

Murena

Installation, setting of parameters and Wave Test2 Software

27/01/2017

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Note:
Possibility of setting working plane of Murena and changing channel is available from version 4.11 of the firmware onwards.

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Note:
Possibility of setting working plane of Murena and changing channel is available from version 4.11 of the firmware onwards.

Murena

Preamble

- Murena is a volumetric, microwave intrusion detector using the Doppler effect, for both internal and external protection.
- Murena however, is a true **RADAR** (**RA**dio **D**etection **A**nd **R**anging) in fact, able to detect, using radio waves, the speed distance and dimensions of any intruder moving within the active area.
- Thanks to the ability to distinguish a true intrusion from all environmental interference it is much better, offering extraordinary detection capabilities accompanied by an equally excellent capacity to reject false alarms.
- Murena can be used as a “fan” in open areas where the external environment make it difficult to protect with other forms of detection, as a “curtain”, particularly for the protection of building facades, giving effective security against intrusion.
- The functions of minimum range to eliminate signals from objects moving very close to the detector and maximum range to delineate the analysis area of the detector are provided.

Murena Plus

Type of sensors

Murena Plus (with RS 485 serial line):

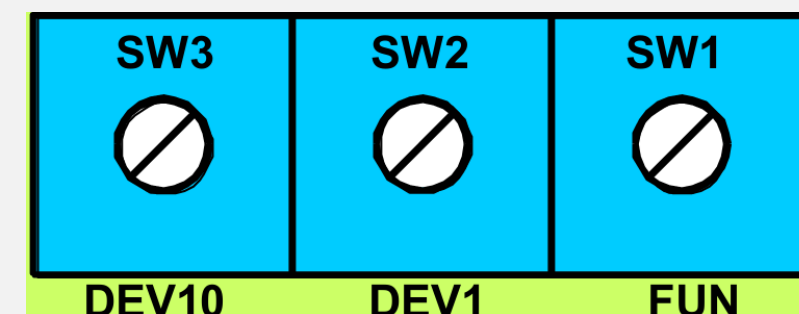
- FAN 12 meters
- FAN 24 meters

- CURTAIN 12 meters

Murena Plus (all versions)

How to set working plane of the microwave (note page 2)

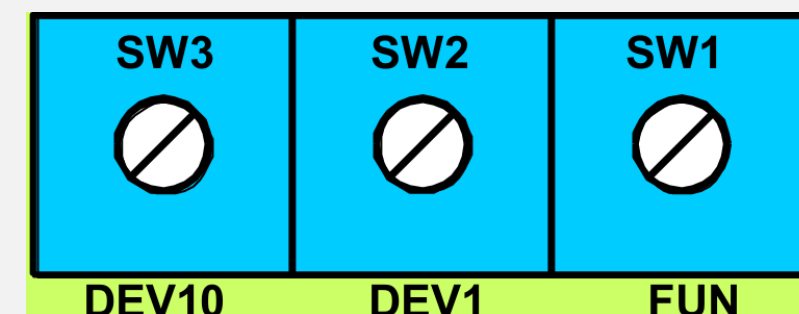
- Possibility to adjust functioning of the device according to the type of ground, for example asphalt/concrete or grass/sand.
In order to apply above adjustment it is necessary to operate on the transceiver.
- Turn FUN to position B
- Turn DEV1 to position 0 for asphalt/concrete
or
- Turn DEV1 to position 1 for grass/sand
- Push red button S1 to apply changes
- Lighting of the led DL9 confirms the adjustment
- Turn FUN back to position 0



Murena Plus (all versions)

How to change the channel in case of interference (note page 2)

- In particular cases where, due to reflection, two/three transceivers are interfering each others it is possible to modify the channel using function 2 of FUN.
- Turn FUN to position 2
- Turn DEV10 to position 0
- Turn DEV1 to position 0 for channel 1 or
- Turn DEV1 to position 1 for channel 2 or
- Turn DEV1 to position 2 for channel 3 or
- Turn DEV1 to position 3 for channel 4
- Push red button S1 to apply changes
- Lighting of the leds DL8 and DL9 confirms the adjustment
- Turn FUN back to position 0



Murena Plus (all versions)

Set Minimum / Maximum range

- It is always recommended to set minimum range at 0 m.
Only for particular cases set it at 1 m.
- It is also recommended to physically test the correspondence between the set values and the real dimension of the protected area. In some cases a lower value set may be enough to cover a bigger area (due to reflection of the signal)
- To test maximum range use function 4 (walk-test).
Suggested alarm threshold for testing purposes is 35.

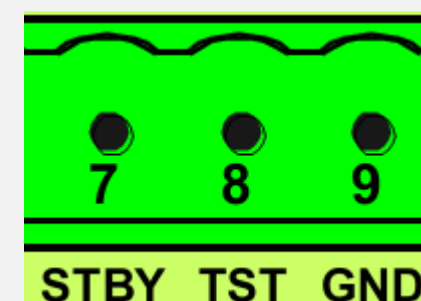
Set Maximum size

- It is recommended to set maximum size at value 99
- Only for particular cases set it at a lower value

Murena Plus (all versions)

Installation notes, Standby function

- Murena incorporates Standby function for stopping events recording on historic and monitor files, which are very useful for a later analysis in case of alarm.
- Connect GND with STBY of MS1 to enable/disable with control panel relay (better if a mechanical one).
- System armed = STBY **not** connected to GND
- System not armed = STBY connected to GND
- 24h System = STBY **not** connected to GND



Murena Plus (all versions)

Important notes for the walk test

- **It's necessary to keep in mind that the front cover of Murena can generate an attenuation of about 1 meter on the distance.**
- **It is therefore advisable to carry out final tests with the front cover closed.**

Murena Plus (all versions)

Connection to USB/RS 485 converter

Use the USB/RS 485 converter to connect to Murena (only PLUS versions). **In case of troubles check the following:**

- Is the green led of converter turned off? Drivers are not installed
- Check the Murena's number device (01 by default) through FUN rotary switch.
Address 00 MUST not be used.

