PX393

PxArt+ Mono

MANUAL

PXM®

CONTENTS

Manufacturer reserves the right to make modifications in order to improve device operation.

1. GENERAL DESCRIPTION

PxArt+ Mono is a professional LED illuminator designed to illuminate museum and exhibition displays.

By using the latest semiconductor light sources SSL LED COB type and advanced control electronics, a high-class illuminator has been created that meets very high requirements concerning museum and exposition lighting. Its most important advantages include the total lack of ultraviolet radiation, trace amounts of infrared radiation, very high CRI colour rendering index, high brightness and low energy consumption.

The device has a handle that allows for its installation to GLOBAL Trac Pulse control current rails which have an additional control line.

An individual address assigned to each lamp enables the regulation of brightness independently from settings of other lamps.

The button on the lamp housing also allows for manual control (e.g. when the lamp is connected to the current rail without control lines).

The lamp has high-efficiency LEDs and an effective control system thanks to which the lamp emits small amounts of heat. The lamp housing makes it possible to change the lighting direction on two axes.

2. SAFETY CONDITIONS

Caution! Before installing, connecting and using the lamp you have to absolutely read this document.

The following symbols are used to underline important information on security conditions on the product and in this manual.

Danger!
Risk of loss of life and health.

Warning!
Fire hazard**.**

Warning!
LED light emission. The risk of eye damage.

Warning!
The risk of burns.

Warning!
Read the instruction manual.

ESD Protection!
Read the instruction manual.

Caution!
Do not look at the LEDs at a shorter distance than 2.2m from the front surface of the tube without proper eye protection. LEDs can cause damage or eye irritation. Do not look at the light source directly through any optical instruments, which focus the light rays.

While working at an ambient temperature of 25°C housing unit can heat up to 90°C. Because of the danger of burns, avoid direct contact with the casing.

In case of improper usage of the product it may cause a risk of serious injury or death because of the threat of fire.

Device PX393 is powered directly from standard 230 V grid what can cause electric shock when safety rules are not observed.

Therefore it is necessary to observe the following:

1. Installation, particularly power connection, should be performed by a person holding the appropriate qualifications, according to instruction manual.
2. Lamp can be connected only to grid, which has protecting instalation in working order (3-wire grid).
3. All the conductors should be protected against mechanical and thermal damage.
4. In the event of damaging any conductor, it should be replaced with a conductor of the same technical data and attestations.
5. Device with visible mechanical damage cannot be connected to the mains.
6. All repairs, should be made with cut off power supply.
7. The device should be strictly protected against water and other liquids.
8. All sudden shocks, particularly dropping, should be avoided.
9. The device cannot be used in places with temperature lower than 2°C or higher than 40°C.
10. The device cannot be turned on in places with humidity exceeding 90%.
11. Clean with damp cloth only - lamp should be made with cut off power supply.

The dimming of the lamp brightness occurs when the temperature is above 70°C, which prevents the device from overheating. If the device reaches a temperature of 90°C, the power of the lamp will be totally reduced. The light is then switched automatically in the event of temperature drop below the maximum temperature (90°C). The higher the temperature of the device, the greater is the brightness dimming.

3. VERSION DATA

There are several versions of the PX393 lamp which are different from each other in the angle of the reflector applied, a colour rendering index, colour temperature and colour of the housing.

Below there is a description of designations of PX393 models with explanation:

PX393-XX-UYY-Z

XX - the reflector angle
Available values:
15 - 15°
36 - 36°
51 - 51°

U - CRI colour rendering index
X - 95
8 - 80
9 - 90

YY - Colour temperature
30 - 3000K
50 - 5000K

Z - Lamp housing colour
1 - grey
2 - black
3 - white

Example of lamp designation:

PX393-36-930-2

lamp housing colour: black

catalog number

CRI colour rendering index: 90, colour temperature: 3000K

the reflector angle: 36°

4. LAMP DESCRIPTION

❶ a three-phase track for control systems GLOBAL Trac® Pulse Control

❷ end feed

❸ power cable

❹ DMX cable (shielded cable, two-core cable)

