asyril Experts in Flexible Feeding Systems

Asycube 240

Operating Manual

Document	Asyril_ASYCUBE-240_Operating_Manual_EN 000.100.500		
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1. Introduction

1.1. Generalities

The following document is the property of Asyril SA and may not be copied or circulated without permission. The information contained in this document is subject to change without notice for the purpose of product improvement. Before operating your product, please read this document in order to ensure a correct use of the product. Nevertheless, if you meet difficulties during the operation or the maintenance, please, feel free to contact Asyril customer service.

In this manual, the safety precautions that you must respect are classified as: “Danger”, “Warning” and “Note”; the following symbols are used:

DANGER!

Failure to observe the instruction may result in serious injury.

DANGER!

Failure to observe the instruction may result in electrocution or serious injury due to electric shock

WARNING!

Failure to observe the instruction may result in injury or property damage.

NOTE :

The user should read carefully this information to ensure the correct use of the product, although failure to do so would not result in injury.

REFER TO …

For more information on a specific subject, the reader should read other manual, or refer to other paragraph.

WARNING!

Asyril shall not be liable whatsoever for any loss or damage arising from a failure to observe the items specified in “Safety Precautions.” The customer is responsible to provide the necessary instruction to the persons concerned.

NOTE :

All dimensions in this document are expressed in millimeters

1.2. Safety precautions

1.2.1. General safety precaution

1.2.1.1. Transport

DANGER !
Be aware of the weight and take care when transporting the system. For more information, please refer to chapter 3 "Transportation, handling and installation"

1.2.1.2. General

DANGER !

Be sure that all power sources and other cables to the unit are disconnected before working on the product.

DANGER !

Only qualified personnel (trained by Asyril and with professional experience) are authorized to work on this device.

DANGER !

Do not unscrew the housing of the system controls. Serious injury or death could result from electric shock. Only authorized personnel from Asyril SA are allowed to access this part of the system for maintenance or for repair.

DANGER !

Do not plug or unplug cables of the system unless it is switched off.

DANGER !

Never modify the product. Unauthorized modification may cause the product to malfunction, resulting in injury, electric shock, fire, etc.

DANGER !

Turn off the power to the product in the event of power failure. Failure to do so may cause the product to suddenly start moving when the power is restored.

DANGER !

Do not use the product in a place where it may come in contact with water or oil droplets.

1.2.1.3. Disposal

When the product becomes no longer usable or necessary, dispose of it properly as an industrial waste.

WARNING!
Observe the valid legal regulation for appropriate disposal protecting environment.

1.2.2. Danger

1.2.2.1. Safety Equipment for Operators

- For safety reasons operators must wear protective eyewear when using the backlight

NOTE :

It is the customer responsibility to install warning signs informing that anyone working around the Asycube must wear safety equipment.

1.2.2.2. Specific danger

Backlight

The Asycube has an integrated Backlight that persists of LEDs (Light Emitting Diodes). These LEDs emit visible or non-visible radiation depending on the color of the Backlight. LEDs illumination can create discomfort, cornea, retinal and lens damage.

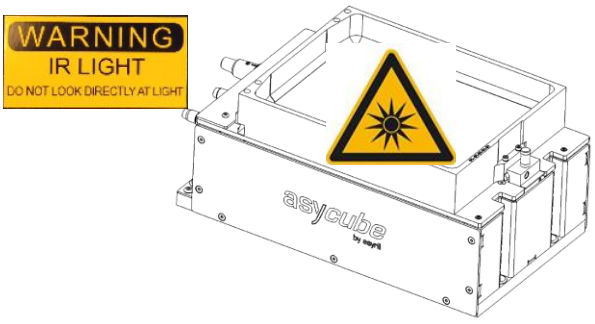


Figure 1-1 :Specific warnings

The used LEDs are class 0 according to the norm EN 62471, It is the responsibility of customers to document their own application and instruct employees on procedures to limit exposure to LED radiation. Following prevention agent can be suggested:

A. Interpose, insofar as the job allows, a high pass filter at x nm depending on the color (see table §0) under a fixed or adjustable connection between the source and the employee
B. When the implementation of the foregoing is not possible, provide workers with goggles or face shield suitable for blocking radiation beyond 700nm;
C. Prohibit or limit as possible direct access to the source (exposure in the axis of radiation), see “Conditions of use of products TPL VISION” in the annexes.
D. Establish a security perimeter to prevent operators from approaching the source at distances beyond the nominal ocular hazard recommended by the manufacturer
E. In all cases, ensure that the means used properly mitigate exposure variables (characteristics of screens or goggles to choose based on wavelength which operators are exposed).

Refer to “5.1 Condition of use of backlight*” on page 46 for the complete calculation sheet on minimal distance to respect for each kind of backlight.*

Temperature

The active elements into the asycube make the surfaces shown on the picture heating up to 45°C in nominal use. This temperature can nevertheless increase to 55°C in extreme use.

It is the responsibility of customers to document their own application and instruct employees on procedures to avoid contact with these surfaces

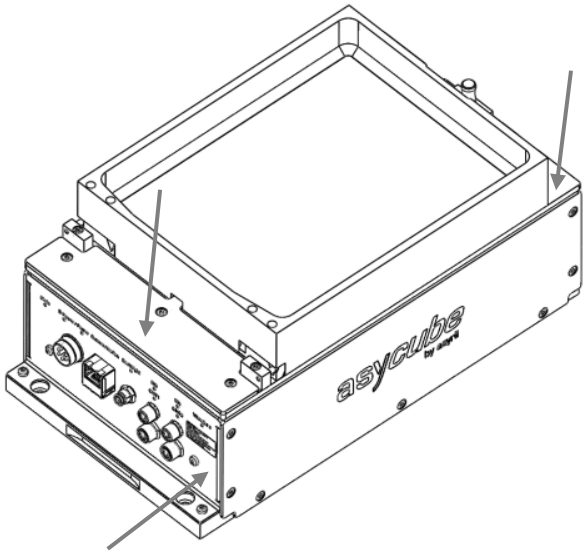


Figure 1-2 :Specific warnings

1.3. Warranty information

You will find all the Asyril warranty information (duration, scope of warranty …) on the general conditions of sale.

2. Description

2.1. First glimpse at the product

Asycube sets new standards in small part feeding. Its 3D vibratory platform allows fast and flexible presentation of small parts (1 mm to 40 mm) to a robot equipped with a vision system.

The core of Asycube is a platform that can vibrate in three orthogonal directions. By selecting appropriate vibration signals, a high flexibility in displacing parts on the platform is reached (forward, backward, sidewise) and flipping is made possible.

It consists of:

(A) A 3D vibrating platform

(B) Electrical interfaces (communication, power supply, I/Os…)

For more information on electrical interfaces to the Asycube, please refer to "2.4. Electrical Interfaces" on page 16

(C) An integrated mechanism allowing to remove the platform easily without additional tooling

(D) An integrated backlight (D) (optional) that allows an easy recognition of the parts from a camera placed above

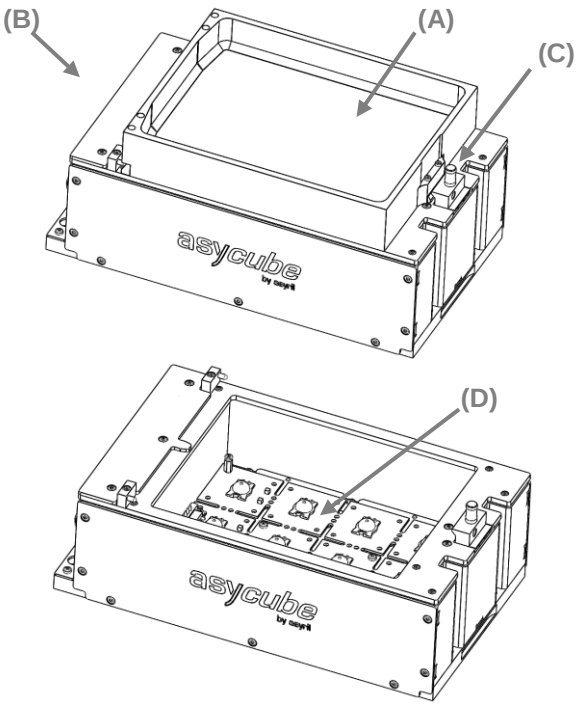


Figure 2-1 : Asycube overview

For more information on how to remove or change the platform, please refer to "4.2.2. Remove the platform module" on page 36

For more information on the procedure to control the platform vibrations, please refer to the HMI manual

For more information on the backlight color and the procedure to exchange the backlight, please refer to "4.3.1 Exchanging / installing the backlight*" on page 38*

2.2. General Characteristics

WARNING !

Do not use the product outside the specifications. In cases of non-respectation, the product guarantee will expire.

2.2.1. Technical features

Typical part size	from 2 mm to 40 mm side length
Integrated high power LED backlight	Optional ✓
Interchangeable backlight color	*(green, red, blue, white, Infrared) please refer to "0 Backlight" on page 25 for more information.*
Independent vibrations in three orthogonal directions	✓
Interchangeable vibration surface	*please refer to section "2.6.1 Additional platform" on page 22 for more information.*
Vibration frequency configurable	up to 100 Hz
Maximal weight on the platform	0.4 kg
Digital Output for hoppers	2
Digital Input	2
Analog Output	2
RoHS	✓

2.2.2. Overall dimensions

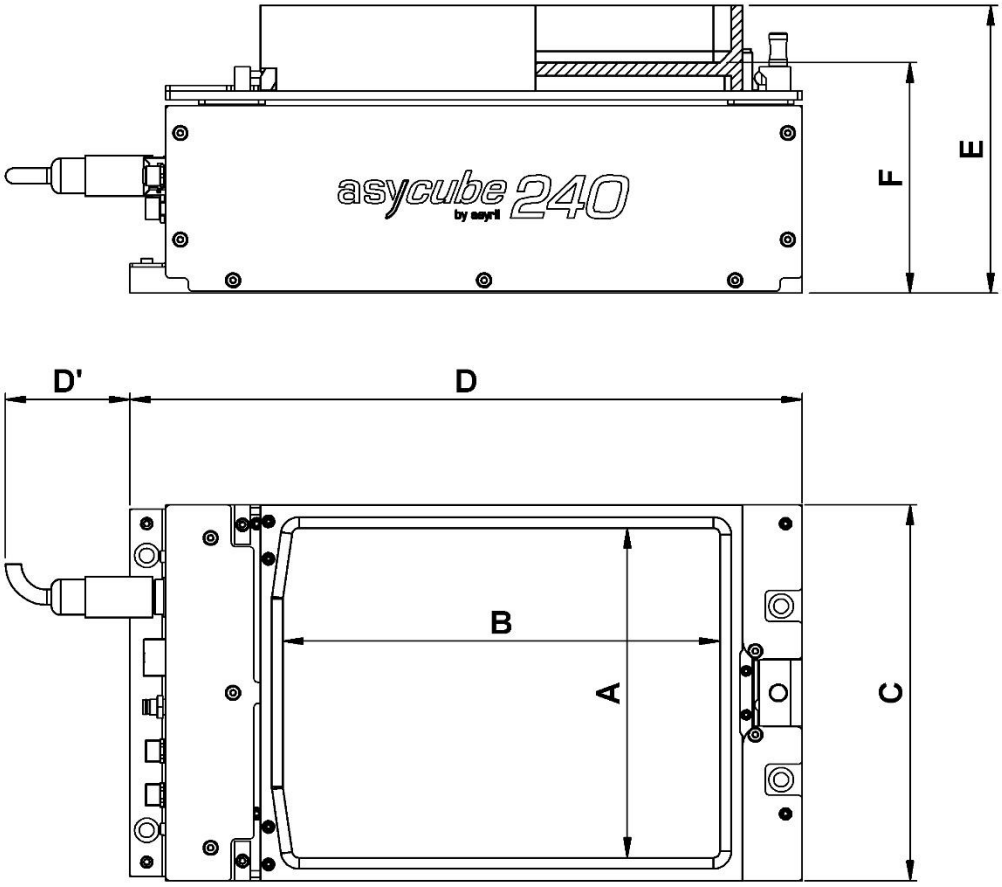


Figure 2-2 : overall dimensions Asycube 240

Characteristic		
Footprint	C	171 mm
	D	300 mm
	D’	45 mm
Size of vibration platform	A	150 mm
	B	195 mm
	E	132 mm
	F	105 mm
Weight with platform and backlight		7.8 kg

Additional space is needed around the Asycube to be able to remove the platform module with the integrated tool :

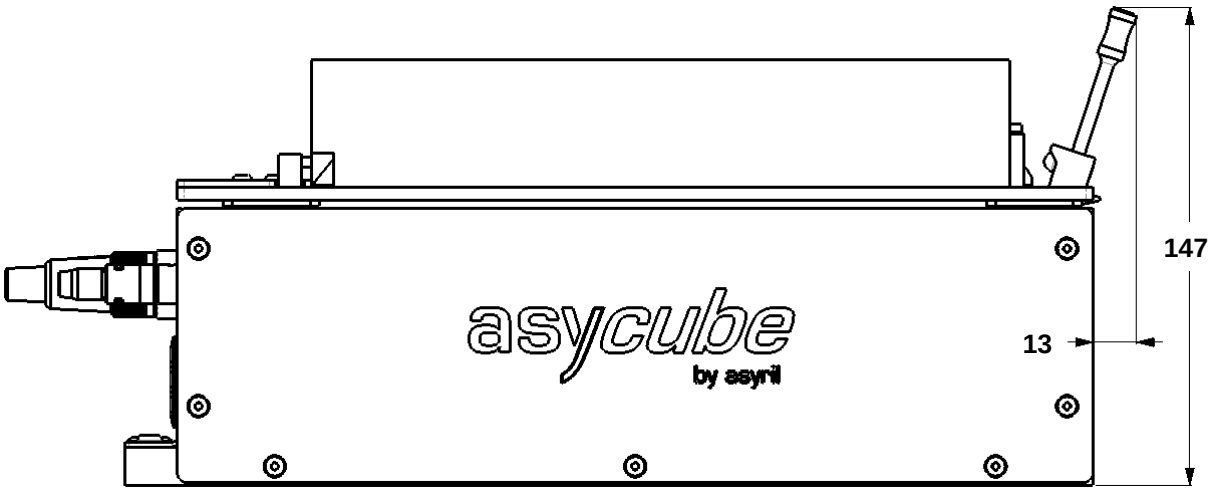


Figure 2-3 : overall dimensions with "lever"

Refer to "4.2.2 Remove the platform module" on page 36 for more information on how to remove the platform.

