

# ALYRA

## ERO 404 LED moving head



## User manual

*The information in this user manual is subject to change at any time without notice.*

*Version: 1.0 Date of creation and author's initials:18-02-2017 RV Revision date and author's initials: -*

# Introduction

Thank you for purchasing the ERO 404 moving head. This compact and versatile device is packed full of the latest technology and will add an extra special element to any occasion. This manual provides all the information you need to know about the product before you start using it.

We advise that you read this user manual in its entirety before unpacking the contents of the box, so that you are familiar with all of the functionality that this product has to offer. Please be sure to check that all of the parts and accessories listed below under 'Box contents' are included in the package. In the event that the ERO 404 does not function properly, or if you have any issues while operating it, please remove the plug from the power socket and contact your dealer for assistance.

## **Box contents:**

- ERO 404 LED moving head
- quick-lock mounting bracket
- connection cable from IEC C13 to Schuko, 1.5 mm<sup>2</sup>
- power cable IEC C13 to UK plug, 1.5 mm<sup>2</sup>

## **Please inspect the device and the included accessories.**

Should you discover that either the device or one or more of the included parts have been damaged or rendered defective while in transit, please contact your dealer directly.

*Please note that the pictures in this user manual serve illustrative purposes only and may differ from the actual product.*

# ALURA

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0    Date of creation and author's initials: 18-02-2017 RV    Revision date and author's initials: -**

# Safety instructions



## WARNING!



Keep this device away from moisture, water and rain to avoid the chance of electric shocks.



## WARNING!



Only connect this device to a suitable power socket. This device functions on a specific power voltage. If it is plugged into a power socket with a different voltage, it could result in permanent damage and even dangerous situations such as fire or electric shocks.



## WARNING!



Be careful when operating this device. Touching the wires that are connected to the mains, inside or outside the device, could result in electric shocks.

Everyone involved with the installation, operation and maintenance of this device must:

- Be qualified
- Be skilled
- Have read the instructions in this user manual
- Be sure that neither the device nor the included accessories are damaged. Should the device or the included accessories be damaged, please contact your dealer for more information.
- Ensure that the device is in good working condition and is safe to operate. Please follow the advice and instructions as they are described in this user manual.

Damage caused by misuse and/or modifications made to the device are not covered by the warranty.

This device does not contain any parts that can be repaired or replaced by the user. Should maintenance or repairs be necessary, they must be handled by a qualified technician.

The light source of this device is not replaceable. If the light source no longer functions, the entire device needs to be replaced.

### Important information regarding safety and health:

- Do not remove any labels or stickers from this device.
- Do not leave any cables lying around.
- The device should not be opened up, and any hardware or software that may be present should not be modified.
- To achieve optimal performance, inputs on the device should not be fed with a signal higher than necessary.
- The device should only be used indoors; contact with water, rain and moisture should always be avoided. Do not place any objects containing liquid on top of the device.
- Remove the device from any nearby flames or heat sources; do not place it near flammable fluids, gasses or objects.
- Disconnect this device from a power source if it will not be used for a longer period of time, if maintenance

*The information in this user manual is subject to change at any time without notice.*

Version: 1.0 Date of creation and author's initials:18-02-2017 RV Revision date and author's initials: -

is necessary, or if it needs to be cleaned.

- Do not pull on the cable to remove a connector, as it can cause damage.
- Do not use any cables other than the ones described in this manual. Do not use defective cables. Please contact your dealer if the included or necessary cables do not function properly with this device.
- Only use this device with a stable AC power supply.
- Only use this device with power from a grounded power source.
- In the event that the device is exposed to extreme temperature changes (e.g. transported through a cold outside environment into a warm indoor environment), it should not be turned on until it has reached room temperature. This is necessary to prevent moisture from forming in the device, which could lead to electric shocks.