❺ adapter GLOBAL Trac GAC 600

DMX+   DMX-
GND⏚

3 - 0 - 1 - 0 - 2
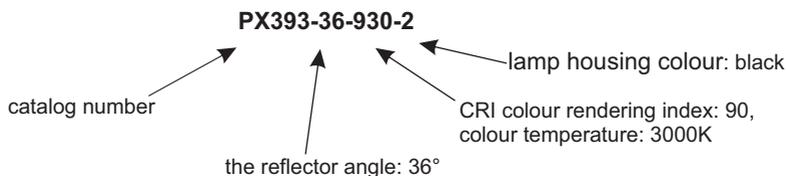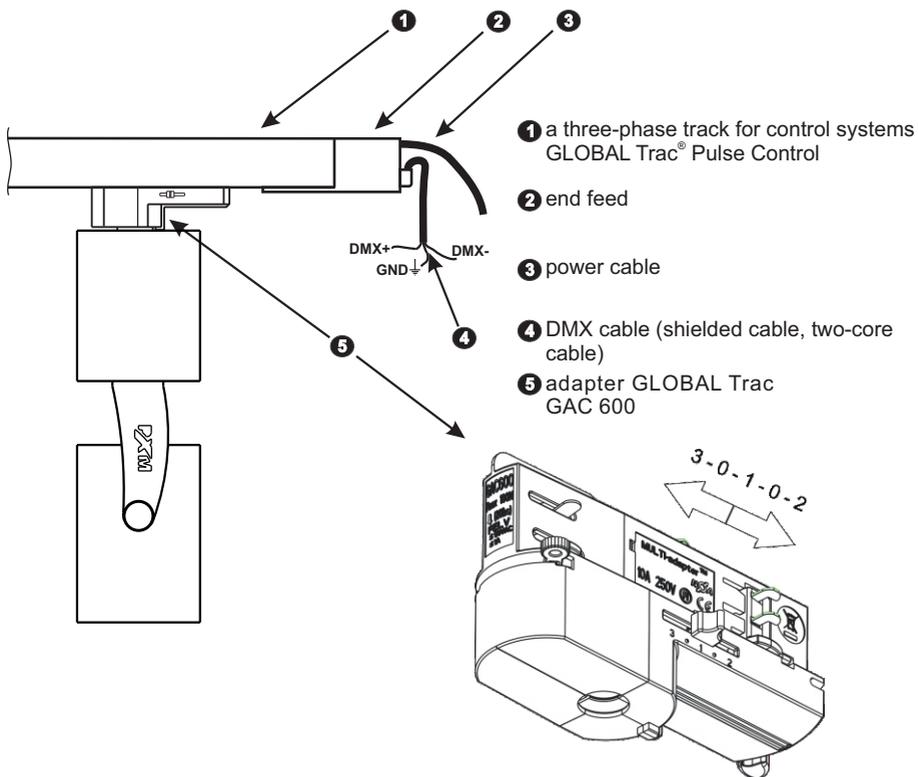
5. DMX SIGNAL AND POWER CONNECTION

5.1. Adapter GLOBAL Trac GAC 600

3   1   2
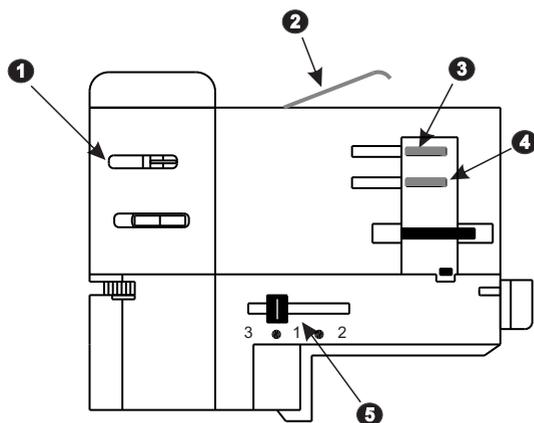
CONTACTS DMX

❶ DMX - (on the opposite side DMX +)

POWER CONTACTS

❷ earth   ⏚

❸ phase 1 (phase 2 on the opposite side)

❹ neutral (phase 3 on the opposite side)

