



KIT-3D-SENSOR

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INSTALLATION GUIDE

Vega 3D System is a door protection system that provides enhanced 3D detection in the landing zone. The system uses microwave radar technology for 3D detection. It is fully compliant to the 2019 update to ASME A17.1 both with B-LIFT-V60 light curtains (Approaching Object + Object in the door path) and as stand-alone device (only Approaching Object).

IMPORTANT: Read carefully this manual before the installation

TYPES OF 3D SYSTEM:

SYSTEM CODE	COMPONENT CODE	DESCRIPTION
KIT-3D-SENSOR-VG-V60	3D-CONTROLLER-E	Power supply unit (115-230 Vac 50/60Hz, 12-48 Vdc) compliant with Vega light curtain B-LIFT-V-60
	3D-SENSOR-VG	Radar Sensor
	B-LIFT-V-60	Light Curtains
KIT-3D-SENSOR-VG-E	3D-CONTROLLER-E	Power supply unit (115-230 Vac 50/60Hz, 12-48 Vdc) compliant with Vega light curtain B-LIFT-V-60
	3D-SENSOR-VG	Radar Sensor
KIT-3D-SENSOR-VG-D	3D-CONTROLLER-D	Power supply unit (115-230 Vac 50/60Hz, 12-48 Vdc) compliant with Vega light curtain B-LIFT EVO series
	3D-SENSOR-VG	Radar Sensor

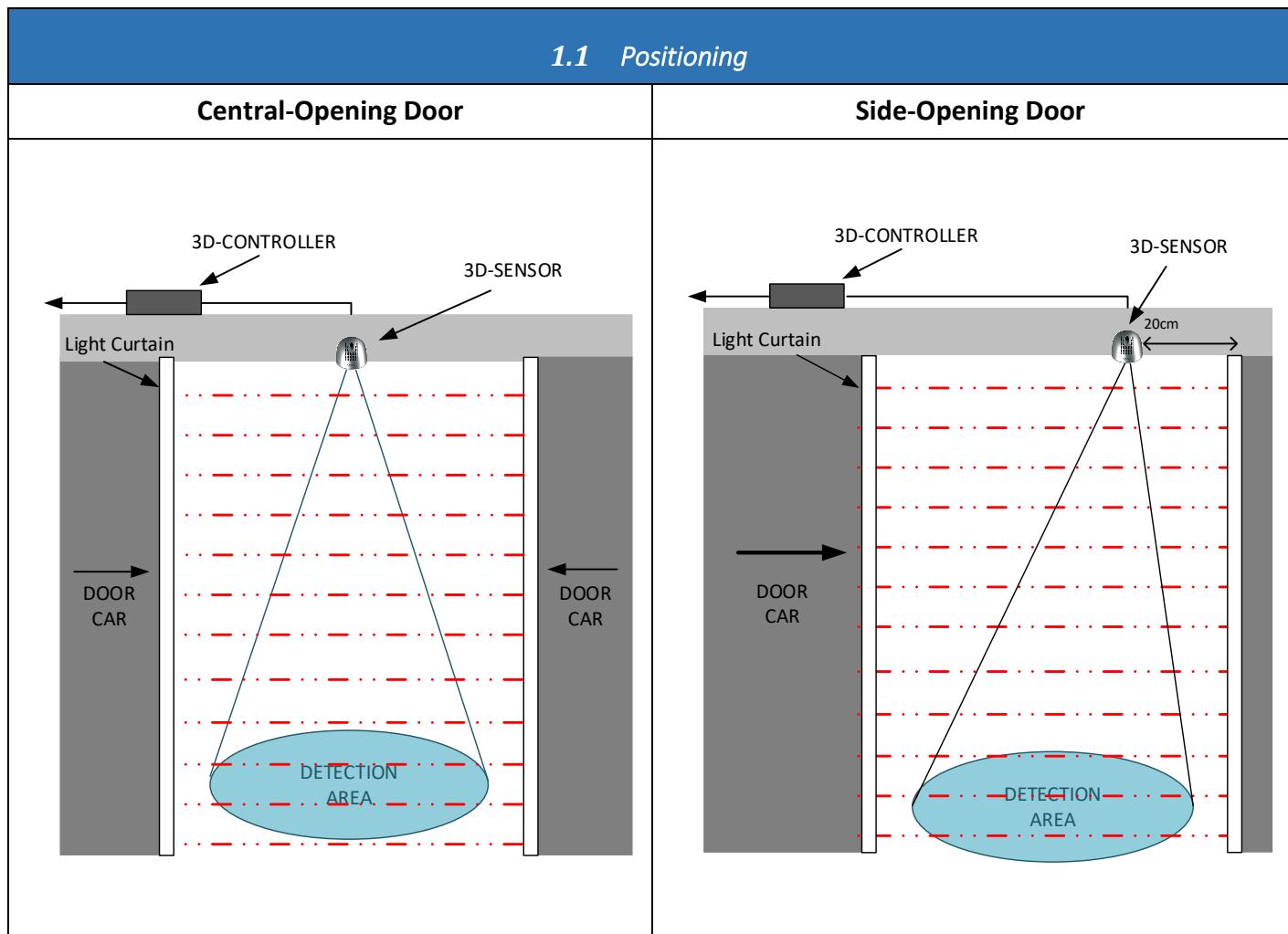
Technical Specification 3D-Sensor:

3D Monitoring & Protection System for a 3D detection in the landing zone based on microwave radar technology.

Size	8x8.3x5 cm
Transmitter Frequency	62 GHz
Range Resolution	3.75cm
Adjustable Detection Range	Up To 200 cm
Mounting Height	180 – 249 cm
Detection Width	152.4 cm Side Opening 200 cm Central Opening
Detection Mode	Motion
Operating Distance	With door separations > 30 cm

1 MECHANICAL INSTRUCTIONS

Consult the images listed below for the correct installation of the **3D-Sensor**



ATTENTION: FOR THE SIDE OPENING, YOU NEED TO CHANGE THE SETTINGS IN THE MENU, CONSULT THE IMAGE AS IF YOU ARE IN THE CAR.

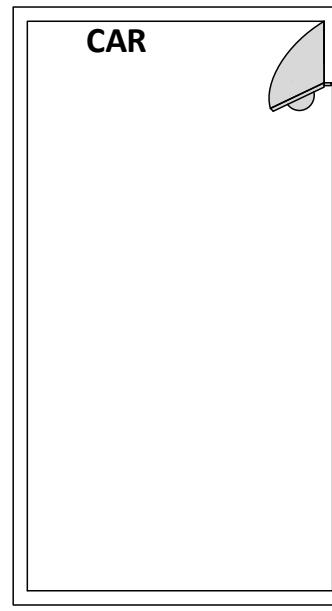
Central Opening Door

The sensor must be positioned in the middle with the back facing the interior of the cab.