#### **Guidelines and operation of this device:**

- This device is intended for use by professionals on stage, in theatres, in clubs, and in similar entertainment locations.
- This device is not suitable for use by children, and should always be operated by an adult.
- This device is designed to create light effects for entertainment purposes. It is not suitable for household illumination.
- This device may only be used in a suitable environment where no damage to the device can occur. Do not use the device in moist or dusty environments such as:
  - indoor swimming pools where chlorine is used
  - beaches where there is sand and salt
  - outdoors
  - indoors in spaces where intense heat sources are present, or where it reaches temperature levels that would be considered uncomfortable for a person
- Avoid impact and collisions during use and transport. Do not transport the device while it is in use. Avoid using excessive force when installing and operating the device.
- The user should become familiar with the functions of this device before using it.
- Should the device not be used in the manner described in this user manual, damages or even injuries could occur. Ayra cannot be held responsible for any injuries or damages that occur as a result of improper use of this product.

#### **Storage and transport:**

- This product was designed for mobile use. Please only transport the device in the original packaging, or in a flight case with a suitable foam inlay.
- This device was not designed for permanent (24/7) use. The expected lifespan of the device will not be affected by occasionally turning the device off. Disconnect the device or turn off the power when it is not actively in use.
- If the device will not be used for a longer period of time, it should be disconnected and stored in a dust-free environment.
- Do not expose the device to extreme temperature differences.

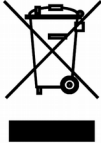


#### **Housing**

- Inspect the device's housing frequently, and always just before use. Avoid operating the device if there are large dents or cracks, or if screws are missing. Do not use the device if the housing is not in good condition. Contact your dealer or a qualified technician if you are unsure about the state of the device.
  - Check the device and the screws for corrosion. Corrosion must not be present on this device. Contact your dealer or a qualified technician if you find any corrosion on the screws.
- Every power and signal connector should be securely attached. Do not use the device if the connectors are not secure.
- Avoid dust and dirt build-up. Clean the device once a month by disconnecting it from the power supply and wiping it down with a dry or slightly moist cloth. If the device is used frequently, the cleaning intervals should increase.

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0    Date of creation and author's initials:18-02-2017 RV    Revision date and author's initials: -**

**Symbol explanation:**

	<p><b>WEEE:</b> Ensure that this device is disposed of properly. This product falls under the WEEE (Waste Electrical and Electronic Equipment) directive. The requirements of this directive apply to all manufacturers and producers of electronic devices in the EU. Do not throw this product away with regular rubbish. Please contact your local authority for more information about how to recycle and dispose of these products in your region. By recycling this product in the proper manner, we can work together to ensure that we can continue to enjoy these kinds of products and still protect the environment as much as possible from pollution.</p>
	<p><b>CE:</b> The CE logo indicates that this product meets the European norms and requirements to which it must legally conform.</p>
	<p><b>Only suitable for indoor use:</b> this product was only designed for indoor use. The maximum environmental temperature must not exceed 40 degrees Celsius (104 degrees Fahrenheit).</p>

# AYRA

**Contact:**

Ayra professional lighting products  
Verrijn Stuartweg 18  
4462 GE Goes  
The Netherlands

*Please do not send any products to this correspondence address.  
Should you wish to send in a product for repairs or for a refund, please contact your dealer for an RMA request (Return Merchandise Authorisation).*

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0    Date of creation and author's initials:18-02-2017 RV    Revision date and author's initials: -**

# Guidelines and operation of this device



1. moving head with light output via lens
2. rubber feet
3. LED display with menu buttons
4. DMX input via 3-pin XLR
5. DMX output via 3-pin XLR
6. power input with fuse holder
7. housing fan
8. head fan

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0    Date of creation and author's initials:18-02-2017 RV    Revision date and author's initials: -**

# Operation and mounting

To activate the device, plug it into a mains socket. Once it's connected to an active power source, it will turn on automatically.

During calibration, 'AYRA' will be shown on the display, which means the device is not ready to be operated. Once the device has fully started up, it will jump to the last-used mode. Operation modes and other settings shown on the display can now be adjusted or changed by means of the menu buttons.

During startup, the moving head may vibrate as it resets the pan and tilt settings. This should take no longer than one minute.

Should the device detect a DMX signal, it will automatically switch to DMX mode and will display the last-used address. For new devices, this will normally be DMX address 001. Of course, you can change the DMX address via the display using the menu buttons.

