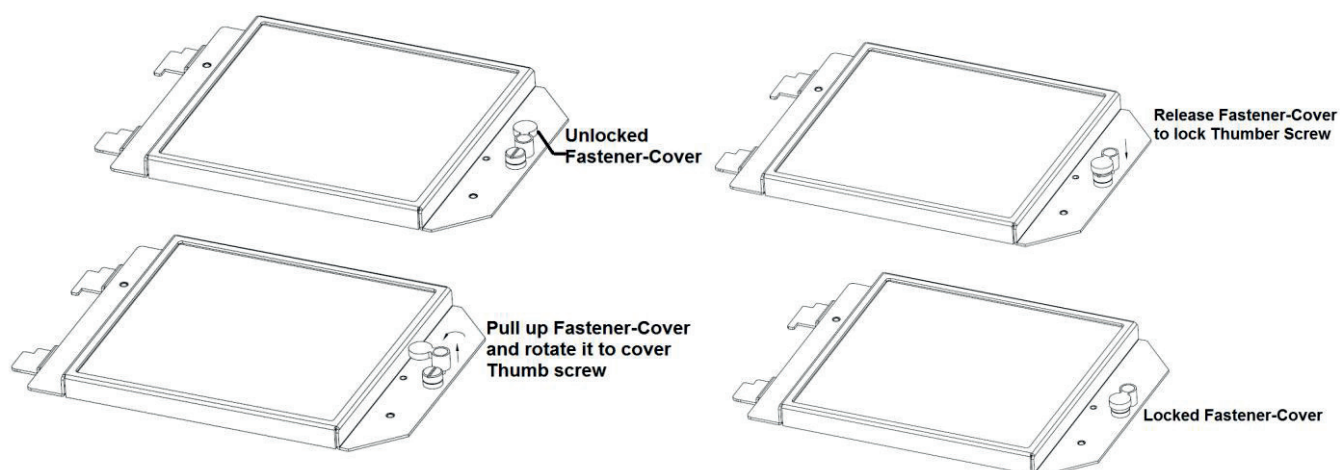


Figure 1

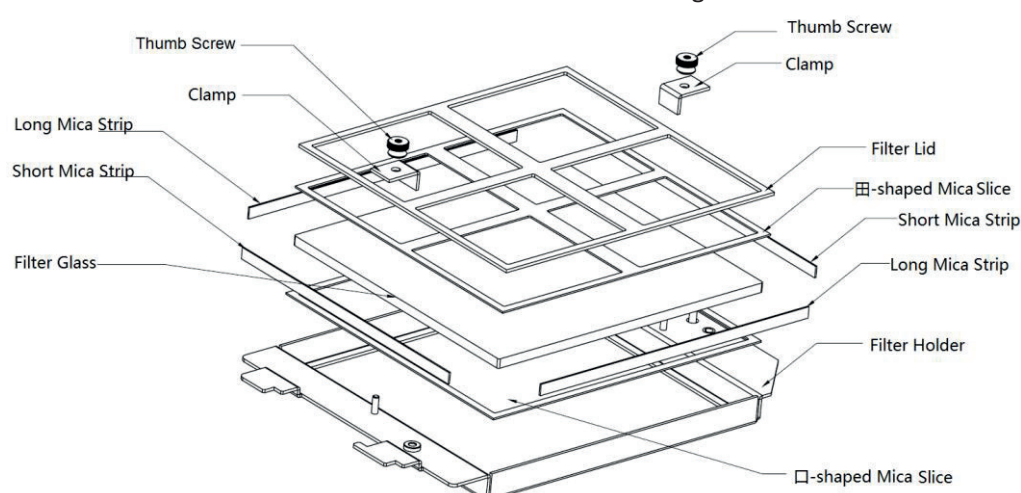


Figure2

Lamp Replacement

Replace burned out lamps immediately in order to maintain the total performance criterion of the device. We recommend replacing lamps in complete sets. For example, if one daylight lamp burns out, replace both of them.