Side Opening Door

The sensor must be positioned in the corner, 20 cm from the door closing point. The back must be facing the interior of the cab.

Positioning of the 3D Sensor

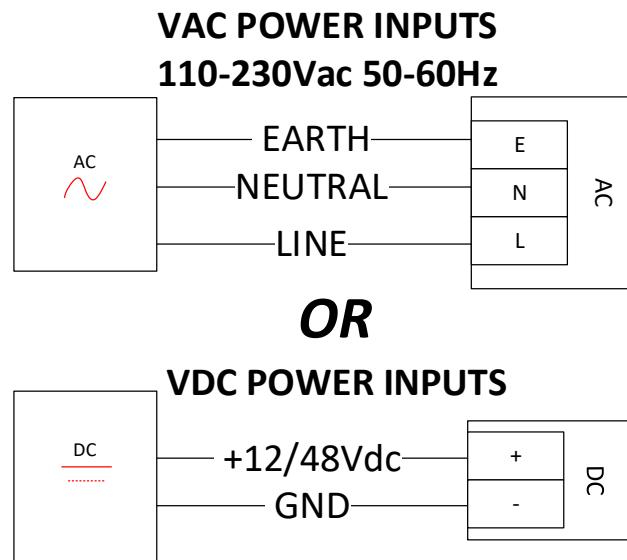


1.2 Mounting procedure

Instructions	Image
Insert the nut into the slot on the base.	
Insert the cover and fix with the screw.	
Insert the cover and fix with the screw.	

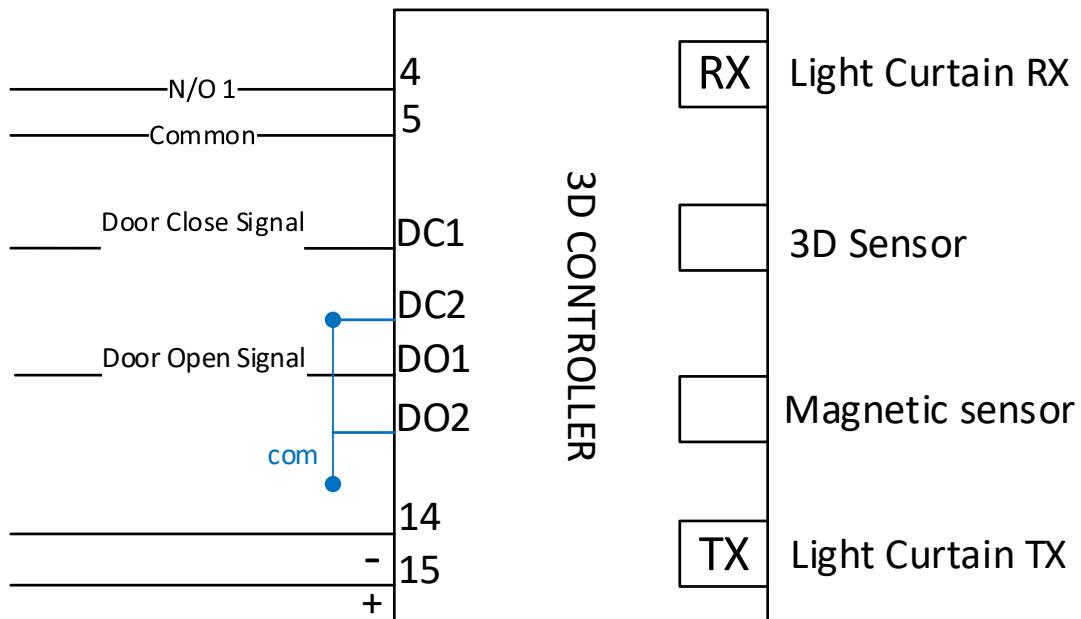
First Connection:

STEP 1: Connect the power supply, consult the image below on how to connect VAC **OR** DC.



Consult the different inputs for the light curtains on paragraph 2

STEP 2: Full Configuration Connections



Consult the following connection diagram for the connection of a fully working 3D controller which stops the doors from closing in case of a detection by the light curtains or the 3D sensor.

Step by step configuration:

In this part you will find the possible connections for the 3D Controller.

You can choose not to connect a certain component if not needed, in that case ignore the point.

Complete Configuration:

- 1) Connect the 3DSensor, Light Curtains and Magnetic Sensor to the 3D controller as shown in the image below.
- 2) You need to activate the 3D Sensor by going to the menu 3D Settings and setting it to how you desire.
- 3) Activate the Light Curtains from the 2D Settings Menu
- 4) Activate the Magnetic Sensor by the menu, 3D settings, 3D shut off, external signal (See magnet positioning in its paragraph)
- 5) Connect the relays used to stop the closing of the doors.
- 6) Connect the door opening/closing door signals.

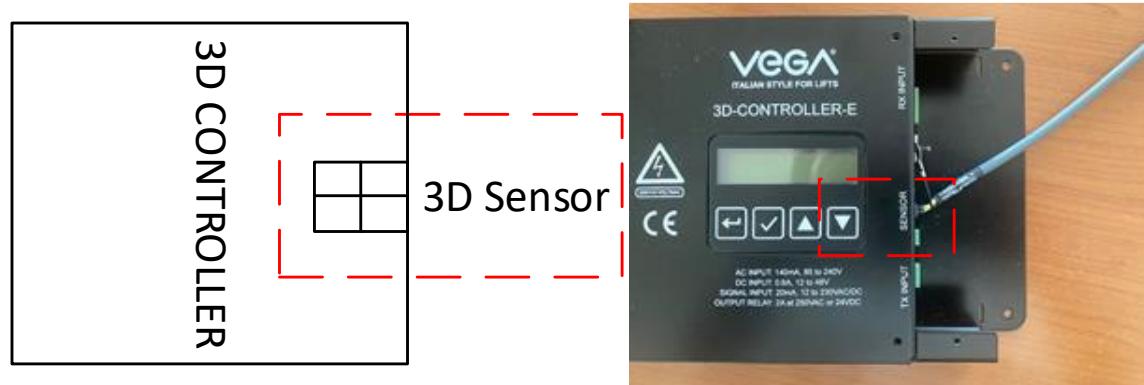
ATTENTION:

After connecting the 3D Sensor, and the other components need to be activated from the programming menu, consult paragraph 5.2.