Using the display and the menu buttons, you can adjust the functions and settings of the device. Press 'Enter' to confirm an adjustment or select a function, use 'Up' and 'Down' to change amounts and 'Menu' to go back to the menu. By holding the 'Menu' button down for 2 seconds after saving a specific setting, the device will return to operation mode and adopt the setting. This will also be done after any changes in the operation mode or DMX address. This operation is not always necessary, considering the device automatically does this after a new setting is confirmed.

The menu contains the following options and functions.

display	Mode	Function
<b>ADDR</b>	DMX address configuration	Address A001 ... A512
<b>CHND</b>	Channel mode selection	9CH/13CH
<b>SLND</b>	Slave mode	Master - NAST Slave 1 – SL 1 (Synchronise) Slave 2 – SL 2 (Mirrored)
<b>SHND</b>	Show mode (for sound-activated operation)	SH 1 – Show program 1 SH 2 – Show program 2 SH 3 – Show program 3 SH 4 – Show program 4
<b>AUTO</b>	Automatic mode (speed user-adjustable)	AUT1 – Auto program 1 AUT2 – Auto program 2 AUT3 – Auto program 3 AUT4 – Auto program 4 (Adjust the speed per program by holding down the 'Enter' button and using the Up/Down keys to select a speed between 1 and 9. 1=slow, 9=fast)
<b>SOUN</b>	Sound-controlled mode (activates built-in microphone)	Mode: ON / OFF
<b>SENS</b>	Sound sensitivity	000 – 100: Sensitivity in %
<b>LED</b>	LED Display on/off when not in use	ON/OFF
<b>DISP</b>	Display inversion	Display inversion, Idsp-dspl
<b>PAN</b>	Invert Pan (mirror)	NO – do not invert pan YES – invert pan
<b>TILT</b>	Invert tilt (mirror)	NO – do not invert tilt YES – invert tilt
<b>TEST</b>	Test mode	This mode tests all the functions displayed to make sure they are functioning properly.
<b>HOUR</b>	Time registration	0000 – 9999 usage in hours
<b>VER</b>	Firmware version number	Display of firmware version number (can not be updated by user)

The information in this user manual is subject to change at any time without notice.

Version: 1.0 Date of creation and author's initials:18-02-2017 RV Revision date and author's initials: -

<b>RSET</b>	Reset function	Reset the device (has the same affect as turning the power off and on again)
-------------	----------------	--

You'll find an explanation of the various functions below:

**ADDR:** With this function, you can determine the DMX start address of the device. Set it channel 001, and the device will respond from DMX channel 1. Set it to channel 003, then the device will respond from DMX channel 3, etc.

**CHND:** This device is equipped with various DMX channel modes. With this function, you can choose a concise channel mode if your DMX circle is full and you do not require complete control over the functions. It is also possible to use the most comprehensive channel mode, which makes more channels available, each with its own separate function.

**SLND:** The Master-Slave mode is designed to sync multiple devices. A copy of the internal program is sent to the daisy-chained devices so that each one projects the same effect. The master-slave function works by means of standard 3-pin XLR cables. The only difference is that the first device in the chain does not receive DMX input. In Slave 1 mode, the device will copy the exact signal directly from the Master. The main difference is that the first device in the chain does not receive DMX input.

**PLEASE NOTE:** When Slave mode is activated, the device will wait for a signal from the Master device. It is not possible to simply select an automatic or sound-controlled mode! To cancel this, select 'NAST' mode in the SLND menu, so the device goes to Master mode. Then, all standalone functions can be activated.

**SHND:** This mode consists of automatic programs, designed for sound-controlled operation. In sound-controlled mode, the device uses the built-in microphone that can be activated by means of the SOUN setting and adjusted in sensitivity. Any time the microphone detects sound, the device will change movement and/or colour in a way that syncs perfectly with your light show. If no sound is detected, the device will move slowly and change colour gradually until sound is detected again.

**AUTO:** With this mode, you can select the same automatic programs as in the SHND mode, but they run at an automatic speed. The user can adjust the speed between 1 and 9, where 1 is the slowest and 9 is the fastest speed.

**SOUN:** This setting shows if the microphone function is activated or not, which you can see in the display as ON or OFF.

**SENS:** This mode allows you to determine the sensitivity of the internal microphone. The further the device is from the speaker, the higher the sensitivity of the microphone needs to be so it can react properly to the music. The microphone is built to handle high sound pressure levels, but the louder the signal, the higher the microphone sensitivity level, the more difficulty the device will have detecting the beat of the music. Experiment with the level of sensitivity and distance/positioning of the device to find the best results.