Rotate function switch **SW1 to Position 8** and it is possible to read and/or modify the Device Address Number to be used.

To Read the device number:

- Rotate function switch SW2 (units) until the red led (DL9) comes on.
- Rotate function switch SW3 (tens) until the red led (DL8) comes on.
- The values read on these switches vary between 01 and 99 (**default of 01**).

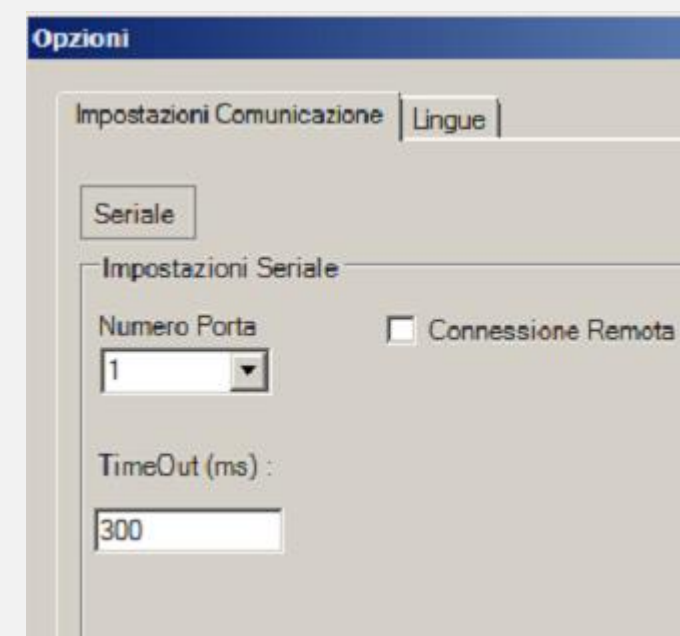
To Modify the device number:

- Rotate switches SW3 (tens) and SW2 (units) to the value required.
- Press S1 to confirm the setting and to acquire the new address.
- Rotate SW1 FUN to position 0

Murena Plus (all versions)

Connection to USB/RS 485 converter

- COM port assigned by PC to USB/RS 485 converter was not correctly set up in Wave Test2 software.
(Tools – Option – **COM Port** – timeout 300 ms)