3D-Sensor configuration with Light Curtains



3D-Sensor stand-alone configuration



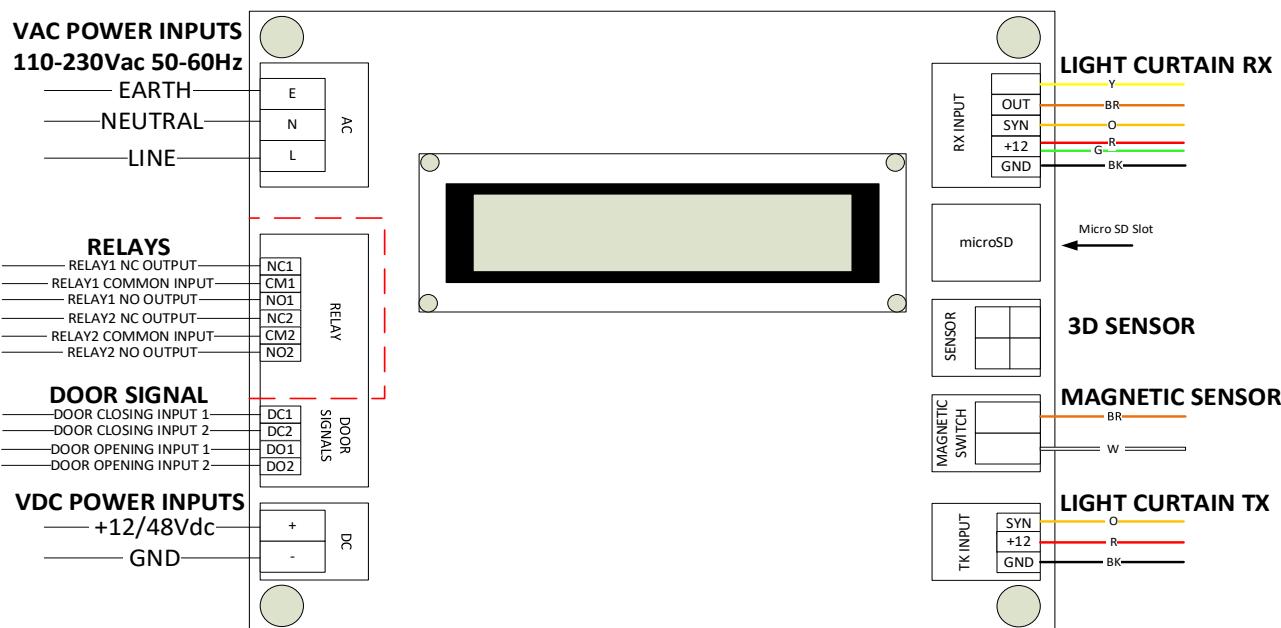
Consult the connection diagram on paragraph 3 for more details on the inputs.

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2 DEVICE CONNECTION

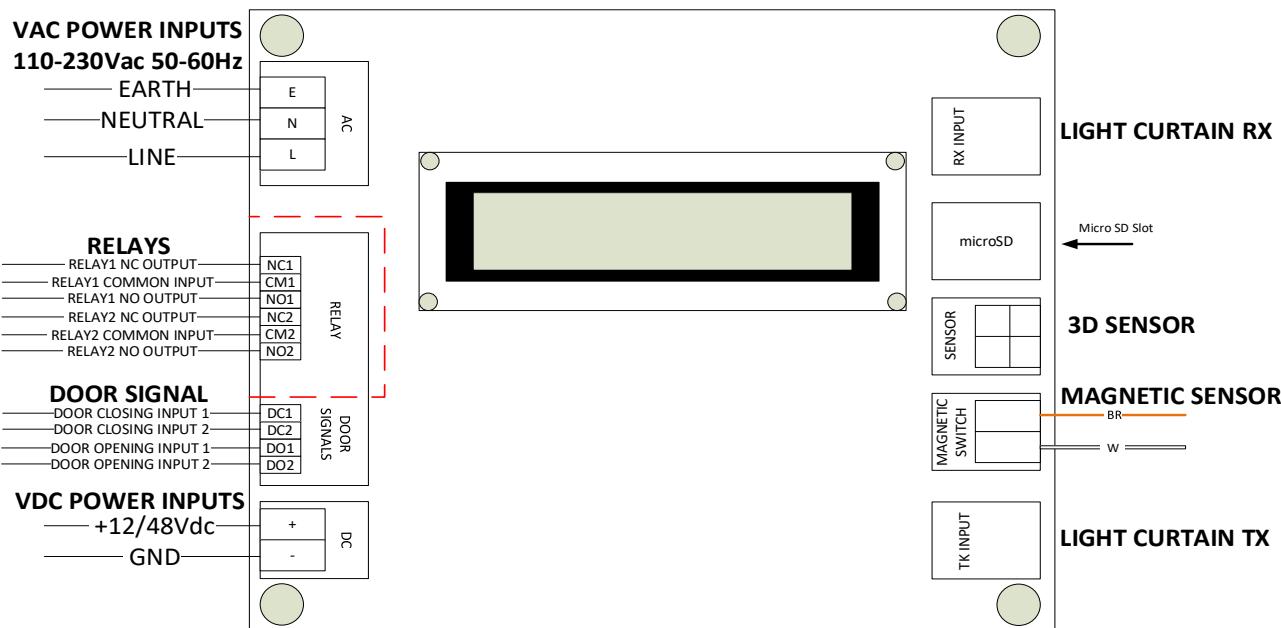
2.1 3D-Controller

CONTROLLER-E



IMG 1.1

CONTROLLER-D



IMG 1.2

KIT 3D SENSOR

	
<p>1. To access the connectors, it is necessary to open the metal box of the controller</p>	<p>2. Remove the right cover</p>
	
<p>3. Remove the left cover</p>	<p>4. Pass all the cables that must be connected to the terminals on the left of the controller through the appropriate cable gland holes in the cover</p>
	
<p>5. Connect the cable on the left side (Power supply, relay, door contacts)</p>	<p>6. Connect the cable on the left side (Power supply, relay, door contacts)</p>

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<p>7. Connection of the light curtains, magnetic switch and 3D sensor</p>	<p>8. Once you are done with the configuration you can close the panel.</p>

2.2 3D-Sensor



1. After the 3D-Sensor has been properly placed on the car header, use the connection cable to connect 3D-Controller with 3D-Sensor. Use nut and washer to ensure the earth connection.

ATTENTION: To use 3D-Sensor in residential environment, the cable must be wrapped around the snap ferrite for one round. [Snap ferrite sold separately](#) (code: FER-CLP-03).

2.3 Magnetic switch

Optional magnetic switch for static installations of the 3D Sensor can be installed to provide a position door signal to the 3D-Controller.