2.2.3. Visual signals

The led give important information on the state of the Asycube :

Led	State	Color	Meaning
1	Blinking Time on : 100ms	green	System in standby
	Blinking Time on : 900ms	green	System in service
2	On	yellow	24V on S-Power input (see 2.4.2 for more information)
3	On	green	24V on Power input
4	On	green	Connection detected
5	Blinking	yellow	Communication in progress
6	On	green	24V on backlight synchronization input
7	On	green	24V on input 1
8	On	green	24V on input 2
9	On	green	Platform vibrating
10	On	yellow	24V on output 1
11	On	yellow	24V on output 2

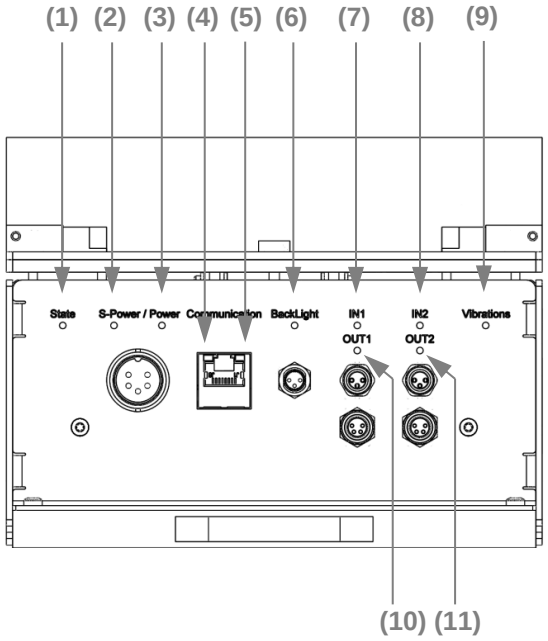


Figure 2-4 : Asycube Operating Indicator LEDs

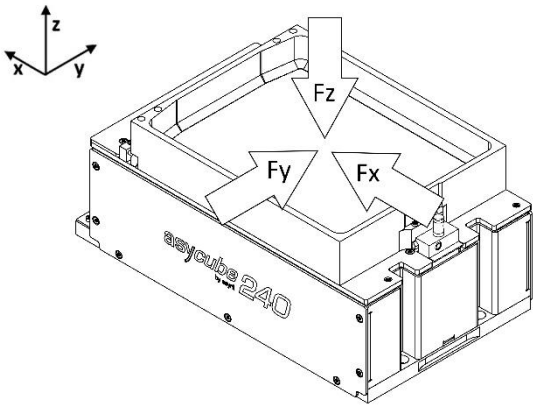
2.2.4. Maximum permissible external force on the platform

The maximum permissible external force on a point of the platform (for example, with the gripper) is:

Fx = 10 N

Fy = 10 N

sFz = 20 N



Note that the shock/impact of the gripper may damage the surface of the platform.

2.2.5. Permissible platform weight

Maximum platform weight (without components)	800 gr
Maximum weight of components (in addition to the maximum platform weight)	400 gr

2.2.6. Maximum plate displacement

Maximum displacement x	±1.5 mm
Maximum displacement y	±2 mm
Maximum displacement z	±1.5 mm

2.2.7. Plate Z repeatability

Platte Z repeatability	±20 µm

2.3. Performance

2.3.1. Picking surface

The maximum picking surface dimensions corresponds to the Asycube platform size :

A	195
B	150

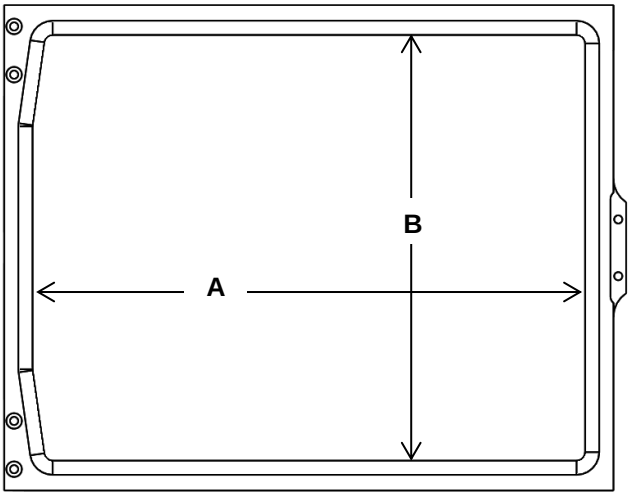


Figure 2-5 : Picking surface

2.3.2. Displacement of the parts

2.3.2.1. Standard movement

To define a specific movement with the Asycube several parameters need to be configured. For each movement on the Platform, twelve parameters must be set. Calling these twelve parameters will generate specific vibrations (corresponding to the sum of the movements of the four actuators in each corner of the platform).

The figure on the right shows the predefined standard movements.

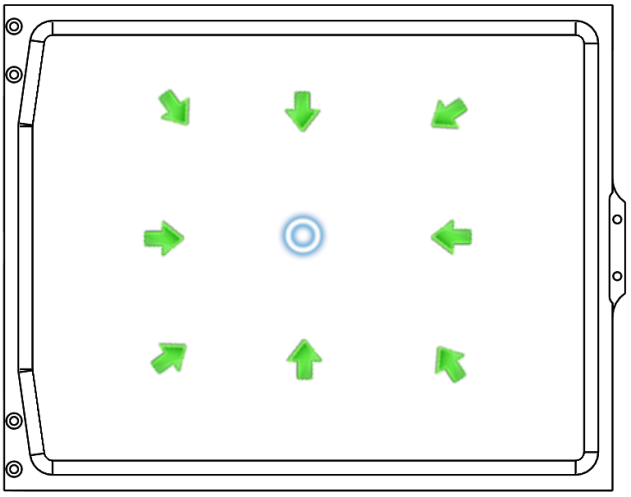


Figure 2-6 : predefined displacement of the parts

2.3.2.2. Advanced movement

On the Asycube 240, advanced movements can be achieved. Indeed, it is possible to center the components along the long side or the short side of the plate, as represented on the figure on the right.

With a sequence of three movements you can spread easily the parts on the surface :

1. Center (long side)
2. Center (short side)
3. Flip

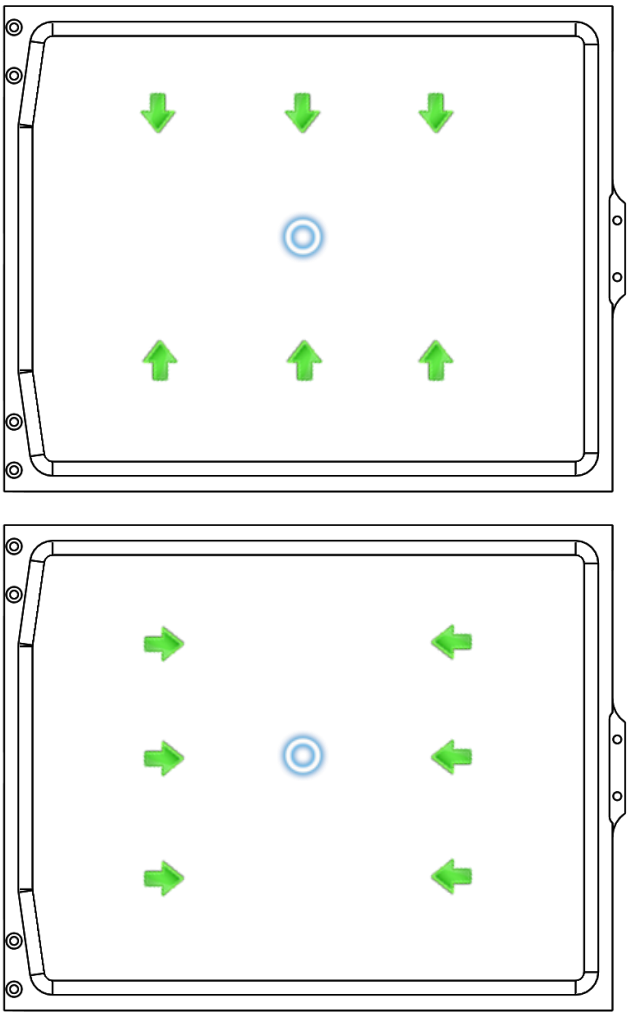


Figure 2-7 : predefined displacement of the parts

For more information on these parameters, and to learn how to configure them, in order to control the cube vibrations, please refer to the User manual

2.4. Electrical Interfaces

2.4.1. Overview

Asycube is a standalone module with its own controller. The electrical interfaces to the Asycube are situated at the back of the product:

(A) Power connection

(B) Ethernet connection (RJ45)

(C) Backlight synchronization

(D) Digital Input 1

(E) Digital Input 2

(F) Digital and analog Output 1 for hopper

(G) Digital and analog Output 2 for hopper

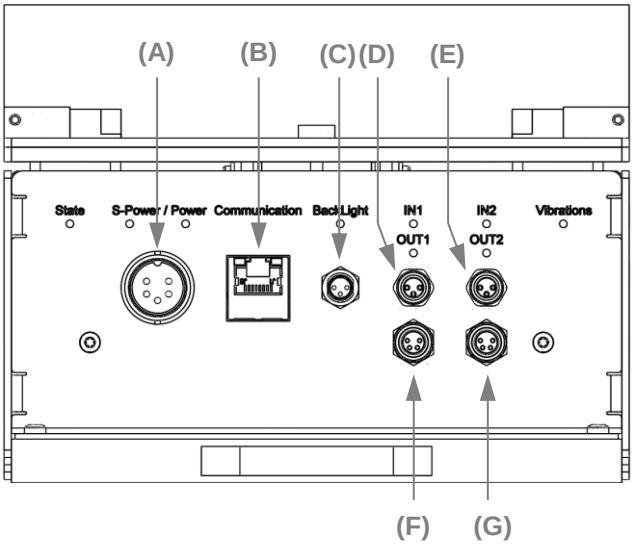


Figure 2-8 : Electrical interfaces to the Asycube

NOTE :

The cables are not part of the feeder but can be ordered separately. (Please, refer to chapter 2.6.3 "Cables")

2.4.2. Power connection

WARNING !

- Before supplying power to the Asycube, check that your distribution voltage is the same as the nominal voltage.
- Never disconnect the power cables. Always turn the machine off and then cut the power
- Use PELV (protected extra-low voltage) nominal voltage

Pin	Signal description	Cable (option)
(1)	24VDC PELV S-Power	1
(2)	0V GND S-Power	2
(3)	24VDC PELV Power	3
(4)	0V GND Power	4
(5)	EARTH	PE

Connector type (on Asycube side) :
M16, 5 Poles, male

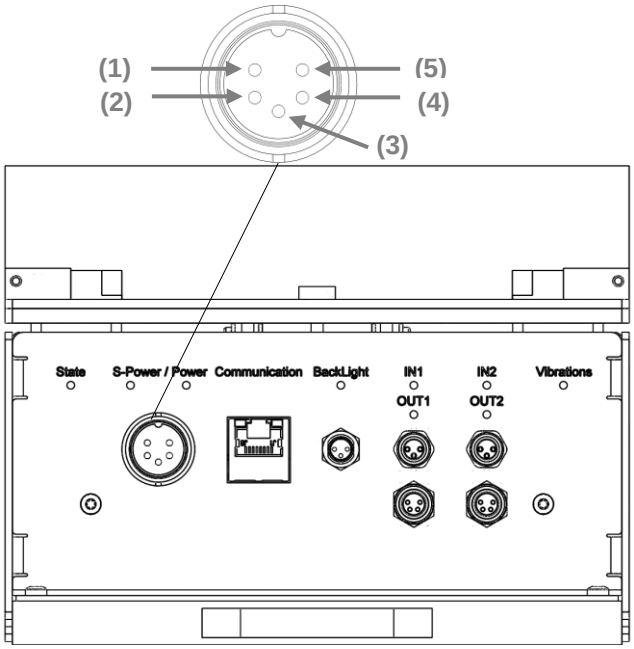


Figure 2-9 : power connection

In case of all functions working simultaneously (vibration, backlight, outputs), the current increases to 8A.