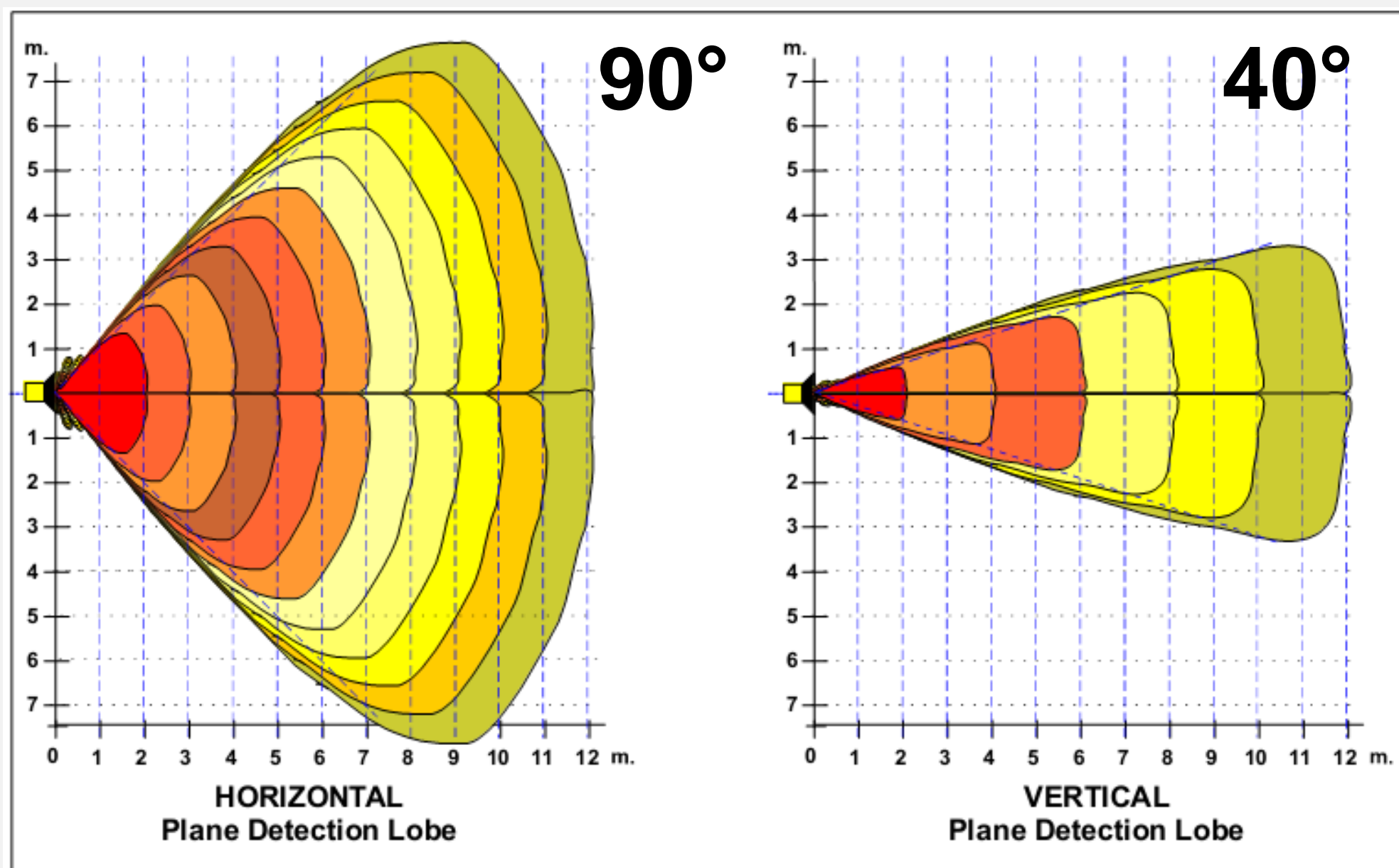


- If the connection is made via 3 pin green terminal blocks check LO & LH are not reversed
- Use the latest version of Wave Test 2 (1.1.7.0)

Murena 12 meters FAN version

Murena Plus 12 meters FAN

Microwave lobe



Murena Plus 12 meters FAN

Installation height

- Murena Plus 12 used with **FAN** configuration should be installed from 1 m to 2 m from the ground. Suggested installation is 1,5 m to adjust later in height during software set-up and walk tests.
- **Warning:**
The higher the sensor is installed from the ground, the bigger is the dead zone.

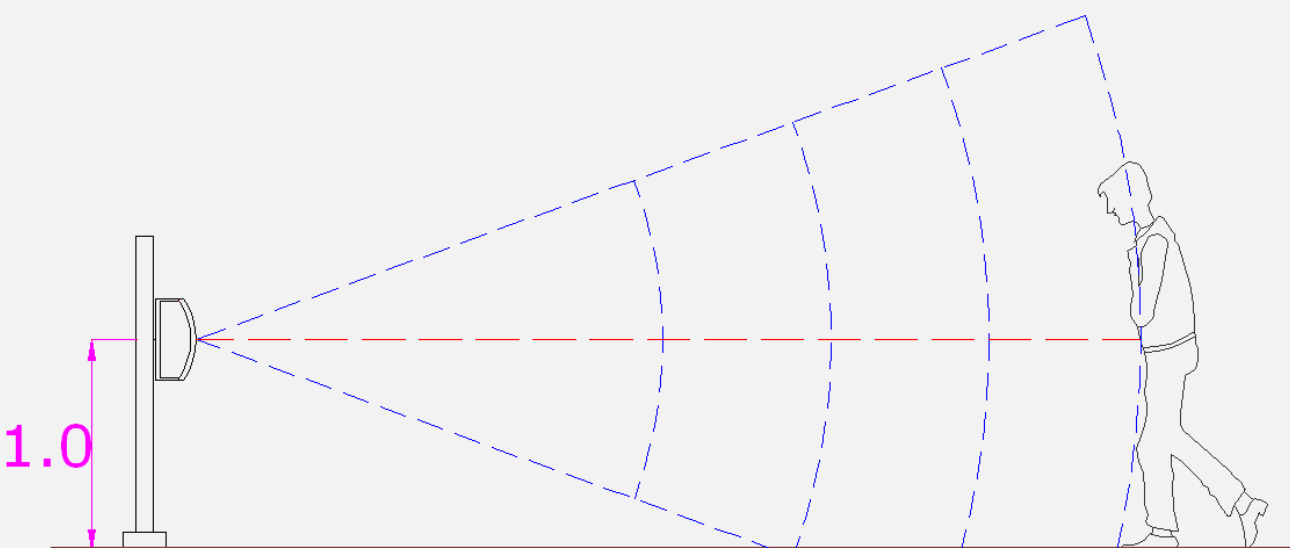
Aiming the sensor

17/07/2012

Murena Plus 12 meters FAN

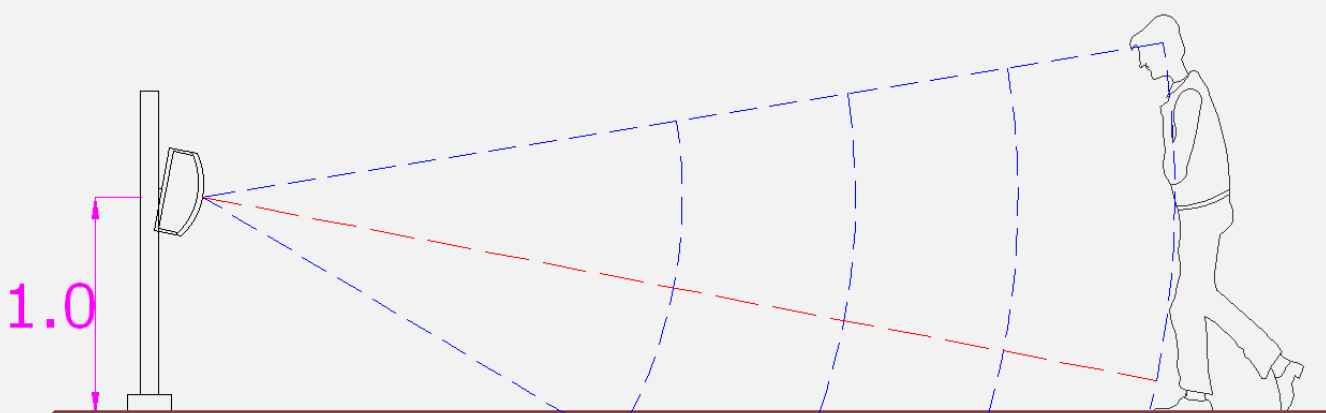
Aiming the sensor

- In order to achieve best results from the sensor it is necessary to identify the most sensible point to protect and install Murena as shown.