Lamp Type	Replace after (Time Resetting)	Lamp Type	Replace after (Time Resetting)
Simulated Daylight (D65, D75)	600 hrs or 60,000 switching cycles	CWF	2,000 hrs or 60,000 switching cycles
Horizon (HZ)		TL84/U30	
Incandescent (A)		Ultra-violet (UV)	

1. Turn off the main power switch and unplug the AC line cord before proceeding.
2. Remove the front panel if viewer box installed.
3. Release the diffuser latch. Lower the front of diffuser until it reaches its fully opened position (vertical).
4. Wait for the lamps to cool down before handling the daylight filter or incandescent lamps. When handling the lamps, always use lens paper or similar products, because skin oils affect the performance of the lamp tube.

Tungsten-Halogen Lamps

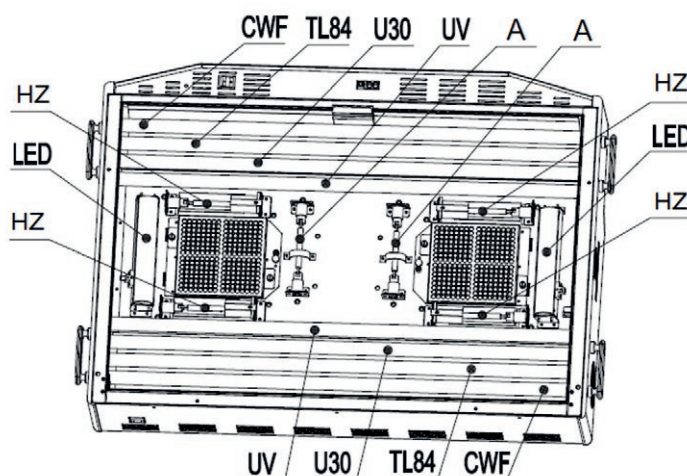
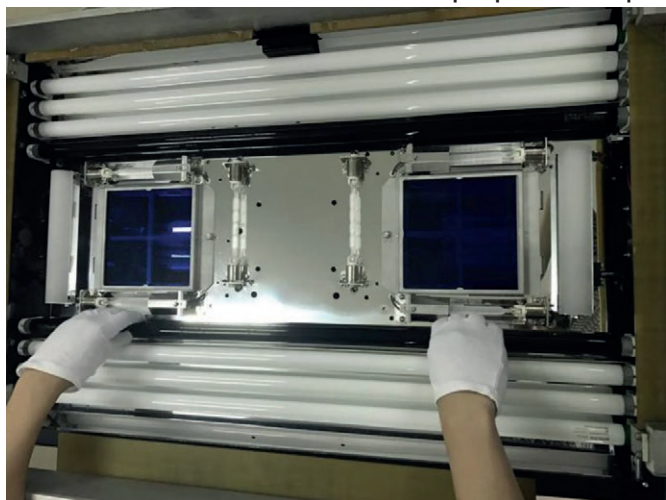
1. Daylight lamps only: Hold the filter pack, push in on the fastener button and lower the daylight filter pack. Repeat the procedure for the other filter pack.
2. Push one end of the old lamp into the spring loaded socket to release the other end from its socket.
3. Pull the lamp completely out of the two sockets and dispose it in the appropriate container.
4. Use lens paper (or similar products) when you touch the lamps. Push one end of the replacement lamp into the socket. Refer to the following photo.
5. Insert the other end of the lamp into the other socket and release the lamp. Refer to the photo.
6. Repeat step 2 to 5 for the other lamp.
7. Daylight Lamp only: Turn the daylight filter pack back into its original position and push in on the fastener button to secure. Repeat procedure for other daylight filter pack.

NOTE: If you want to recertify the light sources, please contact your local BYK-Gardner technical service office.