Characteristic	Value
Voltage	+24V DC ± 5%
Current Power	5A max.
Current S-Power	3A max.

NOTE:

S-Power is the safety power for the backlight. Cutting this S-Power ensures that the backlight stays OFF (e.g. to secure IR backlight danger).

The following connection schematic shows the way to connect the asycube depending if your application requires using an external relay to ensure that the backlight is safely switched off or not.
In any case, both “Power” and “S-Power” have to be supplied for using the backlight.

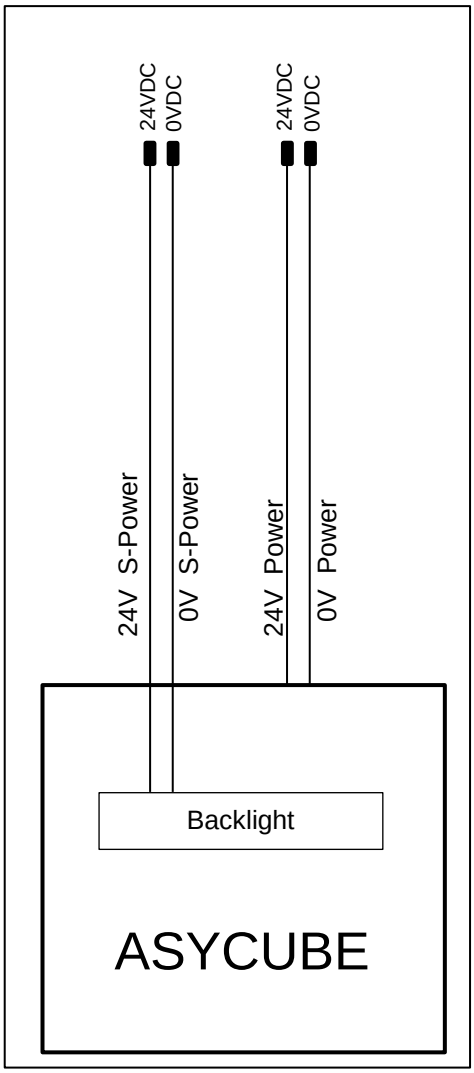


Figure 2-10

Power connection without safety relay

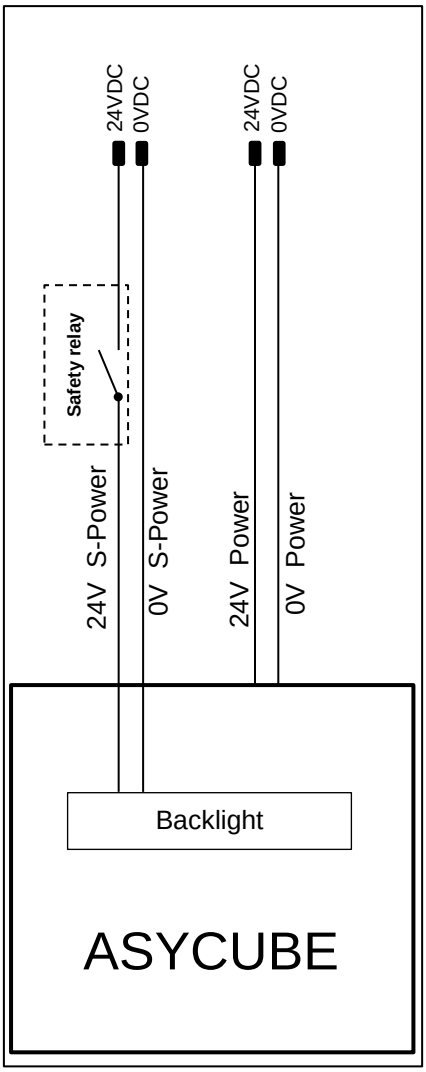


Figure 2-11

Power connection with safety relay

NOTE:

Both Power and S-Power can be connected to a single power supply or to two different power supplies

2.4.3. Communication

The communication with the Asycube is established by a standard Ethernet communication via RJ45 port **(A)**

Characteristic	Value
Default IP address	192.168.127.254
Default subnet mask	255.255.255.0
Port	4001
MAC address	Can be read by ARP request

For more information on the procedure to restore the default IP address, please see chapter 4.3.2.

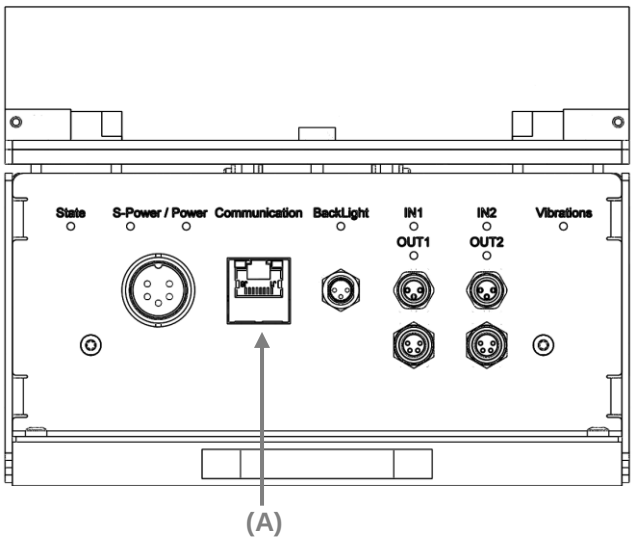


Figure 2-12 : Ethernet connection RJ45

2.4.4. Backlight Synchronization

A standard M8 three-pins female cable enables to synchronize camera acquisition and Asycube backlight illumination, it must be connected as follows :

Pin	Signal	Cable (option)
(1)	Not wired	braun
(3)	0V GND	blue
(4)	+24 V pulse (illumination synch.)	black

Connector type (on Asycube side) :
M8, 3P, male

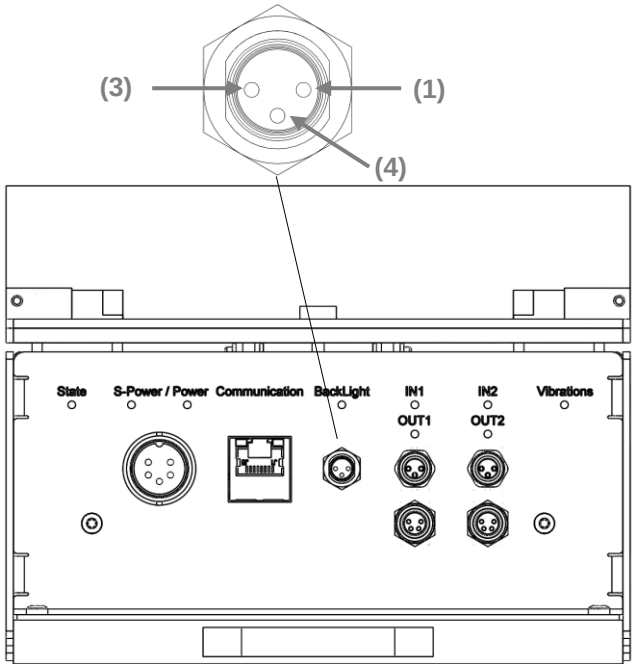


Figure 2-13 : Backlight synchronization

NOTE :

The Asycube Backlight illumination time corresponds to the length of the pulse signal.

2.4.5. Digital input 1 and 2

A standard M8 three-pins male cable enables to read two different signals, it must be connected as follows :

Pin	Signal
(1)	+24VDC OUT (sensor power supply)
(3)	0V GND
(4)	Input (+24VDC)

Connector type (on Asycube side) :
M8, 3P, female

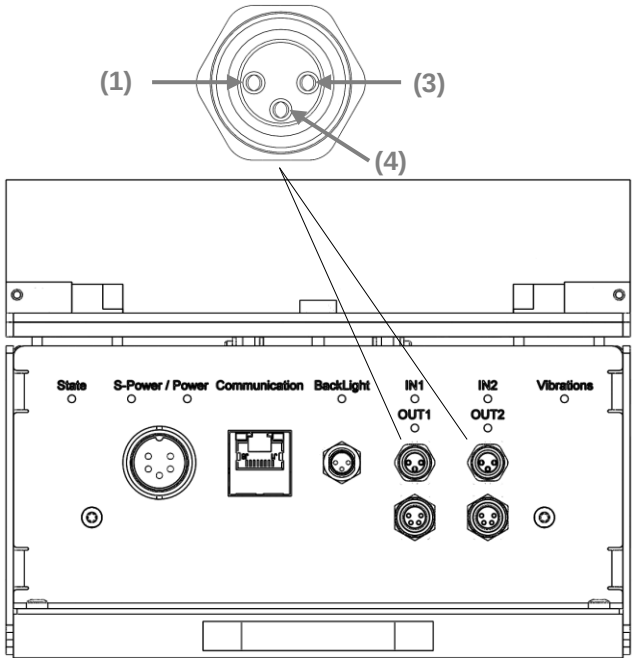


Figure 2-14 : Digital input

2.4.6. Digital output for hoppers 1 and 2

A standard M8 four-pins male cable enables to transmit digital output signal and analog output signal to hopper. It must be connected as follows :

Pin	Signal	Hopper
(1)	0V GND	Analog Output 1
(2)	0…10VDC	
(3)	0V GND	Digital Output 1
(4)	+24VDC	

Connector type (on Asycube side) :
M8, 4P, female

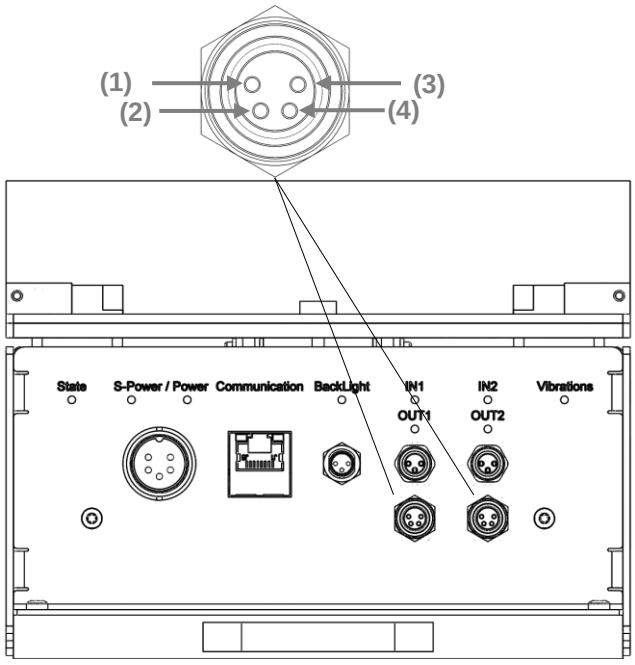


Figure 2-15 : Digital output for hoppers

2.5. Mechanical Interfaces

2.5.1. Attachment of the Asycube

To guarantee a proper behavior of the Asycube a tight fastening to a solid underground is necessary. The holes in the base plate of the Asycube can be used to attach it with four M6 screws.

Repeatable positioning of the Asycube can be done by using positioning pins (possible on both sides).