Correct

(Person entirely covered by microwave lobe)



Wrong

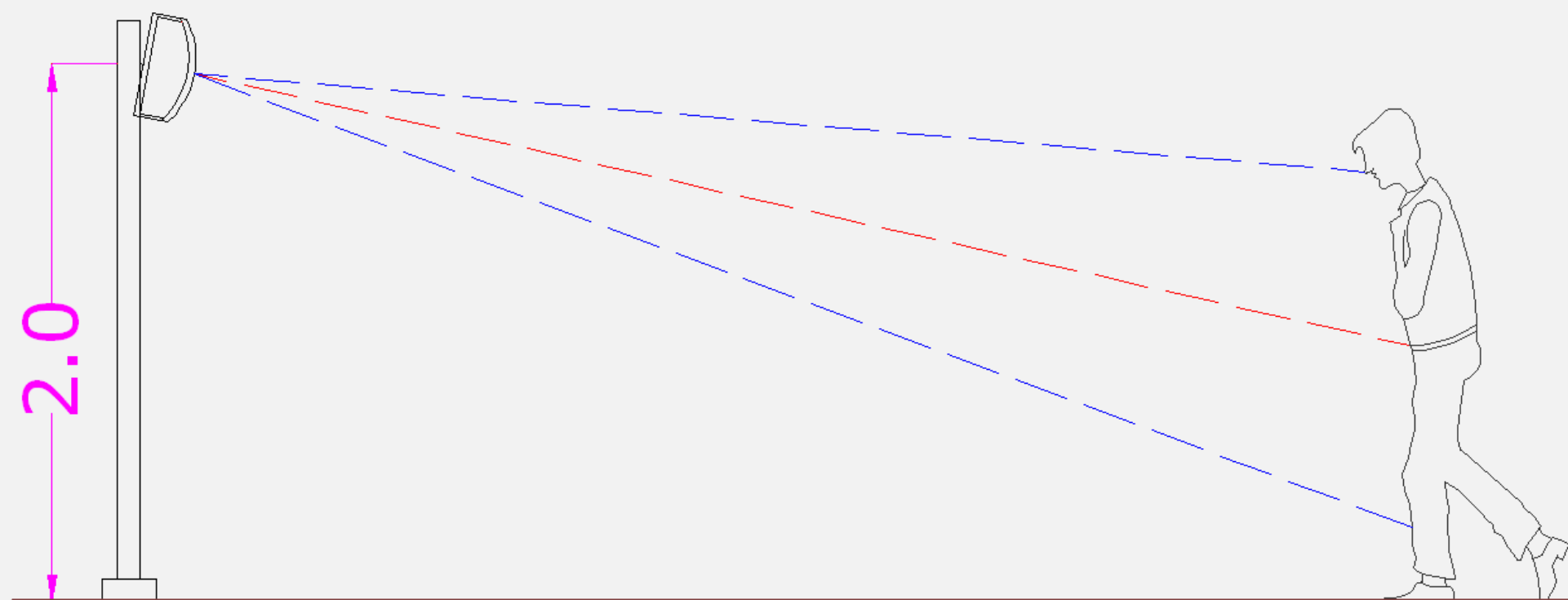
(Person not entirely covered by microwave lobe)

Murena Plus 12 meters FAN

Aiming the sensor

- In order to achieve best results from the sensor it is necessary to identify the most sensible point to protect and install Murena as shown.

Correct (Correct aiming of microwave lobe)



Dead zone protection

17/07/2012

Murena Plus 12 meters FAN

Use for dead zone protection with fence/wall

- Height and direction of the transceiver change according to the effective distance between the sensor itself and the area to protect (dead zone). The farther is the sensor the higher the height from the ground, and vice versa.