Code: KIT-MAGNETIC-SWITCH-01 (not included)

Main features:

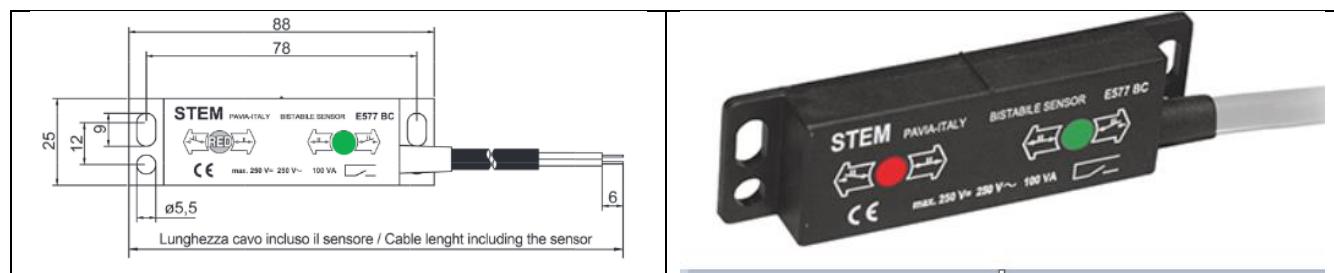
Sensor housing: rectangular, laestra housing

Contact type: bistable

Voltage and power maximum rating: 250V AC-DC, 100W

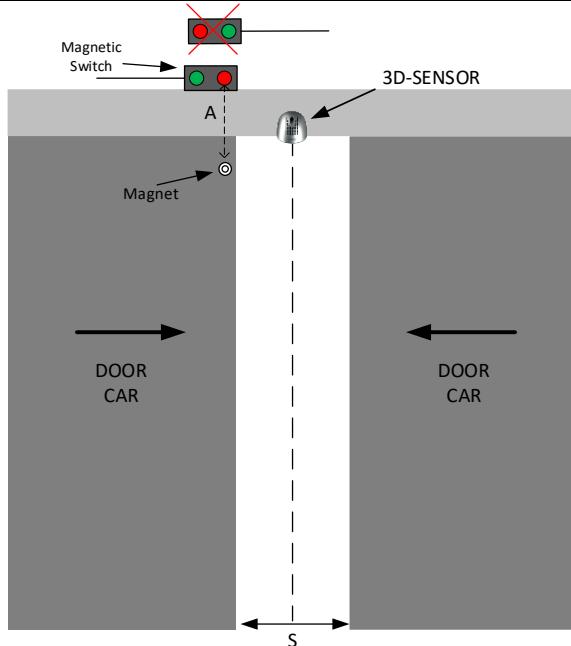
Door Opening to Magnet Range distance: "S" 30/40cm