❺ phase selector switch

6

5.2. Section through the DMX GLOBAL Trac Pulse control current rails.
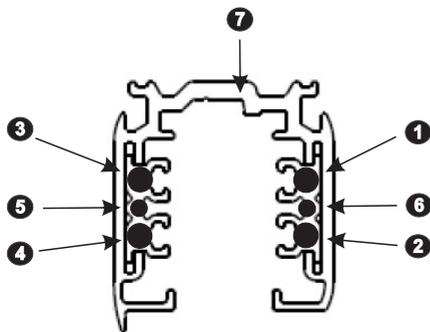
POWER

❶ phase 2
❷ phase 3
❸ phase 1
❹ neutral

DMX

❺ DMX -
❻ DMX +
❼ GND

6. MANUAL CHANGE OF LAMP SETTINGS

The lamp has been equipped with a button which allows for changing the brightness level. The button has been placed at the bottom part of the junction box, above the lamp reflector.

The layout of the button and connectors for connecting the PX277 programmer has been shown in the figure below:

Manual control button and socket
for programming the lamp parameters

Parameter programming
connector (using PX277)

Brightness regulation
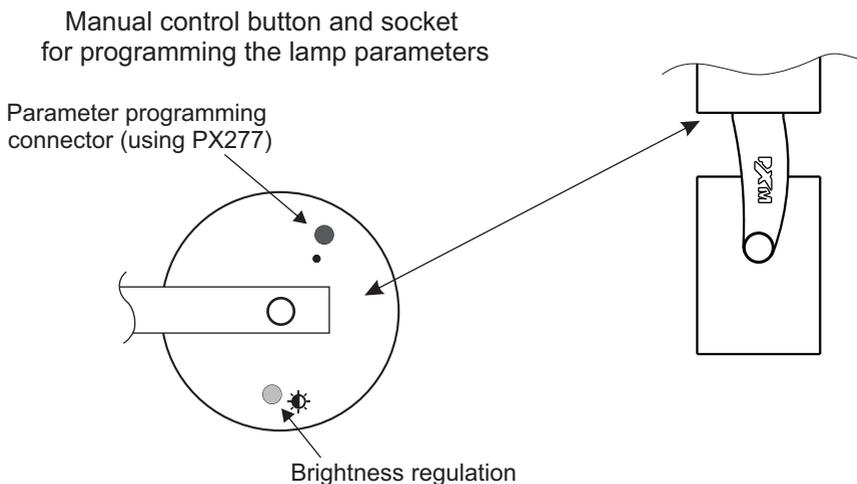
The programming button above the reflector has been equipped with a diode which indicates the condition of the lamp. <u>Depending on a situation, the diode signals the following:</u>
- start of the lamp - quick flickering of the diode for 2 seconds,
- DMX signal receiving - slow flickering of the brightness adjustment button, (1Hz frequency) in the first minute after receiving the DMX signal.

To change the brightness, press and hold down the control button. If during the brightness adjustment the button diode starts flickering, it means that the extreme value (minimum or maximum) has been reached. Then the direction of the adjustment changes.
It is possible to change the adjustment direction without reaching extreme values. For example, while the lamp brightness is increased, release the control button for a moment. The diode will signal the change of adjustment direction. The pressing of the adjustment button again will cause the dimming of the lamp (brightness decrease).
While the lamp operates, the diode stays switched off (excluding situations mentioned above).

Value: 0	Value: 255
Switched off lamp	Maximum brightness of the lamp

7. CO-OPERATION WITH THE PX277 CONFIGURATOR

Lamp settings can be changed by connecting the PX277 PxArt Settings Controller configurator.

At the moment of connection, the PX393 starts again which causes LEDs to be off for a while and the diode indicating the DMX signal condition pulses for 2 seconds. Once connection has been established and the parameters have been read by PxArt Settings Controller, lamp settings return to the state before the connection. When the device is turned on, its name appears on the display. The main menu allows a preview of many lamp parameters from PxArt series and a change of the following options: brightness address, stage brightness, time smoothing, change of smoothing time and restoration of default parameters.

Navigating through the menu is possible with programmer buttons located below the display. The "escape" button allows an exit to the upper level in the device menu; "next" and "previous" buttons make it possible to go forward and backward (alternatively value decreasing or increasing). However, the "enter" button allows you to enter the edition of the selected menu or to confirm the edited value.