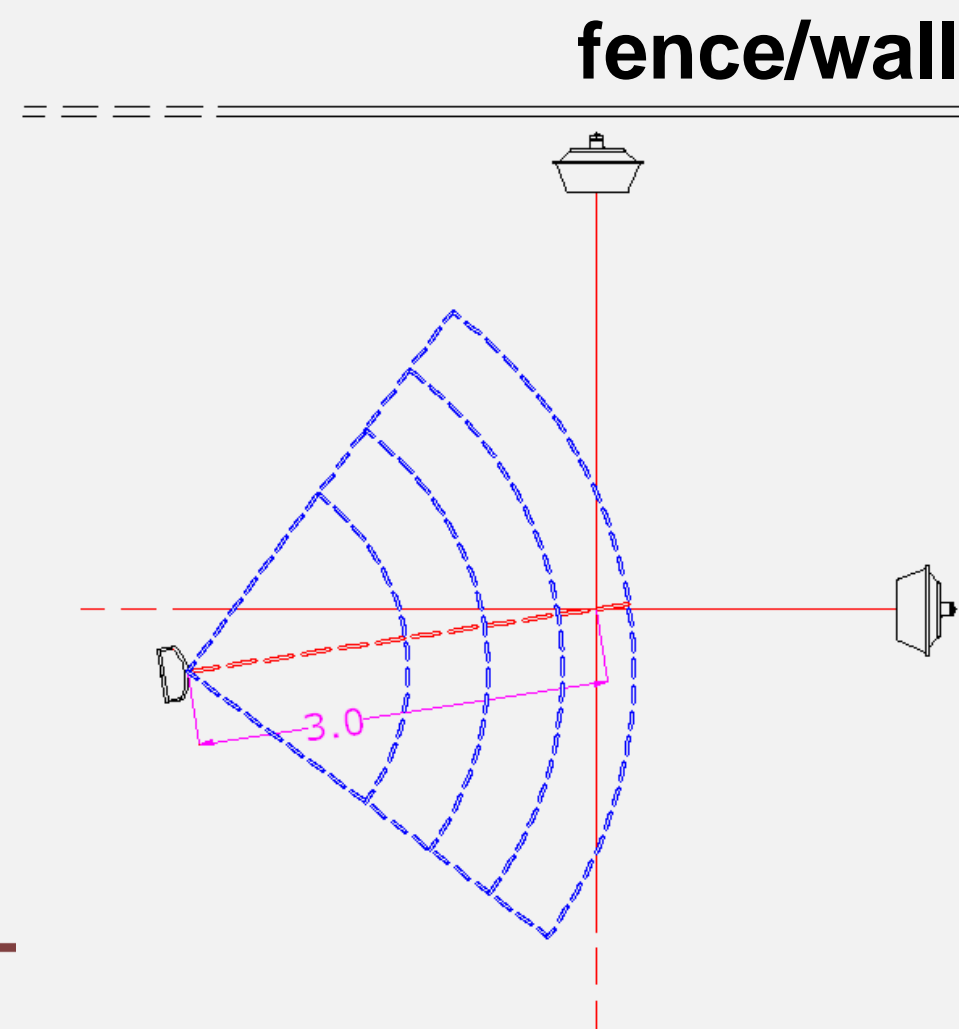
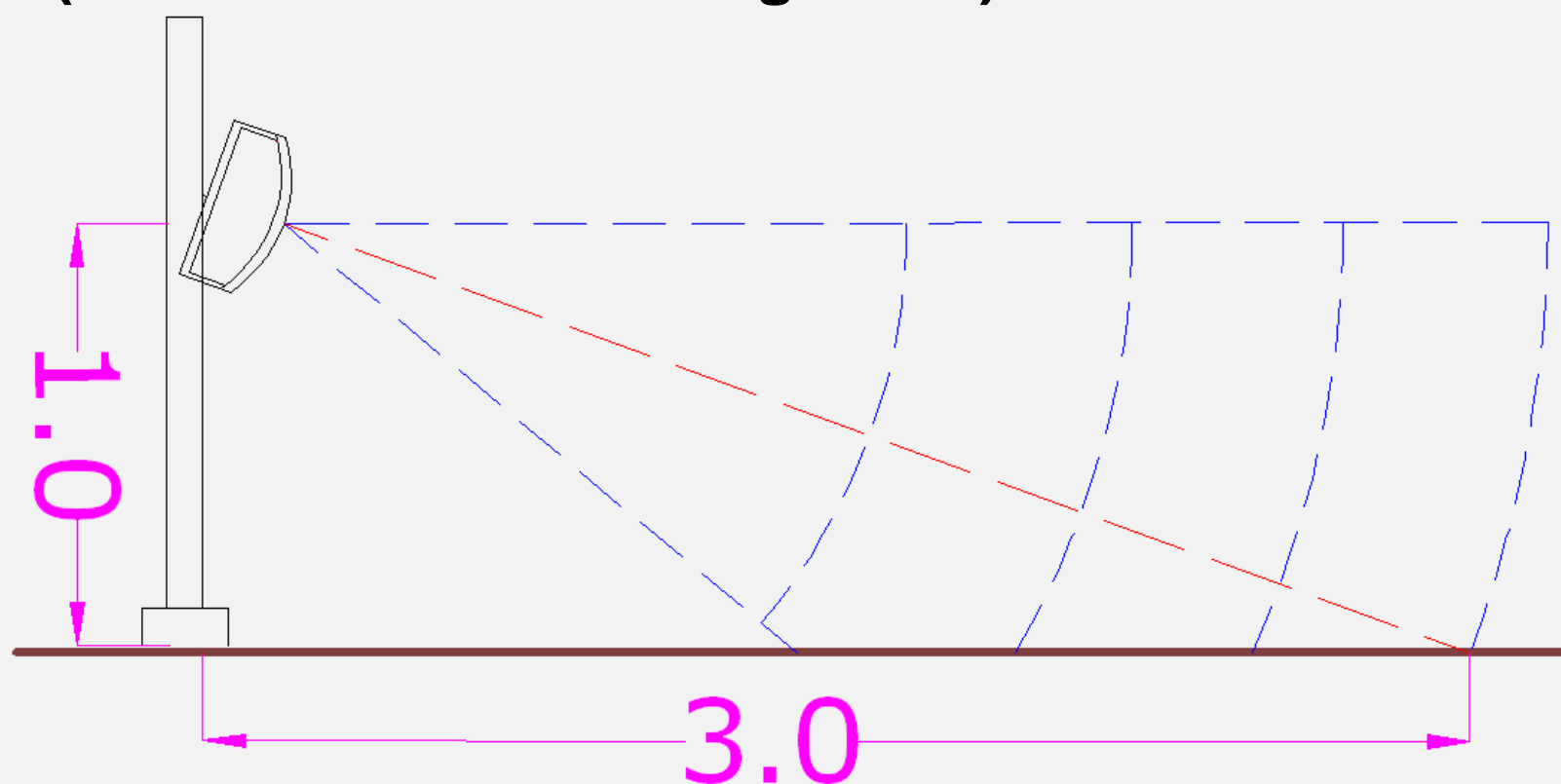
Murena Plus 12 meters FAN

Use for dead zone protection with fence/wall

- Example: distance between the sensor and the crossing 3 m,
height from the ground 1 m.