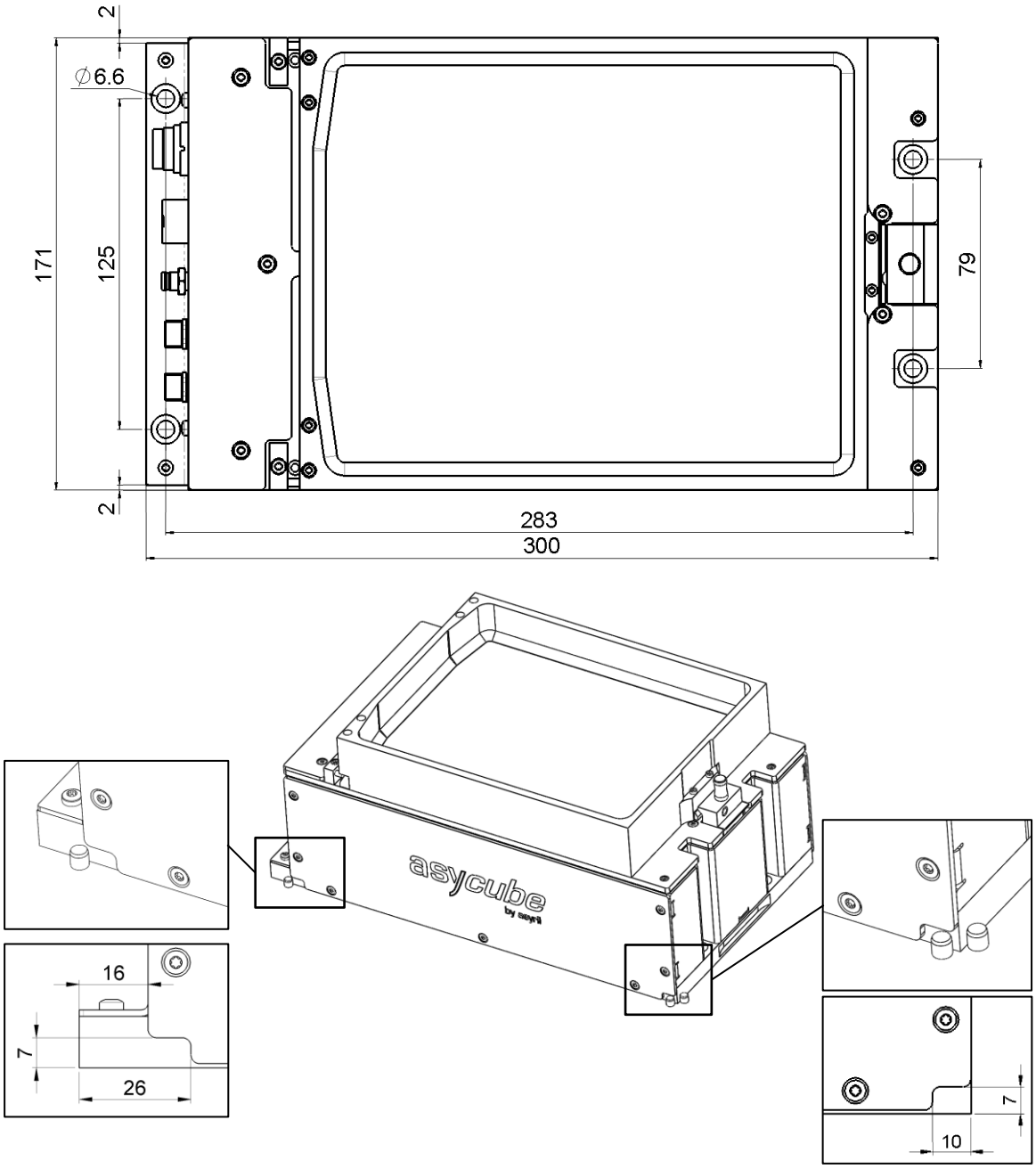
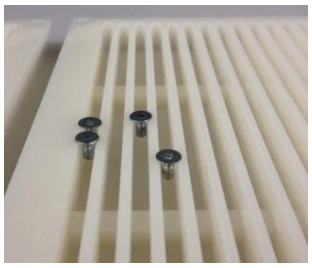
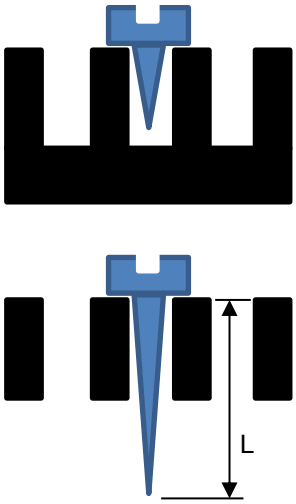
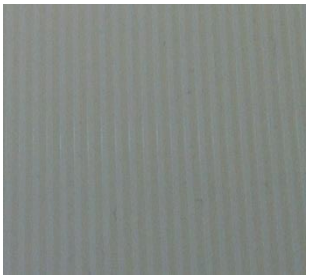
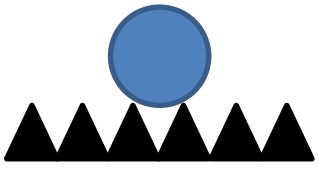


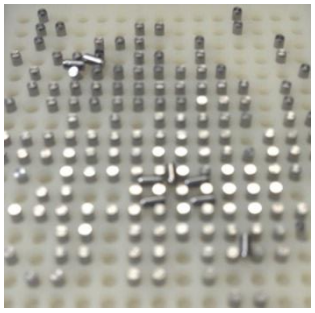
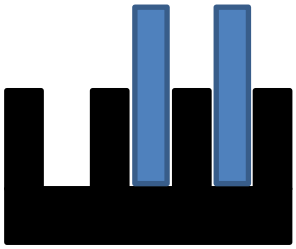
Figure 2-16 : attachment of the Asycube

2.6. Accessories and Optional modules

2.6.1. Additional platform

In order to improve the availability of certain components on the surface of the feeder, it is possible to structure the plate surface. Asyril can provide various types of plates on request. Frequently used structures on Asycube 240 are as follows:

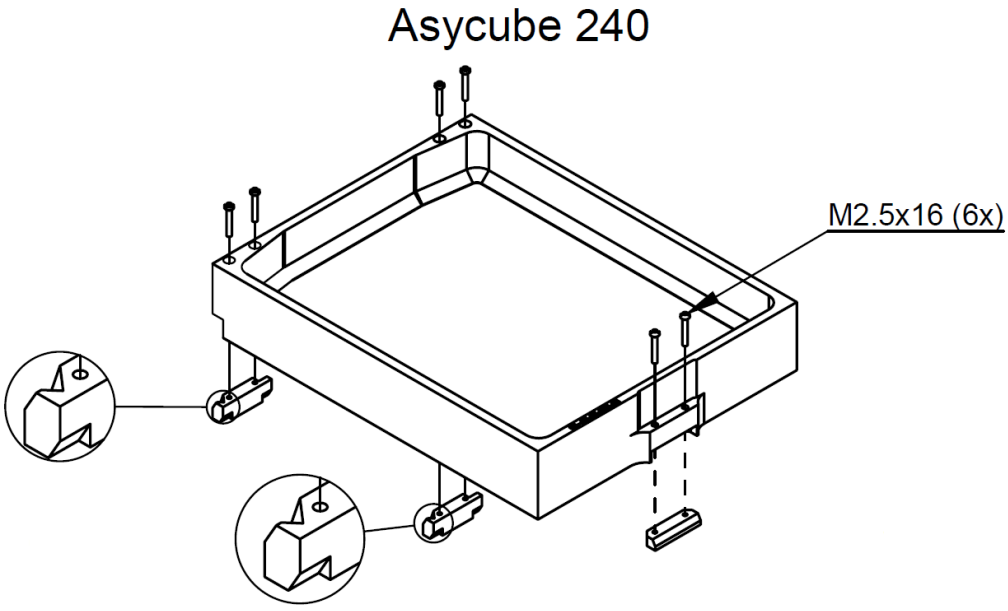
Plate type	Example – picture	Example – drawing	Advantage
Flat		 Ex : Bolts	This type of plate can be used for a large variety of components mainly components with a flat surface allowing a stable resting position.
Grooves (deep)		 E.g.: Screws, rivets	A structured platform with deep grooves is used to supply screw-type components to be fitted vertically. A platform with transverse grooves is used to supply components with a maximum length of 60 mm. **Note:** in case of grooves going through the plate, it is necessary to use the “INTERNAL DIFFUSING PLATE KIT” according product list
Grooves (wide)		 Ex : Cylinders, Needles	Wide grooves are useful when cylindrical components are fed. They reduce the stabilising time significantly after component displacements on the plate surface (stop the components from rolling on the surface).

Grooves (narrow)		 Ex : Thin washers	Narrow grooves are necessary to reduce surface contact especially for flat and light components. This reduces adhesion forces and improves the component displacements on the feeder surface. It also improves the pick-performance of the robot.
Holes		 Ex : Pins	Holes are useful when cylindrical components are to be fed and presented upright.

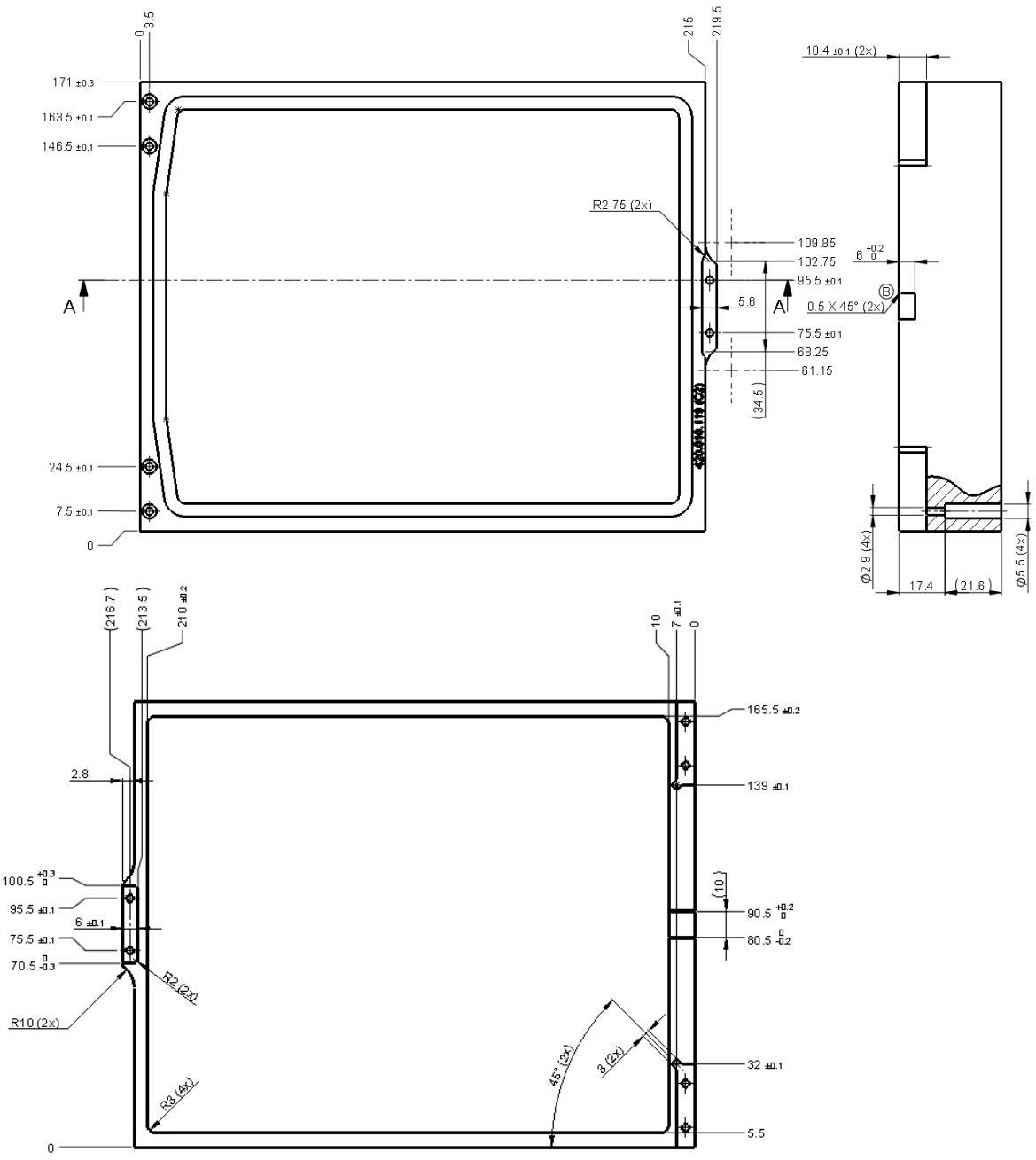
NOTE :

For more information on these bespoke platforms, contact Asyril customer's service.

The customer can also make his own platforms, in this case plate fixation kits can be ordered by Asyril



Mechanical interfaces of the platform



2.6.2. Backlight

Following backlights are available:

Backlight Asycube 240	
Color	Wavelength
Blue	465 nm
Green	550 nm
Infrared	850 nm
Red	645 nm
White	6500 K

If this option is ordered at the same time with the asycube, it is delivered mounted in the feeder

For more information on the backlight color and the procedure to exchange the backlight, please refer to "4.3.1 Exchanging / installing the backlight*" on page 38*

NOTE :

For more information on these bespoke backlights, contact Asyril customer's service.

2.6.3. Cables

Following cables are available:

Product
Power cable (5m)
Ethernet RJ45 cable (5m)
Synchro-backlight cable (5m)
Input Cable (5m)
Output cable (5m)

NOTE :

For more information on these cables, contact Asyril customer's service.

WARNING :

All these cables are **NOT** adapted for cable carriers (cable chain).

2.6.4. Hopper

An optional hopper is available in the 2 or 3 litres versions.

The stainless-steel type 1.4301 hoppers withstand a maximum filling load of 15 kg.