**LED:** If the LED display is not in use, it can be de-activated by turning the LED mode OFF. The red symbols will no longer light up when using the device in a dark environment. Press one of the menu buttons and the display will light up again and show any relevant information. If the device registers that the menu is not actively being used, it will automatically turn off within 30 seconds.

**DISP:** This function determines whether the display is shown normally or inverted. If the device is suspended, the display may be harder to read. This function allows you to rotate it vertically for better legibility.

**PAN/TILT:** Inverts the pan and /or tilt values independently so that the motors work in reverse. This function works in all modes.

**TEST:** Should the device need cleaning or maintenance, this function can be used to test one or more devices simultaneously. The device plays a continuous program while the step motors and LEDs are used. This way you can quickly detect any abnormalities or defects. The device will run the program until stopped manually (for example when the sound-controlled mode is activated.)

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0    Date of creation and author's initials:18-02-2017 RV    Revision date and author's initials: -**

**HOUR:** If this device is used professionally or rented, it should be regularly maintained and inspected in between use. The HOUR function shows exactly how long the device has been in use. This amount accumulates over time as long as the device is being used and cannot be manipulated by the user.

**VERS:** This function shows the device's firmware version. This cannot be changed by the user.

**RSET:** When this function is activated, the device will be restarted. This has the same affect as turning the power off and on again.

## Operating modes

The following overview is designed to show the differences between the various operation modes that are supported by the above-mentioned menu functions.

### Auto:

In automatic mode, choose one of the operating modes where the device is not dependent on external factors (such as a sound-controlled signals or the presence of noise). Choose one of the basic programs and set the options such as the switching speed or the intensity correction, if desired.

### Sound:

When in Sound-controlled mode, the device's internal microphone detects the music and reacts to the beat. The device will move in sync with the music and provide an automated light show.

When there is no music for the device to detect or when only high frequencies are audible, the device will continue its program at a slower pace, so the light show will not stop abruptly. As soon as the microphone detects music again, it will resume the automated program and follow the beat.

### Slave

In Slave mode, you can daisy-chain multiple devices of the same type so they all function a specific way. This way you can coordinate your light show by having multiple separate devices moving the same way instead of all different directions, which can be chaotic. Basically, you can connect an unlimited number of slave devices to a master device, but a DMX booster is required in between. Generally speaking, you can connect up to four armatures together without the need for a DMX booster.

Be aware that when you attempt to connect devices of different types and brands, they may behave strangely and you may not get the desired effect because certain functions are linked to the wrong channels. This is true of DMX lighting of all brands and types.

### DMX

The DMX mode is the most comprehensive way to maintain ultimate control over all the functions this device has to offer. It enables you to determine exactly how many functions you want to control via the DMX controller or DMX software.

This device can be set to various channel modes so the channel layout, which is shown below, corresponds perfectly with your DMX circle layout, as well as with the functions you will be using.

### 9CH mode:

CH	Function	Value
1	Pan position min - max	000-255
2	Tilt position min - max	000-255
3	Shutter	000-007 Blackout 008-015: Open 016-131 Stroboscope mode, slow-fast

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0**    **Date of creation and author's initials:18-02-2017 RV**    **Revision date and author's initials: -**

		132-139: Open 140-181: Shutter slow open, close fast, slow - fast 182-189: Open 190-231: Shutter slow close, open fast, slow-fast 232-239: Open 240-247: Random strobe 248-255: Open 000-255 0-100%
4	Dimmer red 0-100%	
5	Dimmer green 0-100%	000-255 0-100%
6	Dimmer blue 0-100%	000-255 0-100%
7	Dimmer white 0-100%	000-255 0-100%
8	Dimmer master 0-100%	000-255 0-100%
9	Diverse functions	000-199 No function 200-209 Resets after 3 seconds within these settings 210-239 No function 240-255 Sound-controlled mode