Magnetic Switch to Magnet distance: "A" – 30/40cm

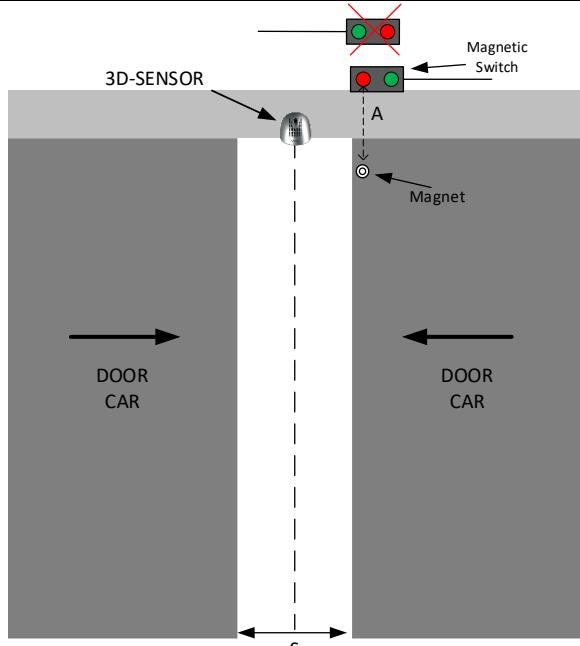


Possible Connections

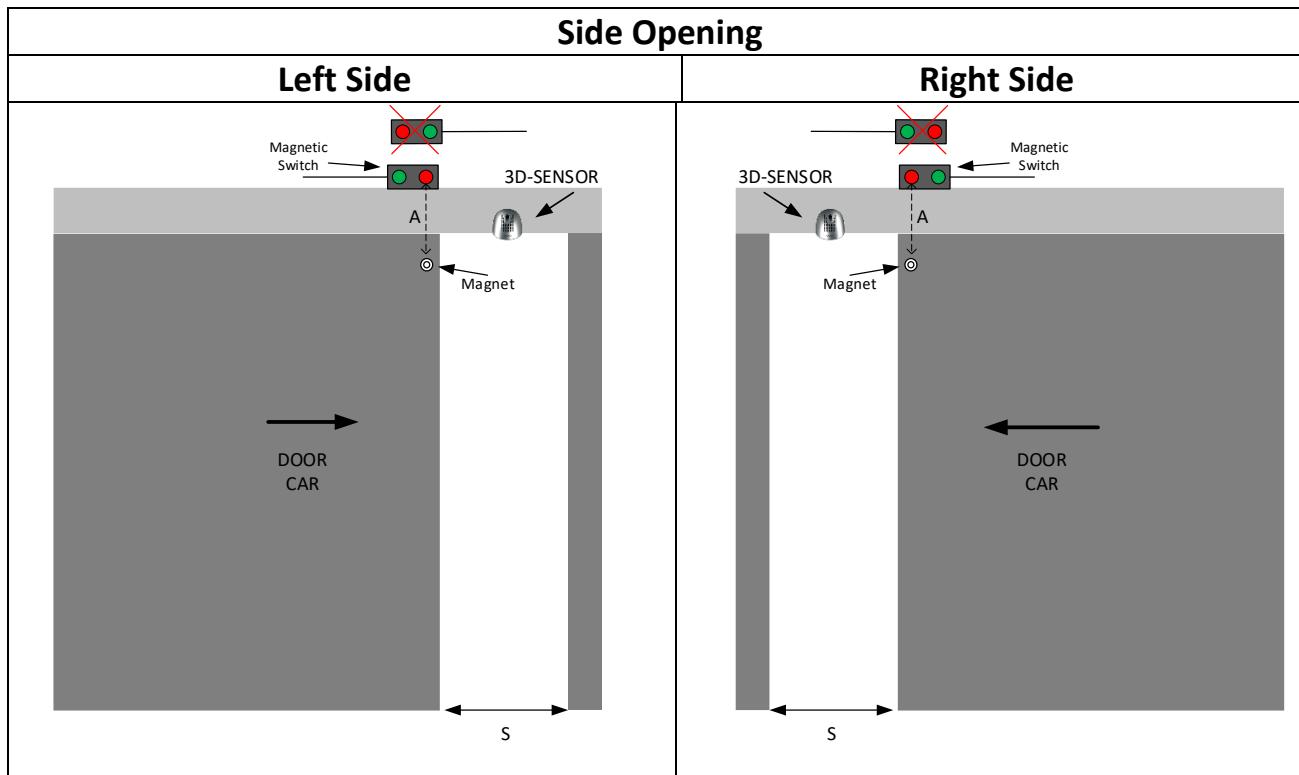
Switch mounted left side



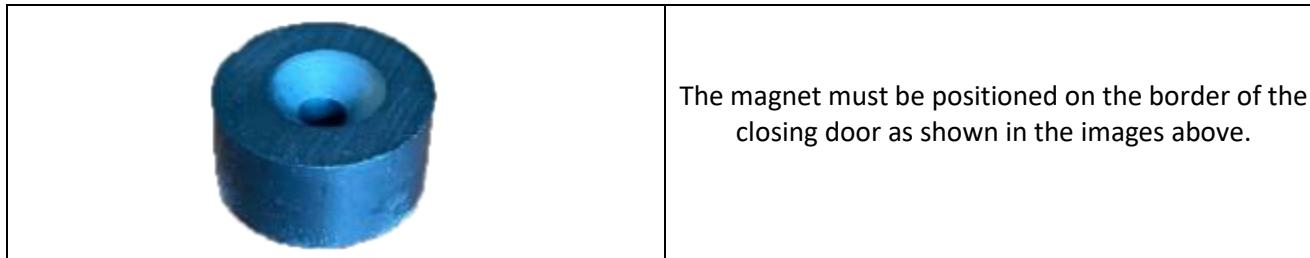
Switch mounted right side



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MAGNET:



3 POWER, RELAYS AND EXTERNAL DOOR SIGNALS

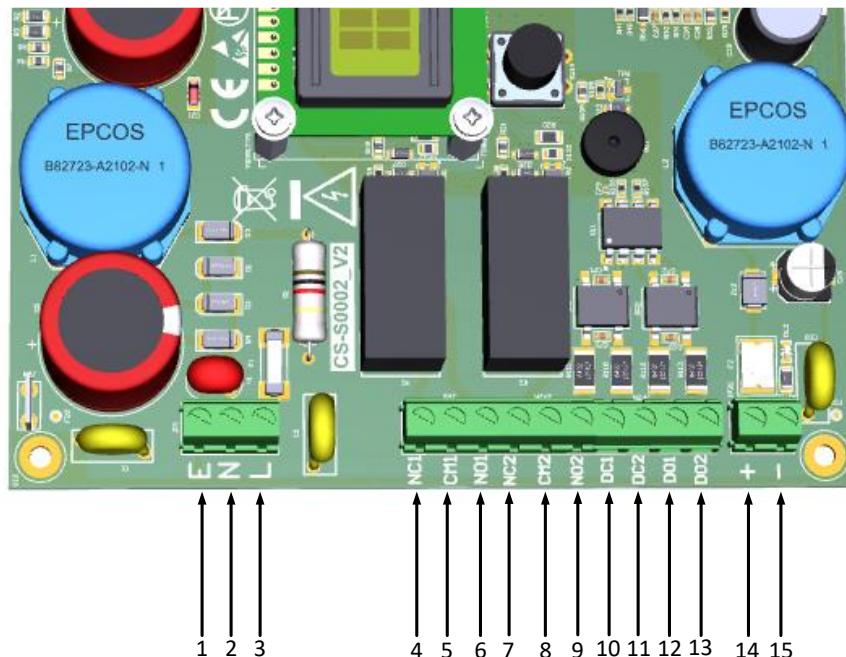


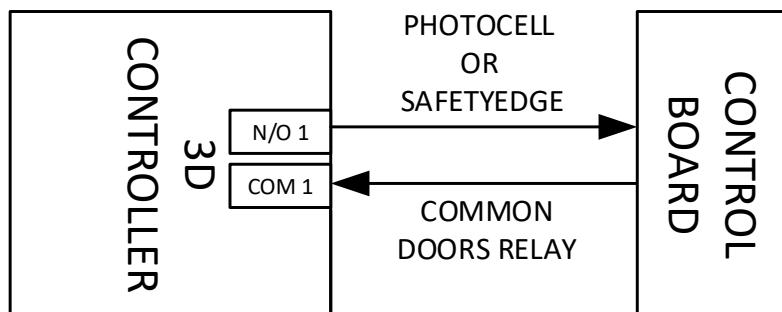
Fig 4: 3D Controller Left-Side connections

Terminal No.	Function	Comments
1	Earth	
2	Neutral	
3	Line	
4	N/O 1	
5	COM 1	
6	N/C 1	
7	N/C 2	
8	COM 2	
9	N/O 2	
10	DC1	Door closing input (12 to 230 AC/DC)
11	DC2	Note: not polarised
12	DO1	Door opening input (12 to 230 AC/DC)
13	DO2	Note: not polarised
14	+	+12 to 48VDC if powered via DC
15	-	0V

Consult the following wiring examples to connect the 3D controller with the different connections.

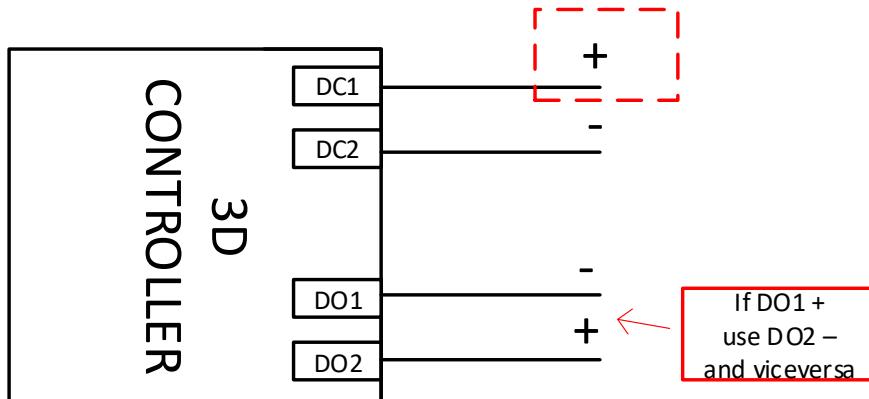
RELAY CONNECTION EXAMPLE:

The relay is used to stop the door closing of the elevator.