Correct

(Aim the sensor to the ground)



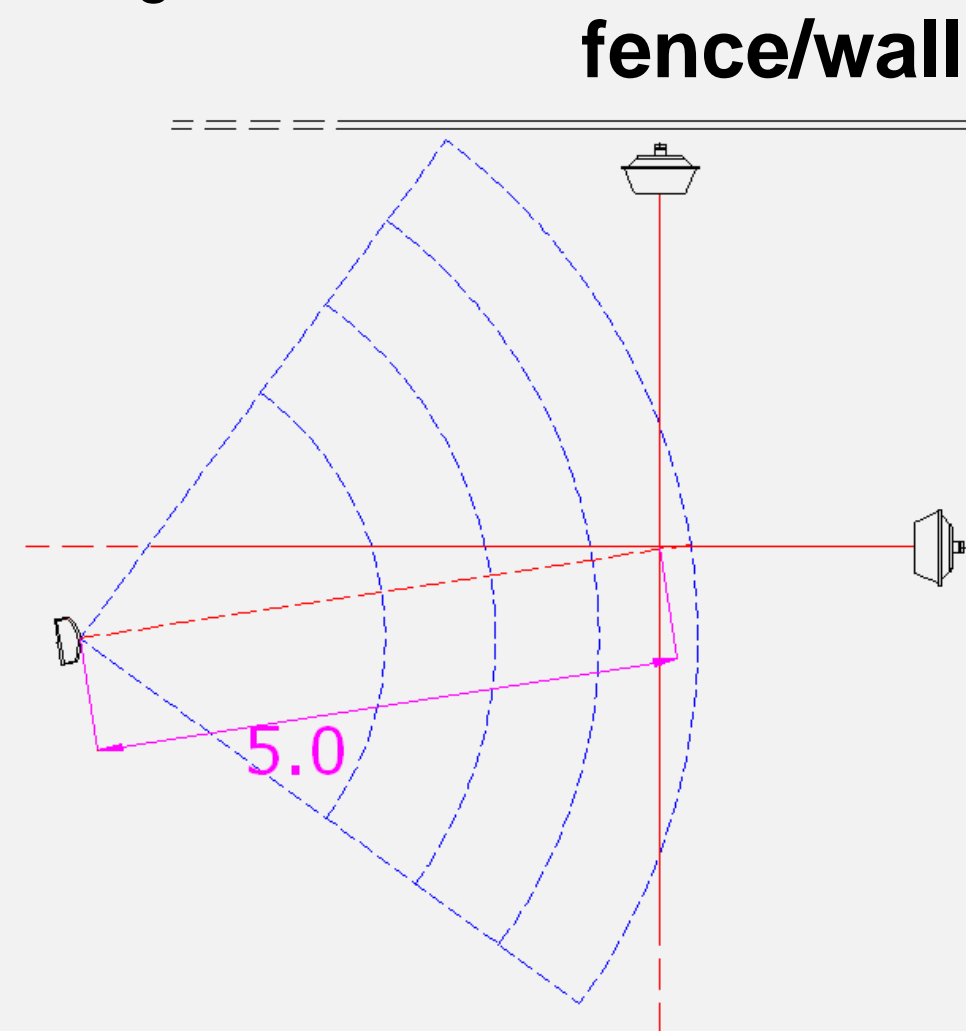
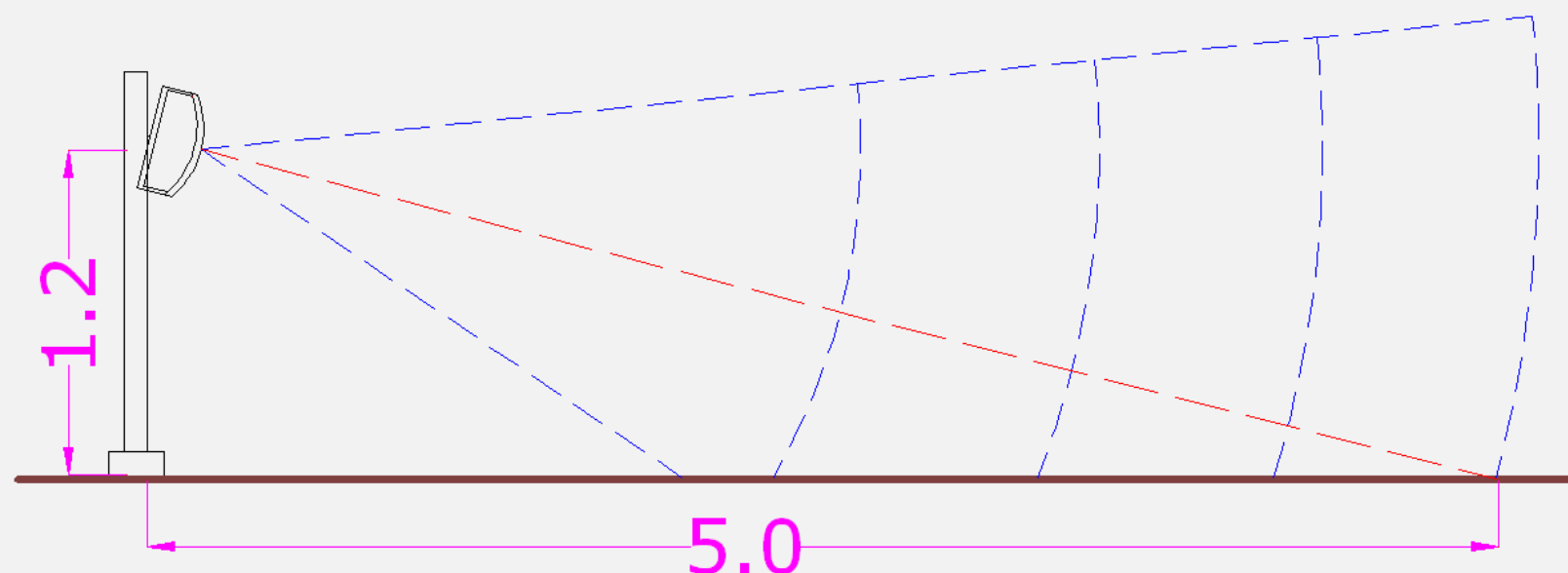
Murena Plus 12 meters FAN

Use for dead zone protection with fence/wall

- Example: distance between the sensor and the crossing 5 m,
height from the ground 1,2 m.