The following items are available:

Product	Reference
2 litres HOPPER	Depending on list of products
3 litres HOPPER	

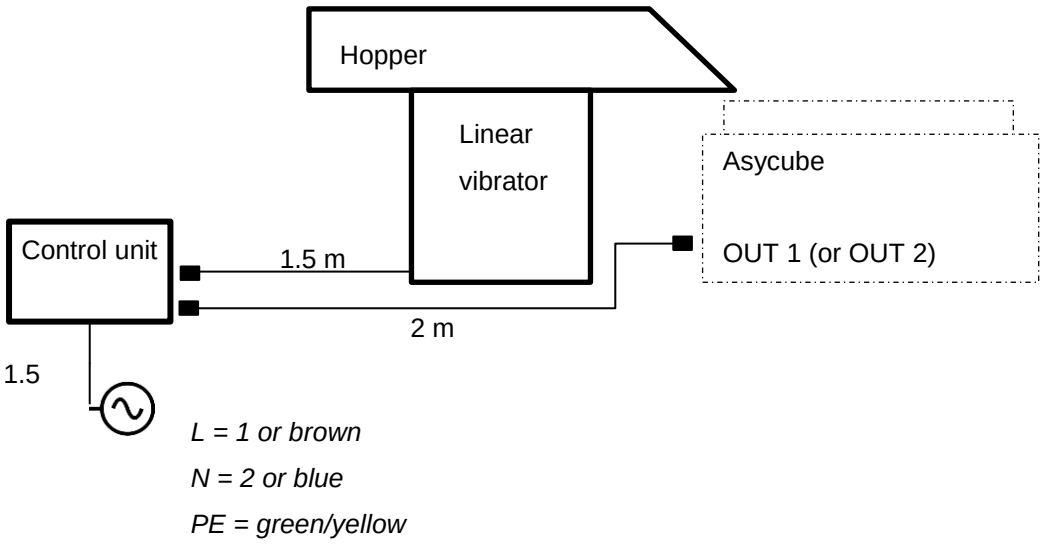
These items comprise:

- The hopper
- The linear vibrator
- Control unit
- The set of cables

2.6.4.1. Wiring diagram:

The hopper is supplied with the controller and cables ready to be installed. Depending on the model chosen, the hopper should be supplied with

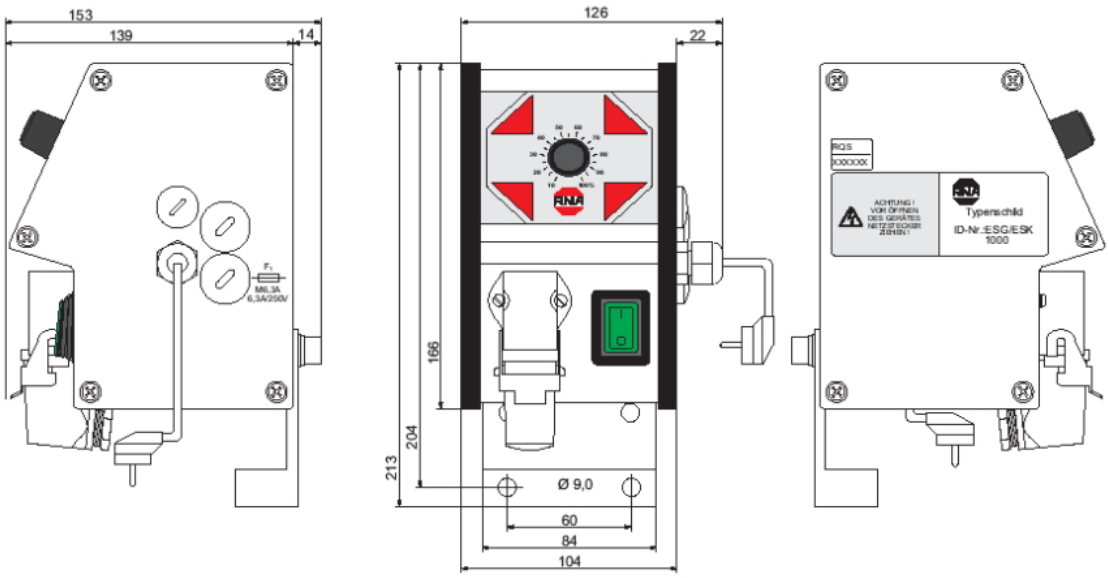
- 115V (+10%/-15%), 50Hz, 6A
- 115V (+10%/-15%), 60Hz, 6A
- 230V (+10%/-15%), 50Hz, 6A
- 230V (+10%/-15%), 60Hz, 6A



2.6.4.2. Control unit

The vibration intensity of the hopper can be adjusted with the potentiometer

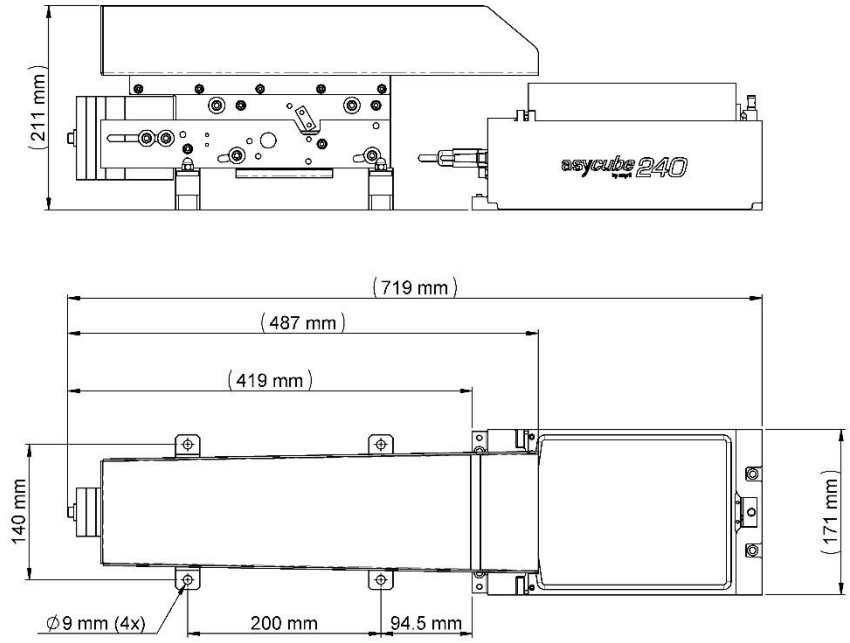
NOTE : place the control unit in order to reach the potentiometer



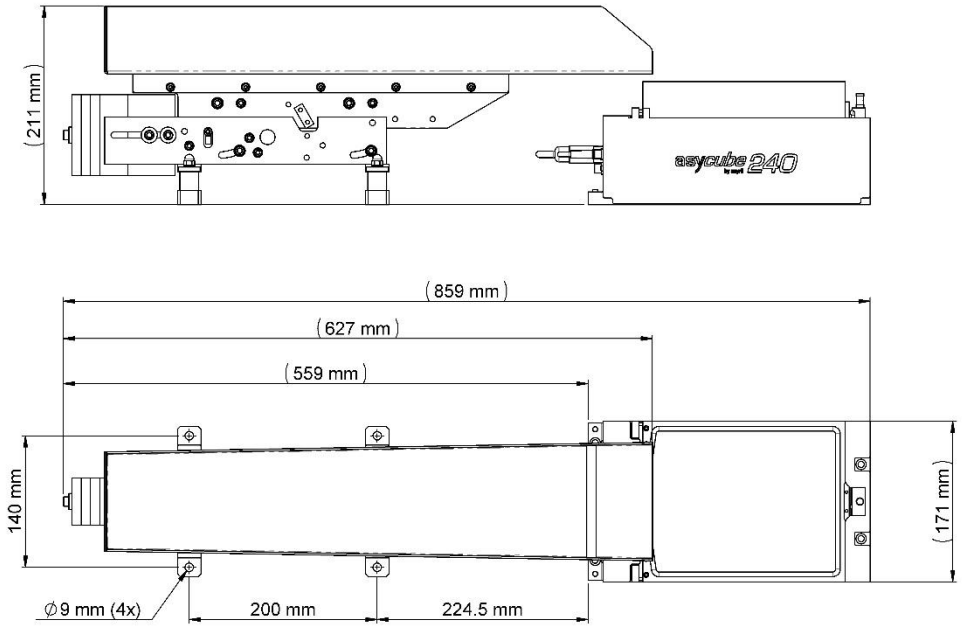
2.6.4.3. Hopper interfaces

The hopper is delivered with fixation feet ready to be screwed (4x M8x20)

2 litres version



3 litres version



2.6.5. Calibration plate

Calibration is used to:

- Define the camera orientation in relation to the feeder system
- Reference the field of view in relation to the robot workspace
- Work in millimeters in the field of view rather than pixels.

NOTE:

There are different ways to perform the calibration depending on the application. Please contact Asyril to define the corresponding tooling if necessary.

The 240 calibration plate contains the checkerboard used to perform the pixel/mm calibration and the reference holes used to perform the robot/vision calibration.

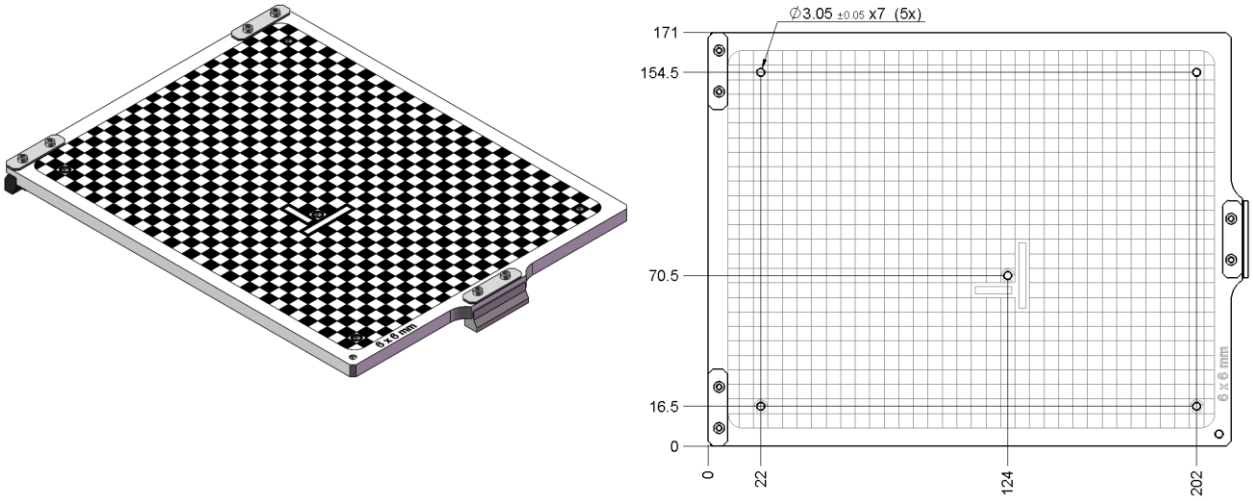


Figure 2-17: 240 robot/vision and pixel/mm calibration plate

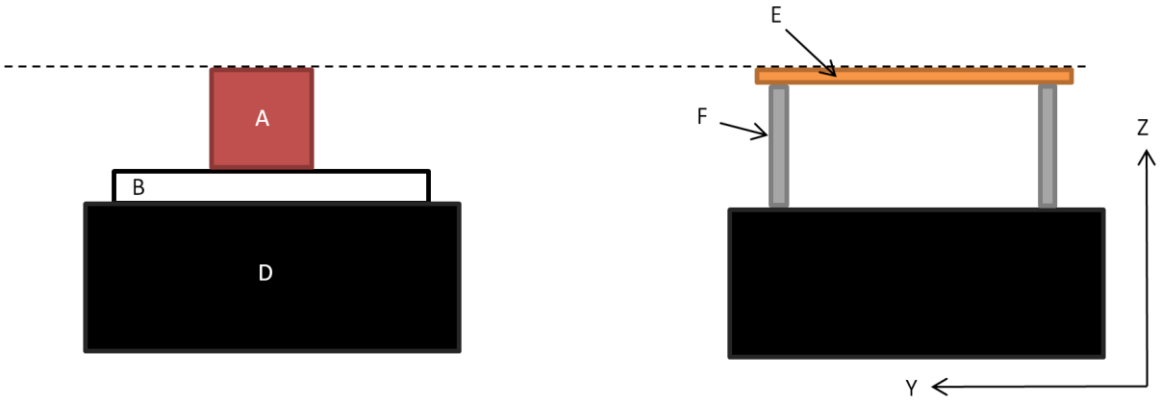
2.6.5.1. Riser kit for the calibration plate

A riser kit (F) is available in addition to the calibration plate (E) for all Asycube models (D). This kit offers enhanced accuracy when the parts (A) on the Asycube plate (B) have a fairly large Z dimension.

The riser kit is used to adapt the calibration plate to the height of the parts in order to perform the vision and robot calibration in the same plane as the parts' upper surface.

This ensures more accurate part detection while reducing errors caused by the parallax, and also the accuracy of the robot calibration (for which the maximum accuracy can be found in the calibration plan).