Furthermore, it is possible to check the lighting time and lamp operation time (total lamp operation time, also without switching the diodes off).
Additionally, information concerning minimum, maximum and current temperature reached by the lamp is displayed.
PxArt Settings Controller also allows for checking the version number of the software which is installed in the lamp, its serial number and model.

7.1. Description of the information parameters

PX277 controller allows you to read important information concerning the lamp to which it has been connected.

```
┌─────────────────┐
│ Model           │ ◄──────────── Lamp model
│ PX393 +MONO     │
└─────────────────┘
        │ 6x NEXT
        ▼
┌─────────────────┐
│ Lighting time   │ ◄────┐
│ 00y 001d 06h: 48m│      │
└─────────────────┘      │
        │ NEXT           │
        ▼                │
┌─────────────────┐      │
│ Working time    │ ◄────┤
│ 00y 000d 07h:00m│      │
└─────────────────┘      │
        │ NEXT           │
        ▼                │
┌─────────────────┐      │
│ Temp. min max   │ ◄────┤
│ 23.0°C  53.3°C  │      │
└─────────────────┘      │
        │ NEXT           │
        ▼                │
┌─────────────────┐      │
│ Current temp.   │ ◄────┘
│ 25.5°C          │
└─────────────────┘
        │ NEXT
        ▼
┌─────────────────┐
│ Serial Number   │ ◄──────────── Lamp serial number
│ 2015350050      │
└─────────────────┘
        │ NEXT
        ▼
┌─────────────────┐
│ Version         │ ◄──────────
│ ver 2.14        │
└─────────────────┘
```

Lamp operation time (total operation time of the lamp, also without diodes turned on) and lighting time are presented as follows (designations from the left):
- years (numbers next to letter "y")
- number of days (letter "d")
- hours (letter "h")
- minutes (letter "m")

Information concerning the minimum, maximum and current temperature reached by the lamp.

Lamp serial number

Version number of the software installed in the PX393 lamp

8. SETTING LAMP PARAMETERS

8.1. Lamp brightness address

PX277 allows for changing the DMX address which controls the brightness of the lamp.
The lamp has the DMX channel assigned whose value can be changed depending on the needs.
DMX channel can be set between 1 to 512.

To change the DMX channel (which is responsible for the lamp function), select in the PX277 menu a [**Bright. address**] option, confirm by pressing "enter" and then using "previous" and "next" buttons set an appropriate value. After the change of the DMX channel, the operation has to be confirmed by pressing "enter".

```
┌─────────────────┐
│ Model           │
│ PX393 +MONO     │
└─────────────────┘
        │ NEXT
        ▼
┌─────────────────┐  ENTER  ┌─────────────────┐
│ Bright. address │ ──────► │ Bright. address │
│ 001             │         │ 001  *          │
└─────────────────┘         └─────────────────┘
                                    │ NEXT
                                    ▼
                            ┌─────────────────┐
                            │ Bright. address │
                            │ 512  *          │
                            └─────────────────┘
```
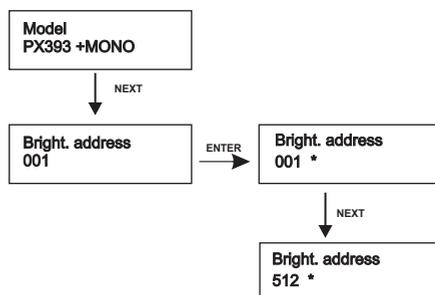
8.2. Scene brightness

Lamps from PxArt series can work without using DMX control. In such case, PxArt Settings Controller enables changing the scene brightness value. This value can be set between 0 to 255.

[**Scene bright.**] set to value 0 turns off the stage and turns the value 255 to 100%. Value 128 means the stage brightness is 50%. After changing the value of the stage brightness, the operation has to be confirmed by pressing "enter".

```
Model
PX393 +MONO

        2x NEXT

Scene bright.      ENTER    Scene bright.
128                         000 *

                                   NEXT

                           Scene bright.
                           255 *
```
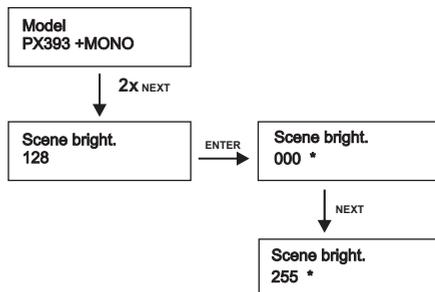
8.3. Smooth

The device also has the smoothing option which enables smooth brightness modifications. When the function is turned off, the transitions between successive DMX values sent to the lamp (responsible for brightness changes) occur smoothly, without visible jolts, which prevents light "vibration" effects in the lighting systems.