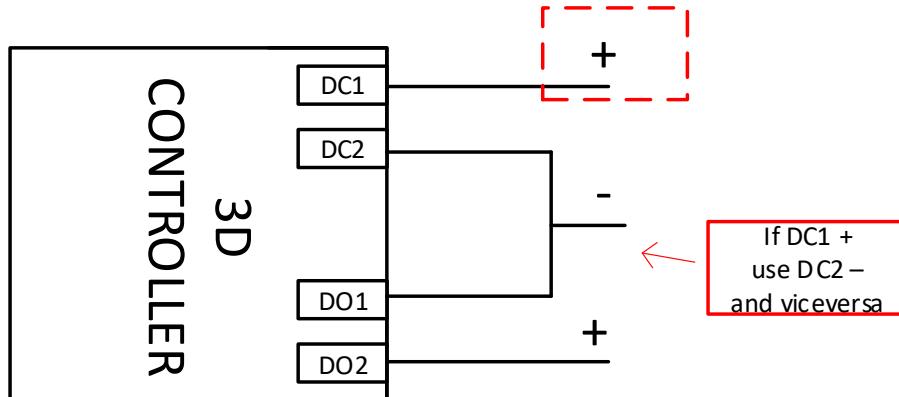


4 EXTERNAL SIGNALS WIRING EXAMPLES

CONNECTION TYPE A: DOOR OPENING/ CLOSING



CONNECTION TYPE B: DOOR OPENING/ CLOSING



ATTENTION:

If DC1 is **positive** set DC2 to **negative**

Same connection required for both types of current.

5 MENU NAVIGATION

Settings configuration can be changed using the 4 buttons on the keypad Controller.



Key	Function
←	Cancel
✓	Confirm
▲	Menu and value up
▼	Menu and value down

Programming Menu

Language	English	Language selection
	Italian	
3D Settings		
	3D Enable	Smart detection with filtering of trasversal movement
		Standard detection
		Turn Off 3D Detection
	3D Position	Sets the configuration according to the position of the sensor in the car header
		Center
		Right
		Left
	3D Mode	3D activates when the door are closing
		3D activates with 5s timeout
		3D activates with 10s timeout
		3D activates with 20s timeout
		3D activates with no timeout
	Count	Counts the 3d triggers and disable 3D once this count is reached. Count reset with 2D trigger or door fully closed. (0 is count disabled).
	Range	Sets detection range up 2 mt
	Size-Opening	Sets size-opening to fit the beam
		<1 mt
		>1 mt, <1.5mt

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	Large	>1 mt, <2mt
Shut-Off 3D		3D deactivates with timeout after door closing signal
	Timer	3D deactivates with external signal
	External Signal	3D deactivates on the falling edge of door closing signal
	Disabled	Sets timeout for Shut-Off 3D->Timer
Timer Off		Sets distance between 3D sensor and landing to adjust the beam
Offset		
2D Settings		
2D Enable		Enable 2D Detection
	On	Disable 2D Detection
	Off	
Nudging Mode		If Relay 2 set to Nudging, after Nudging Timeout Relay 2 is energized and Relay 1 remains activated until door path is cleared
	American	If Relay 2 set to Nudging, after Nudging Timeout Relay 2 is energized and Relay 1 is deactivated
	Canadian	Nudging deactivated
	Off	Sets timeout for Nudging (5-70s)
Nudging Timeout		
Second Realy		
Copy Main		Sets Relay 2 as Main Realy
Fault		Relay 2 activates when a fault is detected
Nudging		Relay 2 activates after nudging timeout
Off		Relay 2 disabled
Audio		
Obstruction beep		Beep activated on trigger
	On	Beep off
	Off	
Nudging beep		Beep activated after nudging timeout
	On	Nudging Beep off
	Off	Sets beep volume
Volume		
Key Sounds		
	On	Keypad Sound On
	Off	Keypad Sound Off

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Display	Info	Status	Devices Status on Display
		Config	Coded display of configuration
	Standby		Enables standby screen
Software	Controller Vers.		Controller firmware version
	Sensor Vers.		Sensor firmware version
	Controll Upgrade		Starts to updating Controller firmware version from Sd-Card
	Sensor Upgrade		Starts to updating Sensor firmware version from Sd-Card
Configuration	Restore Default		Resets to factory settings

Status & Config

The display home screen shows real-time status of connected devices (3D Sensor and 2D light curtains). Digit meanings for each device is explained below:

- 'r' = running;
- 'x' = off;
- '+' = linked, but not working;
- '-' = not linked

Input Status:

- During the closing of the doors you will see on the display the letter "C" on the top right meaning that the controller is receiving a signal on the D/C pin.
- During the opening of the doors you will see on the display the letter "O" on the top right meaning that the controller is receiving a signal on the D/O pin.

ATTENTION:

If the door closing signal remains active during the run you should not set the shut-off option to disabled: choose the option Shut-off by Timer, and set a timer based on the time it takes for the doors to close. Alternatively use the external signal option and connect the magnetic switch.

You can check current configuration on 3D-Controller by option Display -> Info -> Config. The left-hand side of the display shows configuration, the format is as follows:

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Digit	Setting	Meaning
1	2D Enable	'2'= 2D enabled, ' ' = 2D disabled
2	3D Enable	'3'= 3D Standard Mode, 's'= 3D Smart Mode, ' ' = 3D disabled
3	3D Mode	'a'= Always ON, 'c'= On Closing, '5'= ON 5s, 1= ON 10s, '2'= ON 20s
4	3D Position	'C'= center, 'R'= right, 'L'= left
5	Opening-Size	'S'= small, 'M'= medium, 'L'= large
6	Shut-Off 3D	' ' = disabled, 'e'= external sign., 't'= timer
7	Rel2 function	'm'= copy main, 'f'=fault, 'n'= nudging, ' ' = disabled

The right-hand side shows devices status (according to the order: 2D Receiver, 2D Transmitter, 3D Sensor).