Fluorescent Lamps

1. Rotate the lamp 1/4 turn with both hands, remove it from both sockets. Refer to the following photo.
2. Dispose it in an appropriate receptacle.
3. Install the new fluorescent lamp into the socket.
4. For the other fluorescent lamps please repeat steps 1 to 3.



Fuse Replacement

1. Shut off the power and remove the AC line cord.
2. Use screw driver to open the fuse box. Remove the burned out fuse and replace with the back up one.
3. After replacement, push the box to its closed position. Refer to the following photos:



Troubleshooting

Problem	Cause/Solution
No Response	Please check the switch on the front panel is ON properly
	A fuse is burned out. Refer to 'Fuse Replacement' in the maintenance section.
	Device is unplugged. Make sure the AC line cord is plugged in.
	Contact our technical support.
Lamp not working	Lamp is not installed correctly. Refer to 'Lamp Replacement' the maintenance section.
	Temperature is too high. Allow time for the lamps to cool down before operation.
	Contact our technical support.
Remote Control not working	IP Address does not match. Refer to 'Remote Control' section.
	Remote is in sleep mode. Press RED AWAKE switch (with red led twinkling once) to awaken it.
	Remote Control is out of power. Replace the battery.
	Contact our technical support.
Daisy chained luminaires not working	Frequent start or shut off the device. Shut off the power and wait for 10 sec before turning it on again.
	Contact our technical support.

Specifications

Parameters	Overhead luminaire	Observation box
Dimensions	D990 × W690 × H215 mm (D37.6×W27.2×H8.5 inch)	D990 × W635 × H700 mm (D37.6×W25.0×H27 inch)
Weight/Shipping Weight	49kg/61.88 kg	25kg/32.68 kg
Electrical	<p>Power 115Vac (100-120Vac) 50/60HZ 1150W 230Vac (220-240Vac) 50/60HZ 1150W</p> <p>Main Fuse 115Vac Model : 250V 15 A (5x20 mm) 220Vac Model : 250V 6.3A (5x20 mm)</p> <p>Power Cord Plug: Customer specific Connector: IEC60320 C13</p> <p>Standby Power: ≤15W</p>	
Optics	<p>Lamp Daylight: Two 500W, 120V, 3200K Incandescent: Two 120V, 160W, 2950K Horizon: Four 120V, 200W, 2400K CWF: Two T8 30W TL84: Two T8 30W U30: Two T8 25W UV: Two T8 30W Daylight LED Optical Compensation: Two/Group D65 Filter: Two/Group Daylight Attenuator: 25% Attenuator</p>	
Environmental Requirements	<p>a) Indoor use; b) Altitude: ≤2 000m; c) Operating Temperature: 5°C to 35°C (41F to 95F) d) Storage Temperature: -40°C to 70°C (-40F to 158F) e) Relative Humidity: 0 to 80% max (non-condensing)</p>	
Handling Mode	Manual Handling	

About Us

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EC Declaration of Conformity

We BYK-Gardner GmbH
 Lausitzer Strasse 8
 82538 Geretsried

herewith declare that the product:

Type: **byko-spectra pro**

comply with the requirements of the following EC directives:

2014/30/EU	Electromagnetic Compability
2014/35/EU	Low Voltage

The following harmonized standards were applied:

EN 61010-1:2010
EN 61326-1:2013

Geretsried, September 10, 2017



Frank R. Wagner
Managing Director

欧洲合格认证 (CE) 声明

我们 BYK-Gardner GmbH
 Lausitzer Strasse 8
 82538 Geretsried

特此声明, 以下产品:

型号: **byko-spectra pro**

符合以下欧盟准则:

2014/30/EU	电磁兼容性准则
2014/35/EU	低电压准则

以下协调标准被使用:

EN 61010-1:2010
EN 61326-1:2013

格雷茨里德, 二零一七年九月十日



Frank R. Wagner
首席执行官

301 300 000 E 1710