The next two DMX values sent to the lamp are linearly smoothed between DMX signal packets for the selected option (P2P) or the time interval set in the menu (Time).

```
Model
PX393 +MONO

        3x NEXT

Smooth          ENTER       Smooth
Time                        Off *

                                   NEXT

                            Smooth
                            P2P *

                                   NEXT

                            Smooth
                            Time *
```
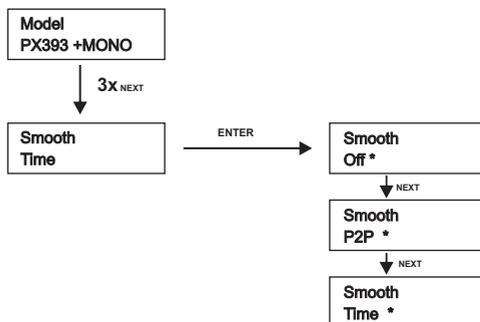
8.4. Smooth time

When the PxArt Settings Controller time smoothing function is active, it allows for changing the smoothing time value. As a result it enables an acceleration or deceleration of the brightness parameter change. Maximum available value is 2000 [ms] and minimum is 10 [ms].

```
Model
PX393 +MONO

        4x NEXT

Smooth time    ENTER      Smooth time
0200[ms]                  0010[ms] *

                                 NEXT

                          Smooth time
                          2000[ms] *
```
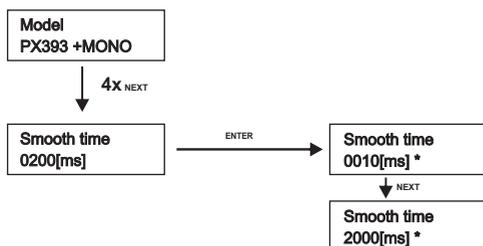
[**Smooth time]** makes it possible to change the time parameter at which subsequent different DMX signal values sent to the lamp are smoothed among themselves. The user may set the smoothing time using "previous" and "next" buttons.

8.5. Restoring default settings

The device comes with the option to restore default settings.

To use this option, select the [**Default sett.**] menu and press "enter".

A window informing about the need to press "previous" and "next" buttons will appear for 2 seconds simultaneously. Next, the device will display [**Reset OK**]. The acceptance of this message by using "enter" restores default settings.

There is also a possibility to exit the level of this menu without returning to default settings. In such case, the "escape" button will be selected.

PX393 default setting:
- Brightness address - 001
- Stage brightness - 128
- Smoothing - Time
- Smoothing time - [200 ms]
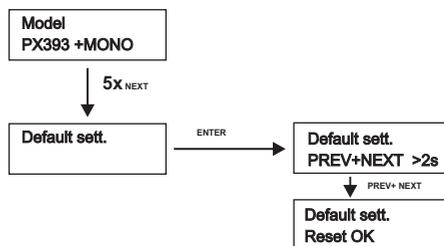
9. RDM DESCRIPTION OF AVAILABLE PARAMETERS

PX393 supports the DMX-RDM protocol. DMX protocol in its assumption enables one-way data flow while its extension, the RDM protocol, can transmit information in two ways. This makes the simultaneous receiving and sending of information possible and allows for monitoring the operation of devices compatible with the RDM protocol as well as possibly changing the configuration of their parameters.