Correct

(Aim the sensor to the ground avoiding it to be perpendicular to the edge of the fence/wall)

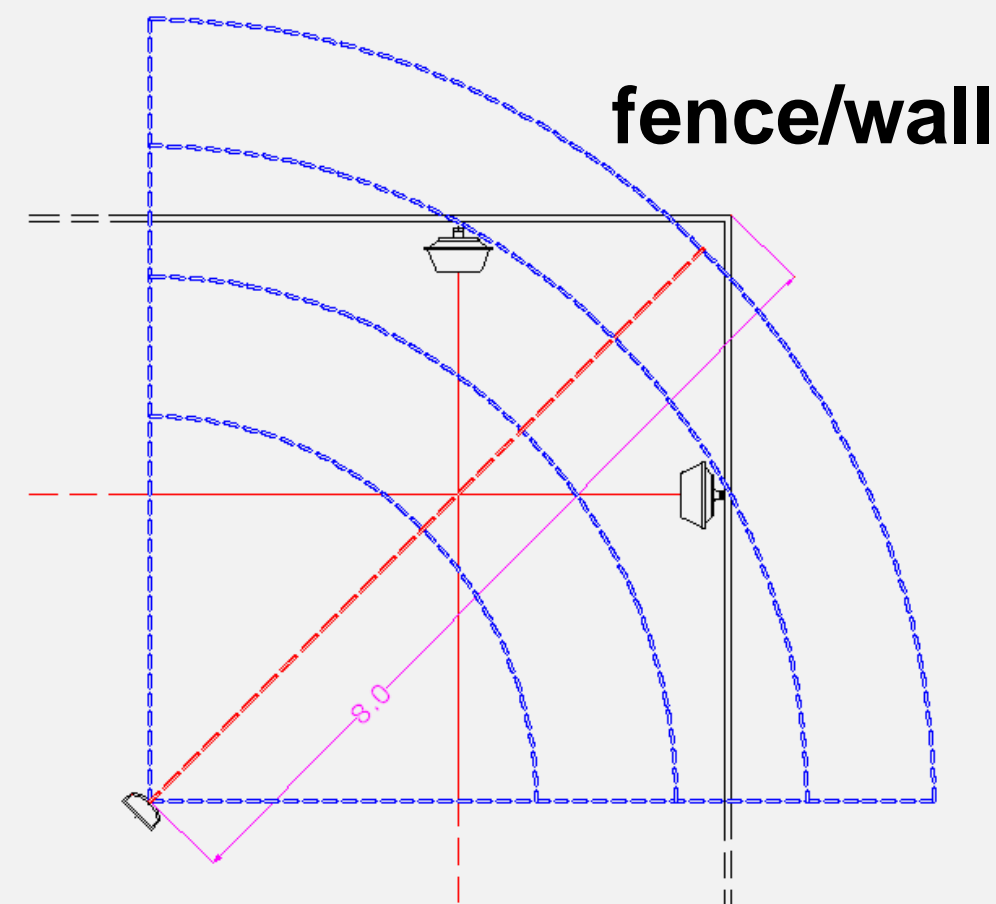
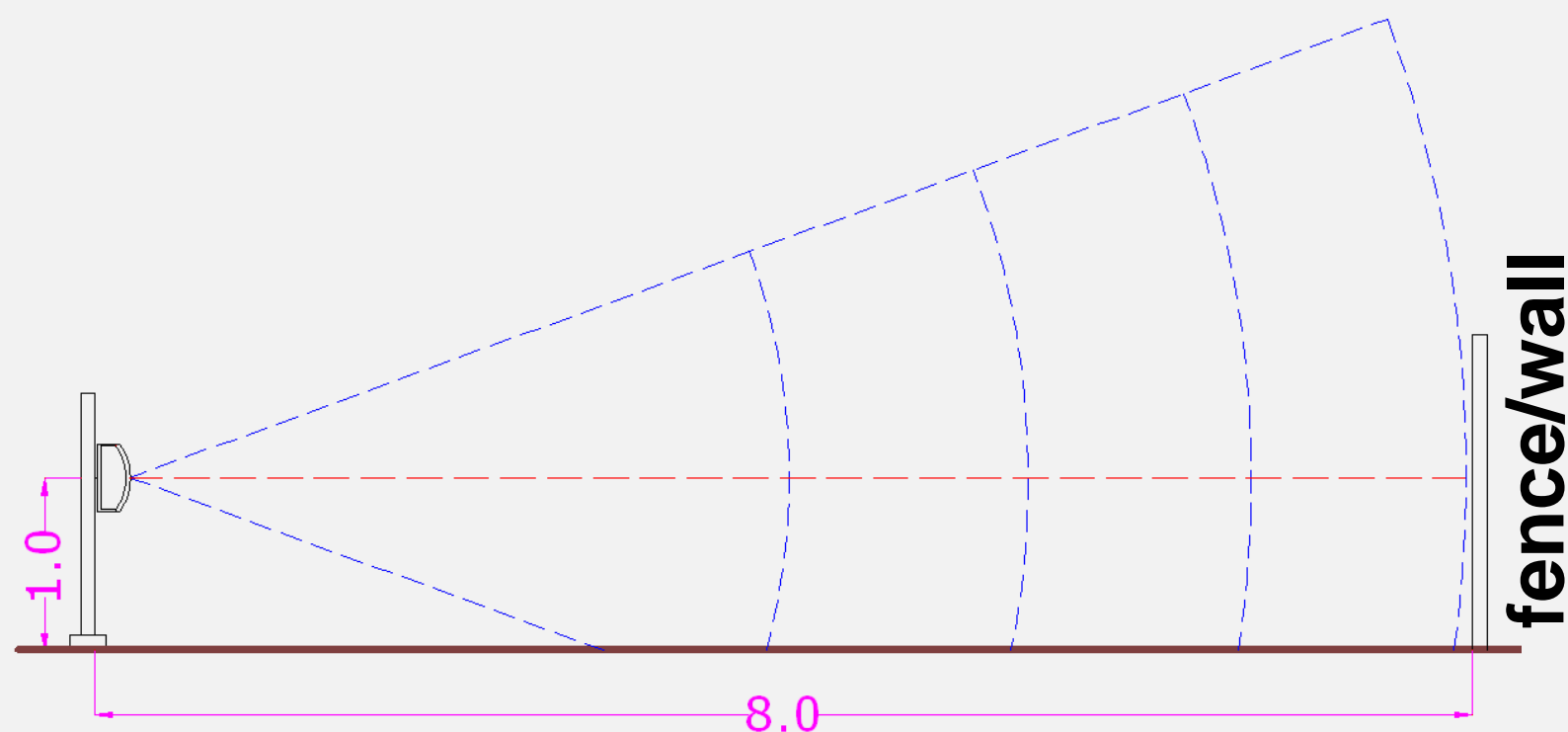