6 3D MODES

3D Sensor Work Mode:

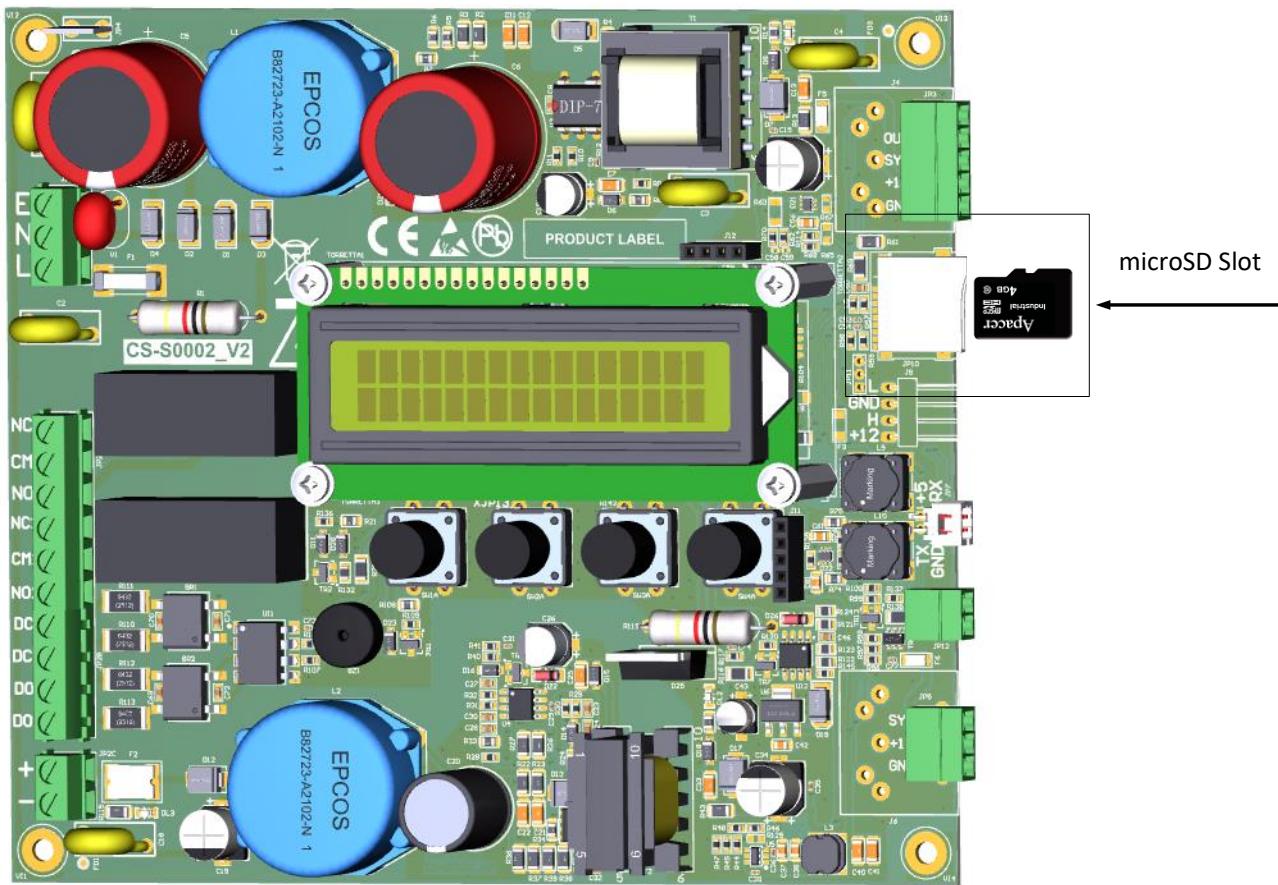
Standard	any movement in any direction within the defined area is detected by 3D Sensor which commands a reopening of the door.
Smart	only approaching movement is recognized by 3D sensor, cross-traffic is ignored.

Work Mode Configuration Settings:

On at Closing	3D detection will be activated when doors begin to close. 3D system will allow up to three consecutive 3D triggers (this parameter can be changed by 3D Settings -> Count), then it will be deactivated. 2D detection resets the count. Anyway, 3D detection turns off with falling edge of Closing signal or according to option: 3D Settings -> Shut-Off 3D if it is enabled.
ON (5s)	3D detection will be activated when doors have reached their fully-opened position. When 3D target is detected, a timer of 5 seconds starts and doors remain open until 2D trigger. If timer expires without 2D target is detected, 3D Sensor is switched off and the doors are allowed to close with an intermittent beep sounding as a warning. This beep will occur regardless of the beeper setting. If there is a 2D trigger at any time, the timer will be cleared. Count option is enabled.
ON (10s)	This is the same as ON (5s) but the timer is set to 10 seconds.
ON (20s)	This is the same as ON (5s) but the timer is set to 20 seconds.
Always ON	3D detection will be activated when doors have reached their fully-opened position and remains operative until the falling edge of Closing Signal or according to option: 3D Settings -> Shut-Off 3D if it is enabled. There is no timer in this mode, count option is enabled.

7 FIRMWARE UPDATE

To update the software version for both the sensor and the controller you will need a microSD inserted in the microSD slot on the 3D Controller: Consult the programming menu and the image under.



You can verify the software version of the controller at the startup. Otherwise you can check the version of the display from the menu "Software".

During the boot of the device you can press "UP" and "DW" buttons to enter the Firmware Update menu, this is a useful command to use in case of a problematic during the data memorization of the device.

IMPORTANT:

The display will show if there is a microSD present in the reserved Slot by showing a "S" in the top right corner of the display.

8 CLEANING INSTRUCTIONS



**ATTENTION:
THE 3D SENSOR IS NOT WATERPROOF**

The sensor can deteriorate or not work correctly if scratched or damaged. Avoid using inappropriate cleaning materials such as corrosive or abrasive cloths to avoid this. The sensor may be wiped using a lightly dampened cloth.

9 KNOWN ERROR LIST

Error Code	Description
11	RX light curtain not detected
12	RX light curtain not working
21	TX light curtain not detected
22	TX light curtain not working
30	3D sensor not responding
31	3D sensor not found
32	Communication error with 3D Sensor
40	Relay bonding
41	Opening and Closing active simultaneously
50	5V Undervoltage
51	5V Overvoltage

10 CONFORMITY

Attribute	Value
EMC emission	EN 12015:2020
EMC immunity	EN 12016:2013
RoHS, REACH	2011/65/EU
Certificate	
CE	2014/30/EU, 2014/33/EU
FCC	Class B (*)