Below there is a list of RDM parameters supported by PX393:

* - parameter editable

Parameter name	PiD	Description
SUPPORTED_PARAMETERS	**0x0050**	all supported parameters
PARAMETER_DESCRIPTION	**0x0051**	description of additional parameters
DEVICE_INFO	**0x0060**	information concerning the device
SOFTWARE_VERSION_LABEL	**0x00C0**	firmware version of the device
DMX_START_ADDRESS *	**0x00F0**	DMX starting address of the device, minimum value: 1, maximum value: 512. According to the RDM standard, for device whose footprint is 0, the value of this parameter may be 65535 and then it is not possible to change the initial address settings for the entire device, but only for sub-devices.
IDENTIFY_DEVICE *	**0x1000**	device identification, Two states are possible: identification is off (0x00 value) and identification is on (0x01 value).

| Parameter name	PiD	Description
DEVICE_MODEL_DESCRIPTION	0x0080	device description, e.g. name
MANUFACTURER_LABEL	0x0081	manufacturer description, e.g. name
DEVICE_LABEL *	0x0082	additional device description, It is possible to enter an additional device description using up to 32 ASCII characters.
FACTORY_DEFAULTS	0x0090	device default settings
DMX_PERSONALITY	0x00E0	DMX operational mode
DMX_PERSONALITY_DESCRIPTION	0x00E1	description of individual operational modes
SENSOR_DEFINITION	0x0200	information concerning the selected temperature sensor
SENSOR_VALUE	0x0201	information concerning sensors
DEVICE_HOURS	0x0400	information concerning the working time of the device counted in hours
LAMP_HOURS	0x0401	information concerning lamp lighting time
TEMPERATURE_LIMIT_ON/OFF	0x800E	temperature limitation activation for the temperature sensor connected to the driver, For 0 value, the function is not active; for 1 value, the function is active. Default value is 1.
TEMPERATURE_THRESHOLD_LOW	0x800F	lower temperature value for which the temperature limitation is being activated
TEMPERATURE_THRESHOLD_HIGH	0x8010	upper temperature value for which the temperature limitation is active, i.e. the cut-off temperature for exits from the driver
SMOOTH_DIS_0/P2P_1/TIM_2 *	0x801A	selection of the options concerning Smooth function, For 0 value, the smooth function is off; for 1 value, the smooth function operates in the Packet to Packet mode (P2P) and for 2 value, the smooth function operates in the time mode. Value 0 set by default – smoothing off.
SMOOTH_TIME *	0x801B	smoothing time for TIM (time) function selected in the above point, Unit expressed in [ms]. Minimum parameter value is 10 and maximum is 2000 [ms]. Default value is 200 [ms].
SCENE_BRIGHTNESS *	0x8022	brightness settings, Minimum value: 0, maximum value: 255. Default value is 128.
SERIAL_NUMBER	0x8030	device serial number

10. DEVICE PROGRAMMING

```
┌─────────────────┐                    ENTER                              ┌─────────────────┐
│ Model           │                                                       │ Bright. address │
│ PX393 +MONO     │                                                       │ 001  *          │
└─────────────────┘                                                       └─────────────────┘
        │ NEXT                                                                     │ NEXT
┌─────────────────┐            ENTER                                       ┌─────────────────┐
│ Bright. address │──────────────────────────────────────────────────────│ Bright. address │
│ 001             │                                                       │ 512  *          │
└─────────────────┘                                                       └─────────────────┘
        │ NEXT
┌─────────────────┐            ENTER                      ┌─────────────────┐
│ Scene bright.   │──────────────────────────────────────│ Scene bright.   │
│ 000             │                                       │ 000  *          │
└─────────────────┘                                       └─────────────────┘
        │ NEXT                                                     │ NEXT
┌─────────────────┐            ENTER                      ┌─────────────────┐
│ Smooth          │                                       │ Scene bright.   │
│ Time            │                                       │ 255  *          │
└─────────────────┘                                       └─────────────────┘
        │ NEXT            ENTER              ┌─────────────┐
┌─────────────────┐                          │ Smooth      │
│ Smooth time     │                          │ Off *       │
│ 0200[ms]        │                          └─────────────┘
└─────────────────┘                                 │ NEXT
        │ NEXT     ENTER      ┌──────────────┐ ┌─────────────┐
┌─────────────────┐          │ Smooth time  │ │ Smooth      │
│ Default sett.   │          │ 0010[ms] *   │ │ P2P  *      │
└─────────────────┘          └──────────────┘ └─────────────┘
        │ NEXT                      │ NEXT            │ NEXT
┌─────────────────┐          ┌──────────────┐ ┌─────────────┐
│ Lighting time   │   ENTER   │ Smooth time  │ │ Smooth      │
│ 00y 001d 06h:48m│          │ 2000[ms] *   │ │ Time  *     │
└─────────────────┘          └──────────────┘ └─────────────┘
        │ NEXT                ┌──────────────────┐
┌─────────────────┐           │ Default sett.    │
│ Working time    │           │ PREV+NEXT  >2s   │
│ 00y 000d 07h:48m│           └──────────────────┘
└─────────────────┘                   │ PREV+ NEXT
        │ NEXT                ┌──────────────────┐
┌─────────────────┐           │ Default sett.    │
│ Temp. min max   │           │ Reset OK         │
│ 23.0°C  53.3°C  │           └──────────────────┘
└─────────────────┘
        │ NEXT
┌─────────────────┐
│ Current temp.   │
│ 25.5°C          │
└─────────────────┘
        │ NEXT
┌─────────────────┐
│ Serial Number   │
│ 2015350050      │
└─────────────────┘
        │ NEXT
┌─────────────────┐
│ Version         │
│ ver 2.14        │
└─────────────────┘
```