**10CH mode:**

CH	Function	Value
1	Pan position min - max	000-255
2	Pan position fine min - max	000-255
3	Tilt position min - max	000-255
4	Tilt -position fine min - max	000-255
5	Pan/tilt speed slow - fast	000-255 slow - fast
6	Shutter	000-007 Blackout 008-015: Open 016-131 Stroboscope mode, slow - fast 132-139: Open 140-181: Shutter slow open, close fast, slow - fast 182-189: Open 190-231: Shutter slow close, open fast, slow - fast 232-239: Open 240-247: Random strobe 248-255: Open 000-255 0-100%
7	Dimmer red 0-100%	000-255 0-100%
8	Dimmer green 0-100%	000-255 0-100%
9	Dimmer blue 0-100%	000-255 0-100%
10	Dimmer white 0-100%	000-255 0-100%
11	Dimmer master 0-100%	000-255 0-100%

The information in this user manual is subject to change at any time without notice.

Version: 1.0 Date of creation and author's initials:18-02-2017 RV Revision date and author's initials: -

12	Colour macro	000-255
13	Diverse functions	000-199 No function 200-209 Resets after 3 seconds within these settings 210-239 No function 240-255 Sound-controlled mode

# AURORA

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0    Date of creation and author's initials:18-02-2017 RV    Revision date and author's initials: -**

# Installation and connection requirements

Now that you know how the ERO 404 works, it's important to know how to use it correctly and safely, according to the installation and connection requirements.

Make sure the device and connection cables are out of reach of children, and that if children are present, they are under adult supervision at all times. Because this device can be used upright or suspended, children could pull on the cables, causing the device to fall on top of them. To avoid injury, it is important to pay close attention to the position and/or installation of this device.

## Upright use

If you want to use the ERO 404 in an upright position, ensure that it is placed on a stable surface like a table, DJ booth or T-bar. The ERO 404 is equipped with rubber feet that grip suitable surfaces.

## Suspended use (brackets)

When you want to suspend the ERO 404, attach the supplied mounting bracket to the bottom of this device and use the included mounting materials.

If you want to mount a half coupler or a G-hook to the brackets, it is advised to do this before mounting the brackets to the armature. You can find standard hooks and/or brackets for 35 or 50mm tubes (truss or light stand) at your local dealer.

Hardware for mounting the ERO 404 to the wall, ceiling, or beam is not included. Contact a specialist if you're not sure which hardware is required for your situation. A wooden beam and stone wall require different mounting methods.

Should you want to suspend the ERO 404, you will need to attach a safety cable to the armature. This is not included, but is available at your local dealer. The safety cable can be pulled through the space under the hanging bracket. Once this is done, you can wrap the cable around the truss or light stand and attach it again by means of the same hook. This ensures the device is secured and prevents it from falling, should the clamp holding the bracket fail for any reason.

Ensure that the safety cable has a load capacity of 10x the weight of the armature and that the device can not fall farther than 30 cm. You can wrap the safety cable around the truss or light stand several times to ensure the fall is as short as possible. The shorter the fall, the less chance of damage or injury.

## Light source

The ERO 404 contains powerful LED modules that create an even more powerful effect thanks to a special lens that bundles the beams together. Never look directly into the lens at close range, as the human eye can't adjust to the sudden intensity of the beam of light this device produces. It won't result in permanent injury, but it can cause temporary blind spots, which may cause disorientation and discomfort.

## Cooling

The ERO 404 is cooled by fans that are installed in the head and in the housing. These will be activated when the device is turned on. Make sure the fans and vents are not blocked and regularly check that they are functioning normally. Be aware that should the fans suck in substances like dust, smoke and moisture, this may impair their operation and shorten the life of the device.

## Parts and repair

This product does not include spare parts and can not be repaired by the user. All inspections and overall maintenance should be done by a specialist.

## Cleaning and maintenance

Clean the exterior of this device monthly with a dry, or slightly damp microfibre cloth. Ensure that the device is unplugged before cleaning it.

Check if all the screws are intact and secured and tighten or replace them where needed. Check all metal

*The information in this user manual is subject to change at any time without notice.*

*Version: 1.0 Date of creation and author's initials:18-02-2017 RV Revision date and author's initials: -*

parts of the device for any signs of corrosion. If corrosion is found, the device needs to be checked thoroughly.