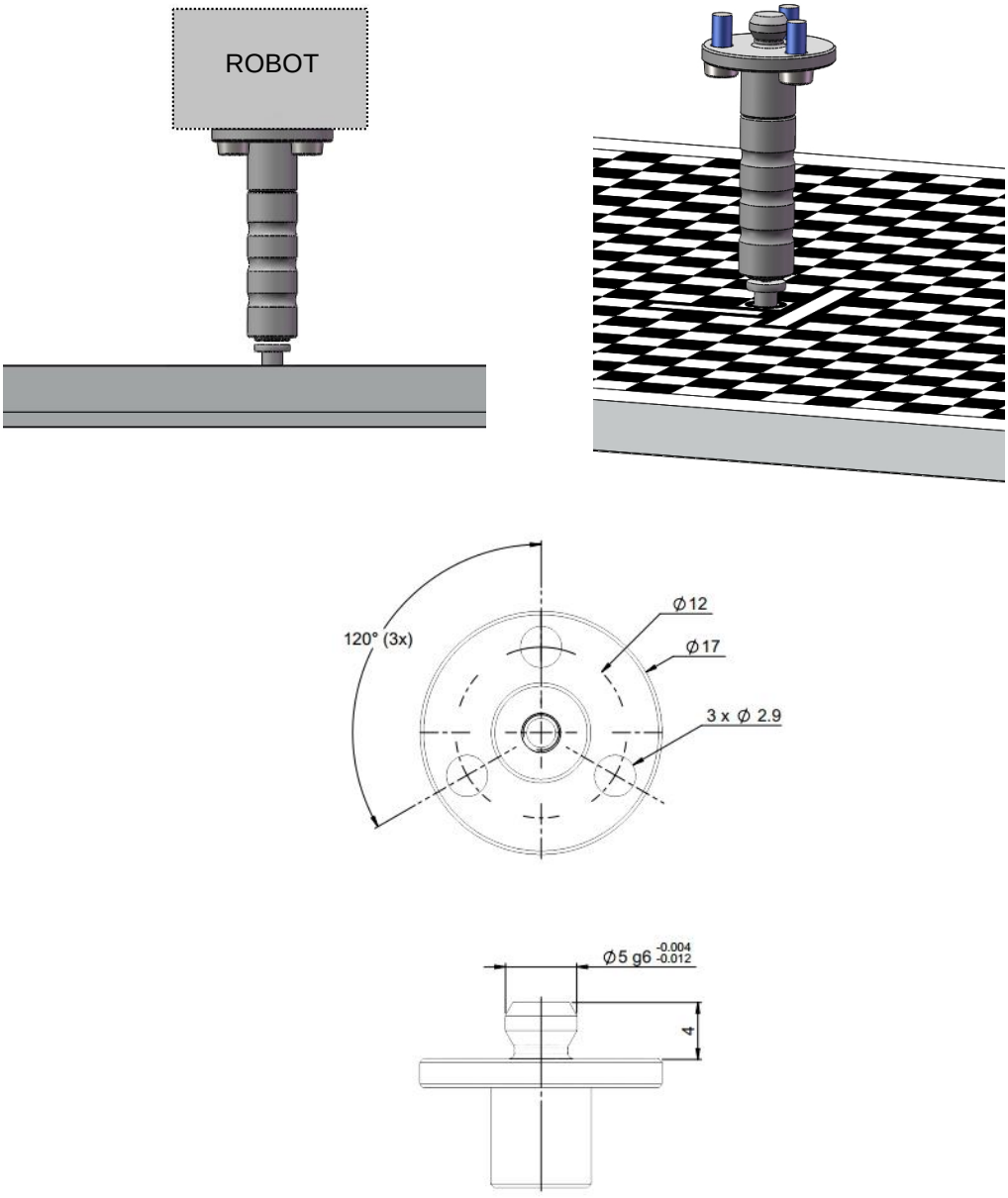
The part numbers for the riser kits can be found in the products list



2.6.5.2. Robot calibration help tool

To facilitate robot/vision calibration using the calibration plates, a "robot calibration kit" is available for the Asycube 240 and 530.

The part number for this tool is available in the products list



3. Transportation, handling and installation

3.1. Packaging of the product, transportation and handling

The transportation of the product must be made in accordance with the specific terms indicated on the package (top, bottom and fragile …). In addition, pay particular attention to the following points :

WARNING !

- Be aware of the weight and take care when transporting the system.
- The operator should not carry heavy shipping boxes by himself.
- If the shipping box is to be left standing, it should be in a horizontal position.
- Do not climb on the shipping box.
- Do not place heavy objects, on top of the shipping box.

The Asycube is shipped in a cardboard of the following dimensions:

	Asycube 240
Dimensions	550x400x300 mm
Gross weight	12 kg

Table 3-1 : gross weight and dimensions of the product when packaged

NOTE :

If the items received do not match to your order, or are damaged, do not sign the receipt, and contact Asyril as soon as possible.

3.2. Unpacking instructions

NOTE :

Do not remove the Asycube from its packaging until you are ready to install it.

WARNING !

Keep the packaging material and the shipment box in case of return

Locate the identification sticker at the back of the product and ensure that the product you have received is the appropriate one.

Important information is on this sticker; such as the power consumption or the serial number that you will need for any kind of correspondence with Asyril.

Asyril SA – Switzerland
www.asyril.com
Article N° : xxx xxx xxx
Type: ASYCUBE-240
Input voltage 24VDC
Serial N°: xxxxxx

Figure 3-1 : Product sticker

3.3. Installation and storage environment

WARNING !

The Asycube must be mounted on a smooth, flat and strong surface. Ensure yourself that the Asycube is not submitted to mounting flexure. Failure to do so would degrade feeder performance.

3.3.1. Installation environment

The Asycube can be used under following conditions:

- The asycube is IP20
- Working temperature: +5°C to +40°C
- Humidity: 30% to 80%max. non-condensing

WARNING !

In the case humidity or temperature variation, note that it might affect the global performances of the Asycube.

- Avoid extreme electromagnetic waves, ultraviolet rays and radiation.
- Avoid using the product in a place where the main unit or controller may be exposed to water or oil droplets.
- Clean room application: cleanliness class ISO7

WARNING !

Do not use the product in an atmosphere of corrosive gases. Rust may form and reduce the structural strength of the product.

3.3.2. Storage environment

The storage environment should be similar to the operating environment. In addition, you should protect the Asycube against dust

4. Maintenance and reparation

4.1. Safety precautions

4.1.1. General safety precautions

WARNING !

There are no user serviceable parts inside the product. Contact Asyril or your local supplier to effect maintenance. In cases of non respectation, the product guarantee will expire.

DANGER !

Do not operate the system when it is damaged. Please ensure yourself before use that no visual defects are detected.

DANGER !

Power down the system and unplug it from the mains before any kind of maintenance.

DANGER !

Do not pour water onto the product. Spraying water over the product, washing it with water or using it in water may cause the product to malfunction, resulting in injury, electric shock, fire, etc.

4.1.2. Specific warnings

WARNING !

Be sure that the platform is unloaded before any kind of maintenance.

4.2. Maintenance

WARNING !

For any kind of maintenance, always use Asyril products.

4.2.1. Periodic maintenance schedule

Our Asycube are largely maintenance-free, however, simple inspections should be done at regular intervals to ensure optimum performances, and safety operating of your product.

	Item	Period	Reference
General	Cleaning of the machine	Week	
	Visual check of electrical harness	Year	
	Visual check and cleaning of the plate	Week	Section 4.2.3
specific process	It is the customer's responsibility to schedule the maintenance of his specific process	/	/
Backlight	Visual check	Month	

Table 4-1 : periodic maintenance schedule

NOTE :

The information given in the "Table 4-1 : periodic maintenance schedule" is only informative, maintenance and times must be modified by the operator in accordance with your particular system, its operating environment and the amount of usage.

4.2.2. Remove the platform module

DANGER !

Be sure that the backlight is off before removing the platform module.

Risk of crushing. Do not place your finger between the platform and the locking mechanism

Step 1 Pull out the integrated tool **(A)** and move it away for freeing the platform **(B)**

Step 2 Take the platform out **(C)**
Release the tool – the mechanism as reverse operation from step 1 to let it goes to its initial position

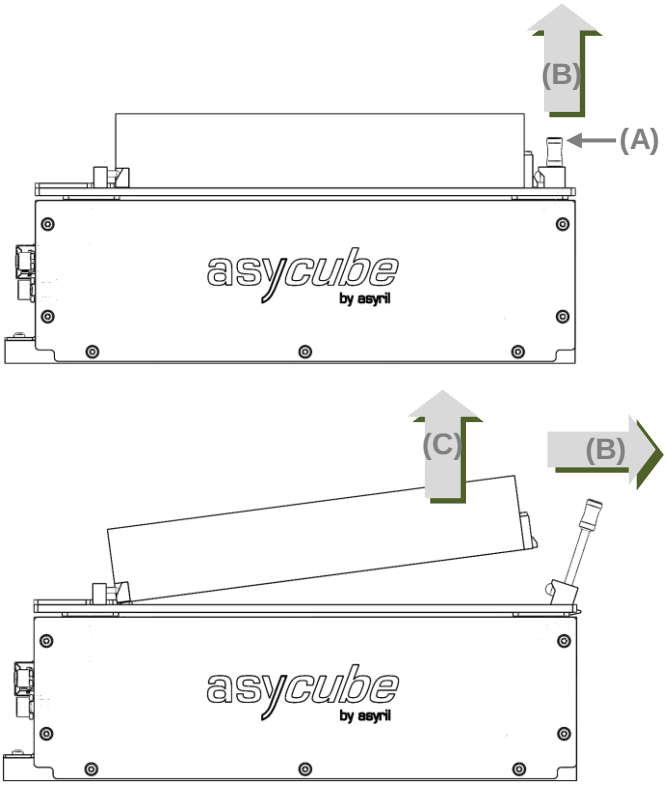


Figure 4-1 : remove the platform

4.2.3. Control and Cleaning of the platform

Material needed :

- Lint-free cloth
- isopropanol alcohol

Step 1 Control the surface state of the platform **(A)** and be particularly careful to the following points :

- Big claws
- Dirt or spotted surface
- Oily or greasy surface

WARNING :

If the surface is damaged so as to obstruct vision or the behavior of parts, its replacement must be proceeded

Step 2 Clean the surface of the platform

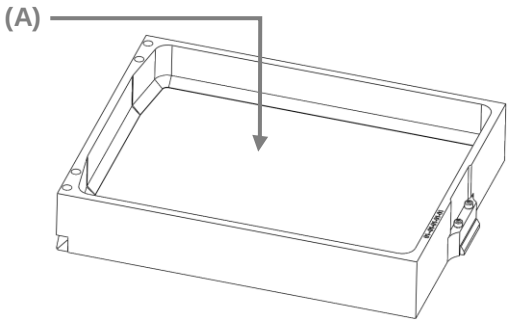


Figure 4-2 : Platform

4.3. Reparation

This section gives a list of the components, which can be replaced directly by the customer.

For any other repair, the product must be returned to the manufacturer.

WARNING !

For any kind of reparation, always use Asyril products.

Part name
Backlight assembly Blue
Backlight assembly Green
Backlight assembly Infrared
Backlight assembly Red
Backlight assembly White

Table 4-2 : Replaceable parts

4.3.1. Exchanging / installing the backlight

DANGER !

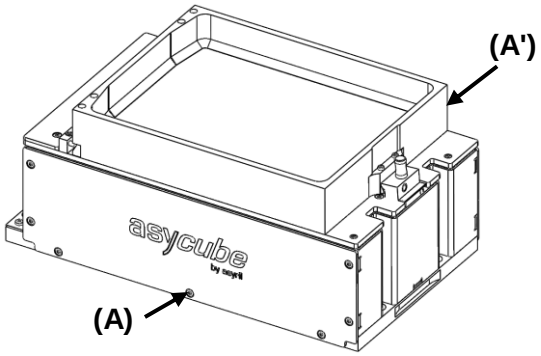
Be sure that all power sources and other cables to the unit are disconnected before changing the backlight.