(*) NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

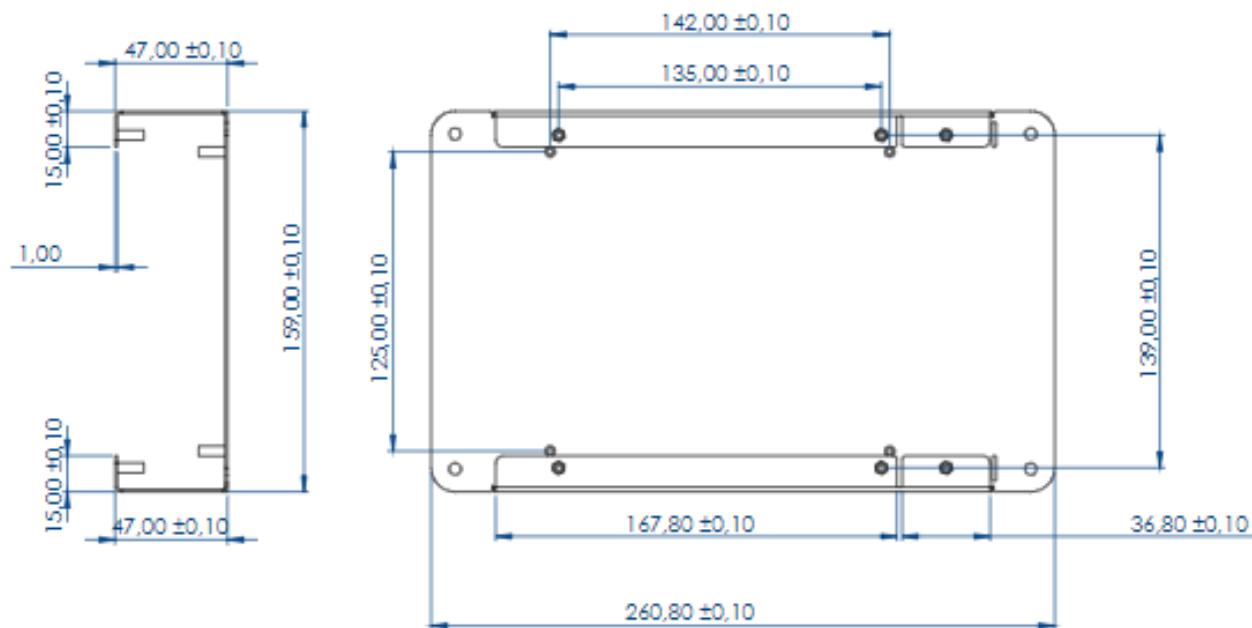
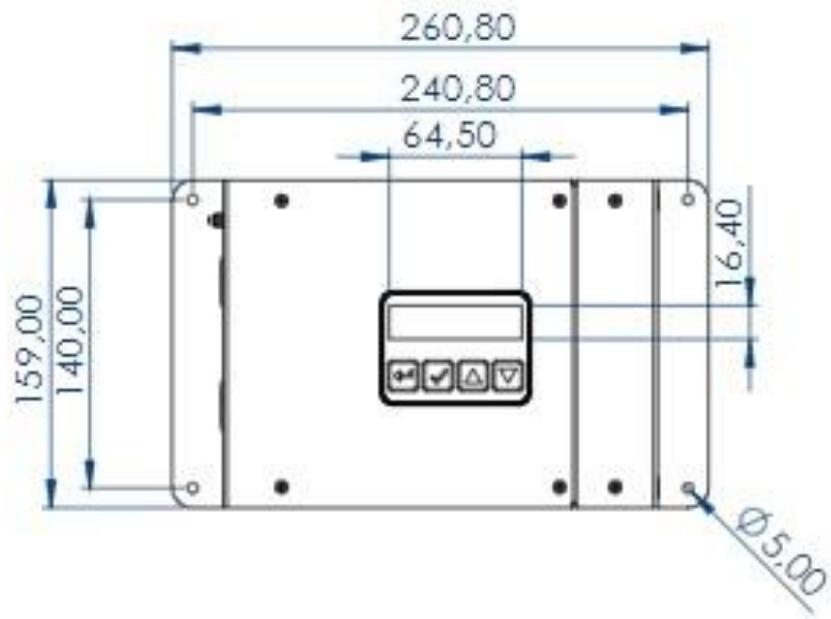
Company	Vega s.r.l.
Model	3D-Sensor
FCC ID	2BC5H-3DSENS

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

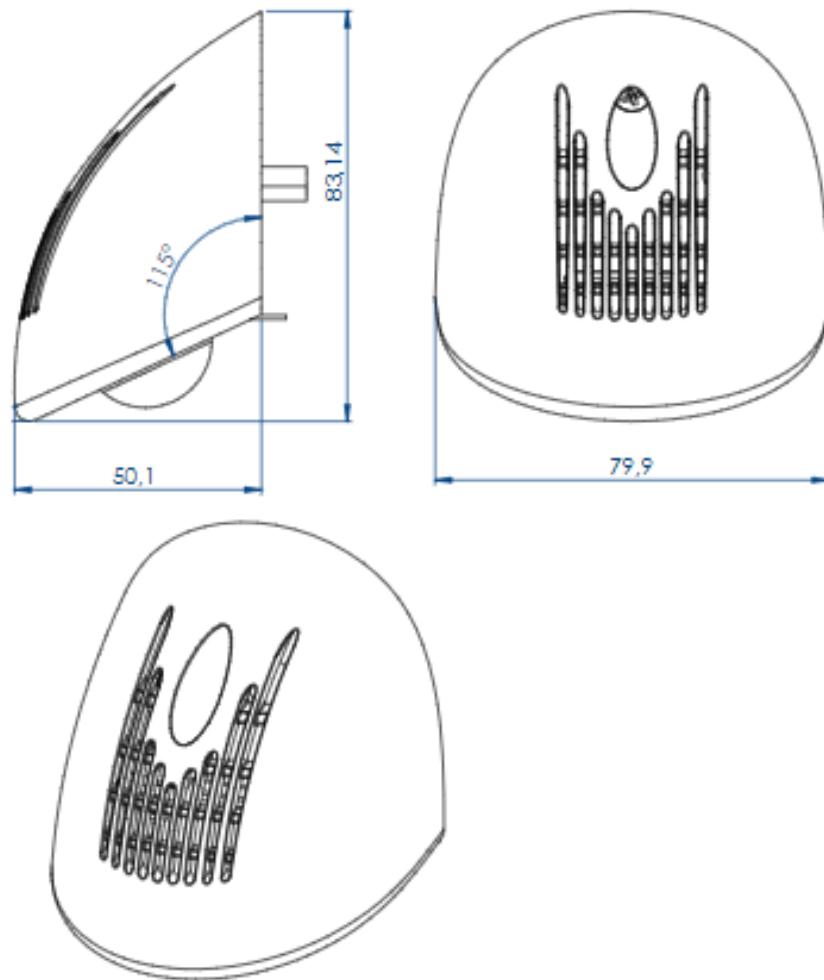
11 DIMENSIONS

3D CONTROLLER



KIT 3D SENSOR

3D SENSOR





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