# ALURA

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0    Date of creation and author's initials:18-02-2017 RV    Revision date and author's initials: -**

# DMX lighting troubleshooting

If you have a problem with your DMX light effect, please consult the troubleshooting section for possible solutions. If, after consulting this section, the problem remains unresolved, please contact your dealer for more information and/or help.

This troubleshooting section contains information on how to solve the most common DMX light effect problems, but it does not and cannot cover every eventuality. It is possible that you won't find your problem, cause and solution in this section due to differences between various connecting devices.

Problem	Possible cause	Solution
The device can not be turned on.	A fuse is blown	Check the fuse to rule out if it is blown or not. If it is blown, replace it with a new fuse of the same type and class.
	Power cable not plugged in	Check if the power cable is properly connected to the device and plugged into an active power socket.
The device is not reacting to DMX signals	Incorrect DMX start address	Check if the device has been set to the correct DMX start address
	DMX controller is set to 'Blackout'	Make sure the 'Blackout' function on the DMX controller is not activated
	Make sure the polarity switch on the DMX controller is set correctly	Try to reverse the DMX polarity switch on the DMX controller.
	The device is not reacting, there is no DMX signal indication	Make sure the XLR cables are connected properly and are not defective. Replace if necessary.
The device does not react to sound/music	Incorrect operation mode	Make sure the sound-activated mode has been selected.
	The internal microphone sensitivity is too low	Check the microphone sensitivity level and increase it if necessary.
	The speaker is too far away, or is not producing enough low tones	Place the light effect closer to a speaker (or vice versa) and/or increase the low-frequency level. The built-in microphone is not triggered by high tones.
The amount of projected light is minimal	Dirty or dusty optics	Clean the lens and/or other optics.
	Dimmer is not completely open	Check if the dimmers on the spotlights themselves and/or if the master dimmer is completely open.
The DMX signal appears to be interrupted and some devices are flashing or behaving strangely	Damaged/defective cables	Check and replace the DMX cables if necessary.
	Power interference on the DMX signal	Avoid connecting signal cables parallel to power cables.
	DMX terminator missing	Close the DMX circle with a DMX terminator

The information in this user manual is subject to change at any time without notice.

Version: 1.0 Date of creation and author's initials: 18-02-2017 RV Revision date and author's initials: -

<p>The operation mode can not be changed</p>	<p>Signal loss or interference in the DMX circle</p> <p>The device is in Slave mode</p>	<p>Close the DMX circle with a terminator or connect a booster after maximum 32 fixtures.</p> <p>If the device is in Slave mode, it will wait for a master signal unless there is a DMX signal present. Set the device to Master to activate the sound-controlled or automated operation modes.</p>
<p>Pan and/or tilt work in reverse</p>	<p>Pan or tilt inversion is set</p>	<p>Check pan or tilt inversion settings and switch them on or off as required.</p>

# ALURA

# Technical specifications

- compact LED moving head
- light source: 4x 10 W RGBW LEDs
- dispersion angle: 17
- LED display with menu buttons
- various operation modes
- automatic mode with adjustable programs and speed in 9 steps
- Sound-controlled mode with adjustable sensitivity
- Master/Slave mode (2 slave modes)
- Pan/Tilt inverse option
- DMX operation via 9 or 13 channels
- separate mounting brackets, including quick couplers
- fuse: F3AL 250V
- power supply with IEC C14 input
- 4000 Hz constant current LED driver
- to be used in environmental temperature: 0 - 40 degrees Celsius
- housing temperature during normal use: 32 degrees Celsius
- maximum power consumption: 55.2 W
- power consumption: 0.454A
- power factor: 0.515
- power supply: 90-240V AC, 50/60 Hz
- dimensions: 195 x 135 x 235 mm
- weight: 3.3 kg

## Menu functions:

- Blackout function when display is not in use
- Display Invert option
- Pan/Tilt Invert option
- Test function (to check movement and colour)
- Reset function (restart the device)
- Time Register readable
- Firmware version readable

## Light output @ 1m:

- full output: 31000 lux
- red: 4,500 Lux
- green: 6,500 Lux
- blue: 10,000 Lux
- white: 10,000 Lux

*The information in this user manual is subject to change at any time without notice.*

**Version: 1.0    Date of creation and author's initials:18-02-2017 RV    Revision date and author's initials: -**