Material needed :

- New backlight assembly delivered by Asyril
- Flat wrench size 5.5
- Torx key size 10

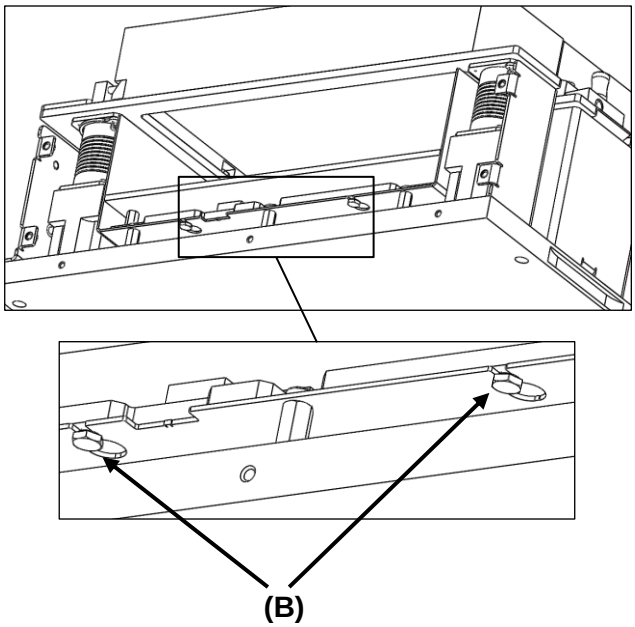
Step 1 Unscrew the 7 screws on both sides **(A)** and **(A')** and remove the two side covers

Use an torx key size 10



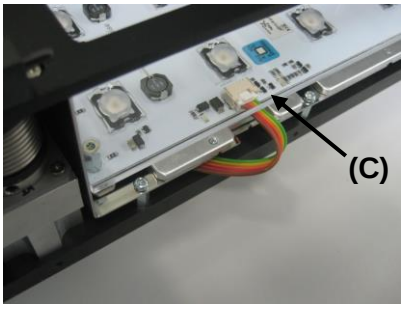
Step 2 On both sides, unscrew the four bolts (B)

Use a flat wrench size 5.5

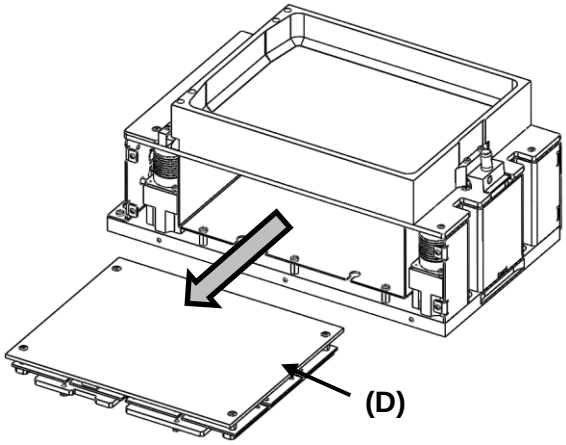


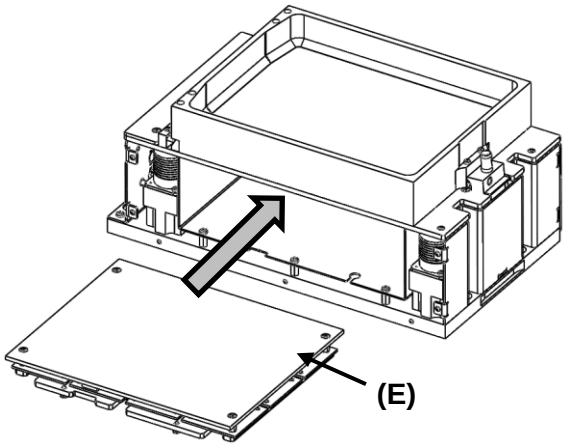
Step 3

Unplug the backlight connector (C)



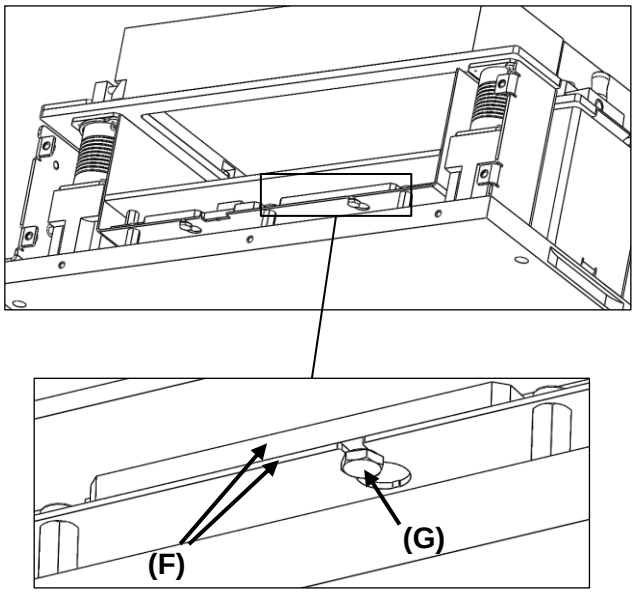
Remove the old backlight (D) and insert the new backlight (E)



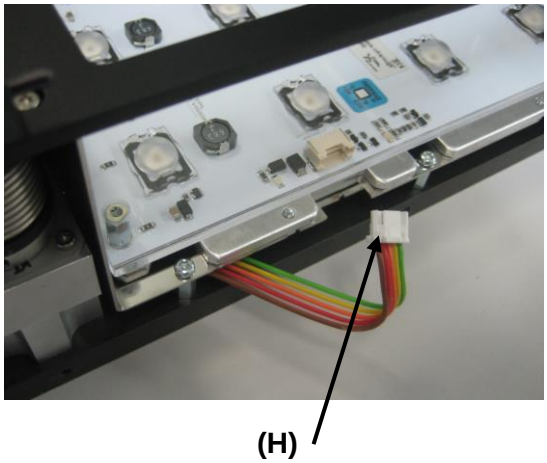


Step 5 Align the backlight module flush with the mirror support **(F)** and tighten the four bolts **(G)**

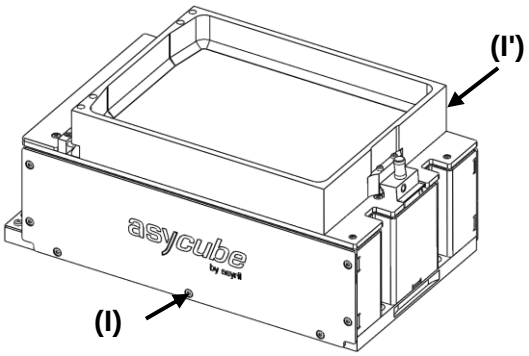
Use a flat wrench size 5.5



Step 6 Plug the backlight connector **(H)**



Step 7 Remount the covers **(I)** and **(I')** on both sides



4.3.1.1. Configure the Asycube with a new backlight color

You can set the color of the backlight in the Asycube. It is useful for example to be able to adapt interfaces depending of the color or depending if there is no backlight.

- With HMI

To modify the parameter, use the following procedure:

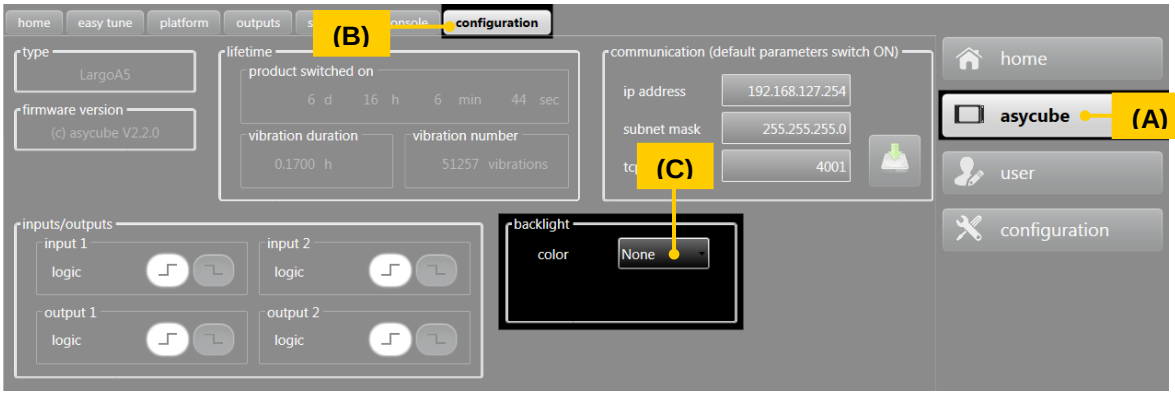


Figure 4-3 : change backlight color in HMI

Ref.	Designation	Description
(A)	*"Asycube" button*	Press this button to display the Asycube screen.
(B)	*"Asycube configuration" button*	Press this button to display the Asycube configuration tab.
(C)	*"Color" select box*	This select box allows selecting the color of the backlight. If "None" is chosen, backlight tab and backlight switches disappear.

For more information about the HMI, please refer to the user interface documentation.

- With dll

To modify the parameter with plugin.Net, use this function:

SetBacklightColor(BacklightColor color, string password)

The password is important, because to write this parameter, you need to be logged in the firmware as Integrator. Password is 1234.

For more information on the DLL, please refer to the integration guide documentation.

- Using tcp commands

  To modify the parameter with TCP commands, use this sequence of commands:

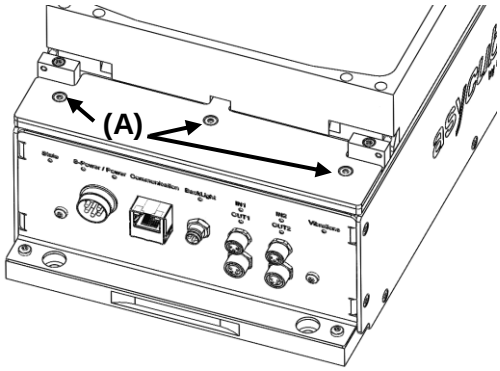
	Command	Function	More informations
1	{wp7=1234}	Login in integrator mode	
2	{wp97="x"}	Write color of backlight	"x": 0: Green 1: Red 2: Blue 3: IR 4: UV 5: White 99: None
3	{df}	Save configuration in flash memory	
4	{wp7=1}	Logout	

4.3.2. Recover IP address using default IP address

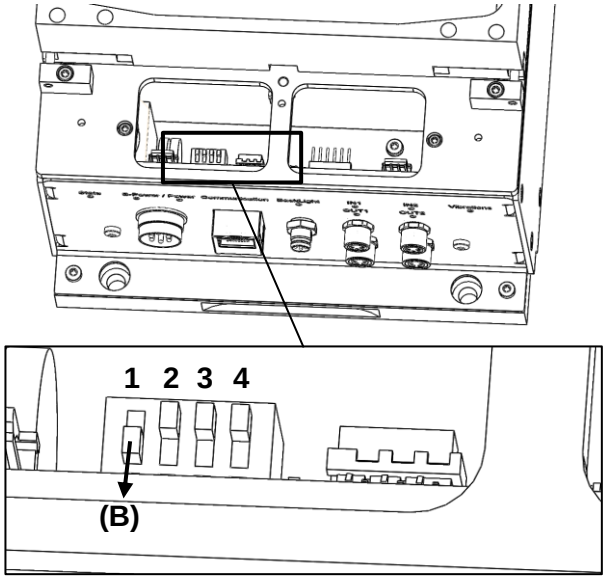
The following procedure explains how to reboot the Asycube on the default IP address, subnet mask and tcp port number to be able to modify IP address, subnet mask and tcp port number when they are unknown and cannot be found. Following this procedure, you are able to connect on the Asycube with default parameters and then modify unknown parameters.

Step 1 Unscrew the 3 screws **(A)** and remove the cover

Use an torx key size 10



Step 2 Place selector 1 in "on" position **(B)**



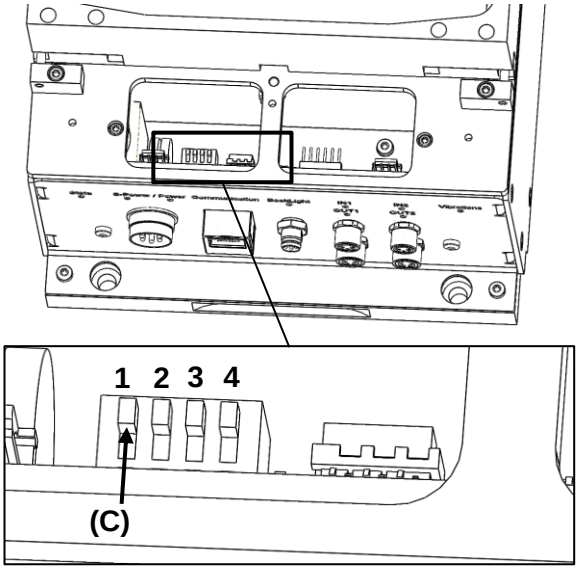
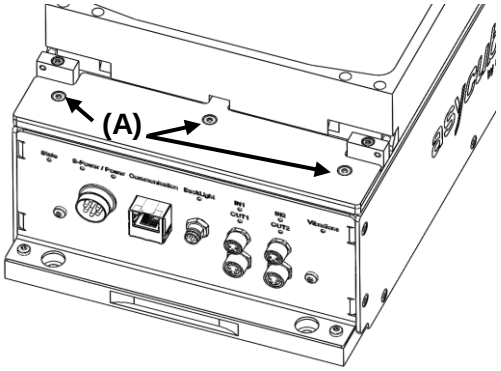
Step 3 Disconnect and reconnect the power cable (or switch off and switch on the power on the Asycube).