11. DIMENSIONS

Ø87

Ø68

Ø13

61

276

125

Ø87

107

Dimensions in millimetres

12. TECHNICAL DATA

Power:	230 V AC
Number of LEDs:	1 (COB)
Power input:	27 W
PF (power factor):	0,94
Max. increase of the housing temperature:	+ 50° C
Luminous flux:	1850 lm in the standard available version (1090÷2420 lm in versions on request)
Lifetime of diodes:	50 000 h
Angles of reflectors:	15°, 36°, 51°
Colour temperature:	3000 K the basic version (3000÷4500 K - versions on request)
Brightness regulation extension:	0÷100%
CRI colour rendering index:	min. 90 for the basic version (80-95 depending on the version of colour temperature)
Control protocol:	DMX-512 / RDM
Available housing colours:	Grey, black and white
Weight:	1,3 kg
Dimensions:	Width: 107 mm Height: 276 mm Diameter of the reflector: 86 mm

Spectral characteristics of the emitted light

PXM
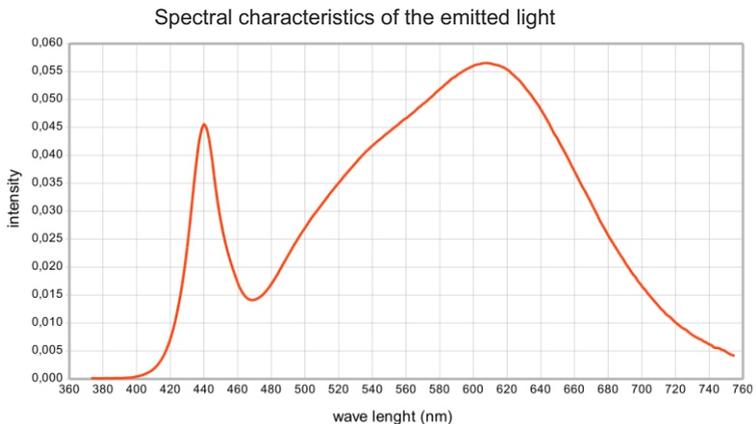
ul. Przemysłowa 12
30-701 Kraków

tel: 12 626 46 92
fax: 12 626 46 94

e-mail: info@pxm.pl
http://www.pxm.pl

DECLARATION OF CONFORMITY
according to guide lines 2004/108/WE and 2006/95/WE

Name of producer: PXM Marek Żupnik sp. k.

Address of producer: ul. Przemysłowa 12
30-701 Kraków

declares that the product:
Name of product: **PxArt+ Mono**

Type: **PX393**

answers the following product specifications:

LVD: **PN-EN 60598-1:2011**
PN-EN 62471:2010

EMC: **PN-EN 61000-4-2:2011**
PN-EN 61000-6-1:2008
PN-EN 61000-6-3:2008

Additional informations: Pay attention to the correct connection of power cables.
Maintenance can be performed only while the current rails system is off.
DMX signal has to be connected by using a shielded cable, connected to the GND pin.

PXM

Marek Żupnik spółka komandytowa
30-701 Kraków, ul. Przemysłowa **12**
NIP 677-002-54-53

mgr inż. Marek Żupnik

Kraków 10.06.2015