The Asycube will take default parameters at startup :

IP: 192.168.127.254

SubnetMask: 255.255.255.0

TCP Port: 4001

Step 4	Parameters in memory can now be modified (by direct access with commands to the Asycube, by functions in dll or by Asycube configuration page in HMI) (see relative documentations for more details).
Step 5	When parameters are defined as desired, replace selector 1 in position **(C)**. 
Step 6	Disconnect and reconnect the power cable (or switch off and switch on the power on the Asycube). The Asycube will take the parameters defined by the new startup.
Step 7	Replace the cover and screw the 3 screws **(A)** *Use an torx key size 10 (0.9Nm)*  

4.4. Technical support

4.4.1. For better service …

You have read the related manuals without finding answers to your questions ? Before calling the support service, note the following information for your system:

- serial number and product key of your material
- software version
- alarm or error message displayed on the screen

4.4.2. Contact

You can find lot of information on our website: www.asyril.com

You can also contact us by mail or through our web-site contact form:

support@asyril.com +41 26 653 7190

5. Annexes

5.1. Condition of use of backlight

CONDITIONS OF USE OF PRODUCTS TPL VISION

TABLE OF CALCULATION

THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD

NF EN 62471 "LAMPS PHOTOBIOLOGICAL SAFETY"

THIS DOCUMENT ISN'T A CERTIFICATE AND CAN'T BE USED AS WELL BUT ONLY AS PRECONISATIONS FOR USERS

Sample subjected to calculations	Product reference	Date
1 brick 8 leds 200x150 green	SPE1341-AB2	17/10/2014

Info Source to LEARN			
	Exposure time to the direct source	0,25	Secondes
1	Wavelength	525	nm
	Color temperature		K
2	Total Angle	150	Degrés
3	*For the visible:*		
	Output Intensity		candelas
	Output Power	150	lumens
	For the Non-Visible:		
	Power density	0,000	W/m²
4	Number of LED	8	LEDs
5	If you use a lense, Efficiency in candela per lumen	2,5	Cd/lm

CALCULATION from information about the Source			
	Calculation of Maximum Permitted Exposure (EMP) :	25,456	W/m²
		13665,66445	Lm/m²
	Calculation of power density for visible source :		
	Surface illuminated by the source :	0,437567409	m²
	Power of one LED =	150	Lumen
	Power densité for one LED :	342,804324	lm/m²
	Calculation of power density for a non-visible source :		
	Surface illuminated by the source :	0,4376	m²
	Power Density for one LED :	0,000	W/m²
CALCULATION for the safety of persons			
	Source Hazardous :		
	Power density for a visible source :	2742,434592	lm/m²
	Power density for a non-visible source :	0,000	W/m²

	NOMINAL DISTANCE TO AVOID OCULAR HAZARD (DNRO) FOR AN EXPOSURE TIME OF (Seconde):	0,25
	Minimum safe distance in this case*	128 mm

** Consider as Hazard Zone Optics (NRA), or area within which the irradiance or radiant exposure exceeds the maximum permissible exposure (MPE), all positions within an envelope of the remote DNRO.*

informations :

Exposure time is fixed to 0,25s for this calculation table, which is the latency blink of the eye duration.
Output power : the maximum output power for the type of LED used in the product is 150 lumens under 350mA.
Number of Led : In the worst case, we can imagine that the person can see entirely the light.

CONDITIONS OF USE OF PRODUCTS TPL VISION

TABLE OF CALCULATION

THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD

NF EN 62471 "LAMPS PHOTOBIOLOGICAL SAFETY"

THIS DOCUMENT ISN'T A CERTIFICATE AND CAN'T BE USED AS WELL BUT ONLY AS PRECONISATIONS FOR USERS

Sample subjected to calculations	Product reference	Date
1 brick 8 leds 200x150 red	SPE1341-AC2	17/10/2014

Info Source to LEARN			
	Exposure time to the direct source	0,25	Secondes
1	Wavelength	630	nm
	Color temperature		K
2	Total Angle	150	Degrés
3	*For the visible:*		
	Output Intensity		candelas
	Output Power	80	lumens
	For the Non-Visible:		
	Power density	0,000	W/m²
4	Number of LED	8	LEDs
5	If you use a lense, Efficiency in candela per lumen	2,5	Cd/lm

CALCULATION from information about the Source			
	Calculation of Maximum Permitted Exposure (EMP) :	25,456	W/m²
		4607,380507	Lm/m²
	Calculation of power density for visible source :		
	Surface illuminated by the source :	0,437567409	m²
	Power of one LED =	80	Lumen
	Power densité for one LED :	182,8289728	lm/m²
	Calculation of power density for a non-visible source :		
	Surface illuminated by the source :	0,4376	m²
	Power Density for one LED :	0,000	W/m²
CALCULATION for the safety of persons			
	Source Hazardous :		
	Power density for a visible source :	1462,631782	lm/m²
	Power density for a non-visible source :	0,000	W/m²

	NOMINAL DISTANCE TO AVOID OCULAR HAZARD (DNRO) FOR AN EXPOSURE TIME OF (Seconde):	0,25	
	Minimum safe distance in this case*	161	mm

** Consider as Hazard Zone Optics (NRA), or area within which the irradiance or radiant exposure exceeds the maximum permissible exposure (MPE), all positions within an envelope of the remote DNRO.*

informations :

Exposure time is fixed to 0,25s for this calculation table, which is the latency blink of the eye duration.
Output power : the maximum output power for the type of LED used in the product is 80 lumens under 350mA.
Number of Led : In the worst case, we can imagine that the person can see entirely the light.

CONDITIONS OF USE OF PRODUCTS TPL VISION

TABLE OF CALCULATION

THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD

NF EN 62471 "LAMPS PHOTOBIOLOGICAL SAFETY"

THIS DOCUMENT ISN'T A CERTIFICATE AND CAN'T BE USED AS WELL BUT ONLY AS PRECONISATIONS FOR USERS

Sample subjected to calculations	Product reference	Date
1 brick 8 leds 200x150 Bleu	SPE1341-AF2	17/10/2014

Info Source to LEARN			
	Exposure time to the direct source	0,25	Secondes
1	Wavelength	470	nm
	Color temperature		K
2	Total Angle	150	Degrés
3	*For the visible:*		
	Output Intensity		candelas
	Output Power	39	lumens
	For the Non-Visible:		
	Power density	0,000	W/m²
4	Number of LED	8	LEDs
5	If you use a lense, Efficiency in candela per lumen	2,5	Cd/lm

CALCULATION from information about the Source			
	Calculation of Maximum Permitted Exposure (EMP) :	25,456	W/m²
		1582,15708	Lm/m²
	Calculation of power density for visible source :		
	Surface illuminated by the source :	0,437567409	m²
	Power of one LED =	39	Lumen
	Power densité for one LED :	89,12912424	lm/m²
	Calculation of power density for a non-visible source :		
	Surface illuminated by the source :	0,4376	m²
	Power Density for one LED :	0,000	W/m²
CALCULATION for the safety of persons			
	Source Hazardous :		
	Power density for a visible source :	713,0329939	lm/m²
	Power density for a non-visible source :	0,000	W/m²

	NOMINAL DISTANCE TO AVOID OCULAR HAZARD (DNRO) FOR AN EXPOSURE TIME OF (Seconde):	0,25	
	Minimum safe distance in this case*	191	mm

** Consider as Hazard Zone Optics (NRA), or area within which the irradiance or radiant exposure exceeds the maximum permissible exposure (MPE), all positions within an envelope of the remote DNRO.*

informations :

Exposure time is fixed to 0,25s for this calculation table, which is the latency blink of the eye duration.
Output power : the maximum output power for the type of LED used in the product is 39 lumens under 350mA.
Number of Led : In the worst case, we can imagine that the person can see entirely the light.

CONDITIONS OF USE OF PRODUCTS TPL VISION

TABLE OF CALCULATION

THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD

NF EN 62471 "LAMPS PHOTOBIOLOGICAL SAFETY"

THIS DOCUMENT ISN'T A CERTIFICATE AND CAN'T BE USED AS WELL BUT ONLY AS PRECONISATIONS FOR USERS

Sample subjected to calculations	Product reference	Date
1 brick 8 leds 200x150 infrared	SPE1341-AD2	17/10/2014

Info Source to LEARN			
	Exposure time to the direct source	10	Secondes
1	Wavelength	850	nm
	Color temperature		K
2	Total Angle	150	Degrés
3	*For the visible:*		
	Output Intensity		candelas
	Output Power		lumens
	For the Non-Visible:		
	Power density	1,028	W/m²
4	Number of LED	8	LEDs
5	If you use a lense, Efficiency in candela per lumen	2,5	Cd/lm

CALCULATION from information about the Source			
	Calculation of Maximum Permitted Exposure (EMP) :	19,953	W/m²
		Source Non-Visible	Lm/m²
	Calculation of power density for visible source :		
	Surface illuminated by the source :	Source Non-Visible	m²
	Power of one LED =	Source Non-Visible	Lumen
	Power densité for one LED :	Source Non-Visible	lm/m²
	Calculation of power density for a non-visible source :		
	Surface illuminated by the source :	0,4376	m²
	Power Density for one LED :	8,227	W/m²
CALCULATION for the safety of persons			
	Source Hazardous :		
	Power density for a visible source :	Source Non-Visible	lm/m²
	Power density for a non-visible source :	8,227	W/m²

	NOMINAL DISTANCE TO AVOID OCULAR HAZARD (DNRO) FOR AN EXPOSURE TIME OF (Seconde):	10
	Minimum safe distance in this case*	183 mm

** Consider as Hazard Zone Optics (NRA), or area within which the irradiance or radiant exposure exceeds the maximum permissible exposure (MPE), all positions within an envelope of the remote DNRO.*

informations :

Exposure time is fixed to 10s for this calculation table, which is the max duration according to the standard compliance.

Output power : the maximum output power for the type of LED used in the product is 450mW under 350mA.

Number of Led : In the worst case, we can imagine that the person can see entirely the light.

5.2. CE Certificate

Declaration of incorporation

according to the EU Machinery Directive 2006/42/EC, Annex II 1. B

for partly completed machinery

Manufacturer

Asyril SA

ZI Le Vivier 22

CH - 1690 Villaz-St-Pierre

Person established in the Community authorised to compile the relevant technical documentation

Jean-Baptiste Berset

Asyril SA

ZI Le Vivier 22

CH - 1690 Villaz-St-Pierre

Description and identification of the partly completed machinery

Product / Article	ASYCUBE 240
Type	Asycube Largo A5 / ACUBE 240
Serial number	14380000 à 50000000
Function	Smooth vibration feeder for ultra efficient component distribution

It is declared that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled.

1.3., 1.3.7, 1.5.1, 1.5.10, 1.5.11, 1.6.1

It is also declared that the relevant technical documentation has been compiled in accordance with part B of Annex VII.

It is expressly declared that the partly completed machinery fulfils all relevant provisions of the following EU Directives.

2004/108/EC	Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (1)

Reference to the harmonised standards used, as referred to in Article 7 (2)

EN 349:1993+A1:2008	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
EN 62471:2008	Photobiological safety of lamps and lamp systems
EN 60204-1:2006/AC:2010	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN ISO 13732-1:2008	Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces (ISO 13732-1:2006)
IEC 61000-6-2:2016	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments
ECI 61000-6-4:2007/A1 2011 ECI	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

The manufacturer or his authorised representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place

- in electronic format

This does not affect the intellectual property rights!

Important note! The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive, where appropriate.

Villaz-St-Pierre, 2018-09-21

Place, Date

Signature
A.Codourey
Director

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Review history

Rev.	Date	Author	Comments
A	03.10.2014	BeJ	Initial Version
A1	06.11.2014	BeJ	Pt 2.4.2 TBTP modified in PELV, pt 1.4 CE certification
A2	23.04.2015	HsJ	Changes for pinout connectors and power max current.
A2.1	16.06.2015	HsJ	Remove 5V TTL synchro backlight, because it's not guaranteed.
A2.2	15.10.15	BeJ	§2.6.3: "cables not adapted for cable tracks" added
A2.3	07.12.2015	HsJ	§4.4.2: change off to on for switch position
A3	23.06.2016	BeJ	Rename LA5 in 240, cosmetic changes, add fixation kit info
A4	15.12.17	BeJ	Hopper info §2.6.4 and platform dwg §2.6.1 added
A5	14.06.19	BeJ	§2.6.4 : correction of hopper frequency, §3.2 : removed shockwatch information
A6	02.12.2019	HuG	§2.2.1 : addition RoHS, §2.2.2 : Adding picking height, §2.2.3 : description of the leds, §2.2.4 : Maximum permissible external force on the platform, §2.2.5 : Permissible platform weight, §2.2.6 : Maximum plate displacement, §2.2.7 : Plate Z repeatability, §2.4.2 : Power connection, §2.6.1 : addition of part tilting length, removal of the item numbers from the platform fixation kit and the flat platform, §0 : Removal of the item numbers, §2.6.3 : Removal of the item numbers, §2.6.4 : Modification of hopper variants, §2.6.4.3 : Modification of some dimensions, §2.6.5 : Calibration plate, §4.3 : Removal of the item numbers and platform/fixation kit references, §5.2 : Update of the CE Certificate, § entire document: various minor corrections

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