Murena Plus 12 meters FAN

Use for dead zone protection with fence/wall

Wrong

(Perpendicular, aiming to the fence/wall)

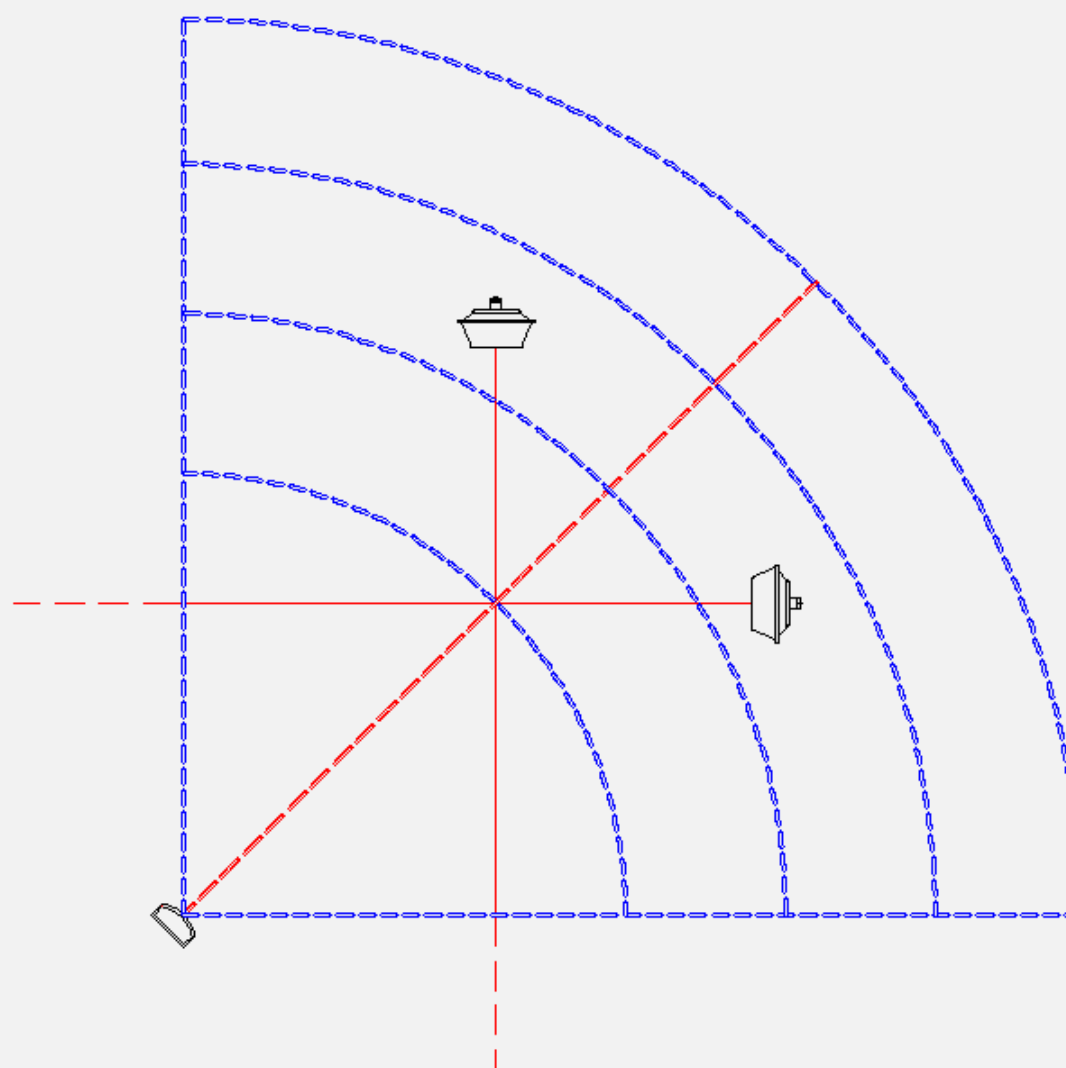


Murena Plus 12 meters FAN

Use for dead zone protection without fence/wall

- Installation rules are identical to the previous slides but since there is no fence/wall it's possible to install the sensor as follows:

Correct
(Open space)

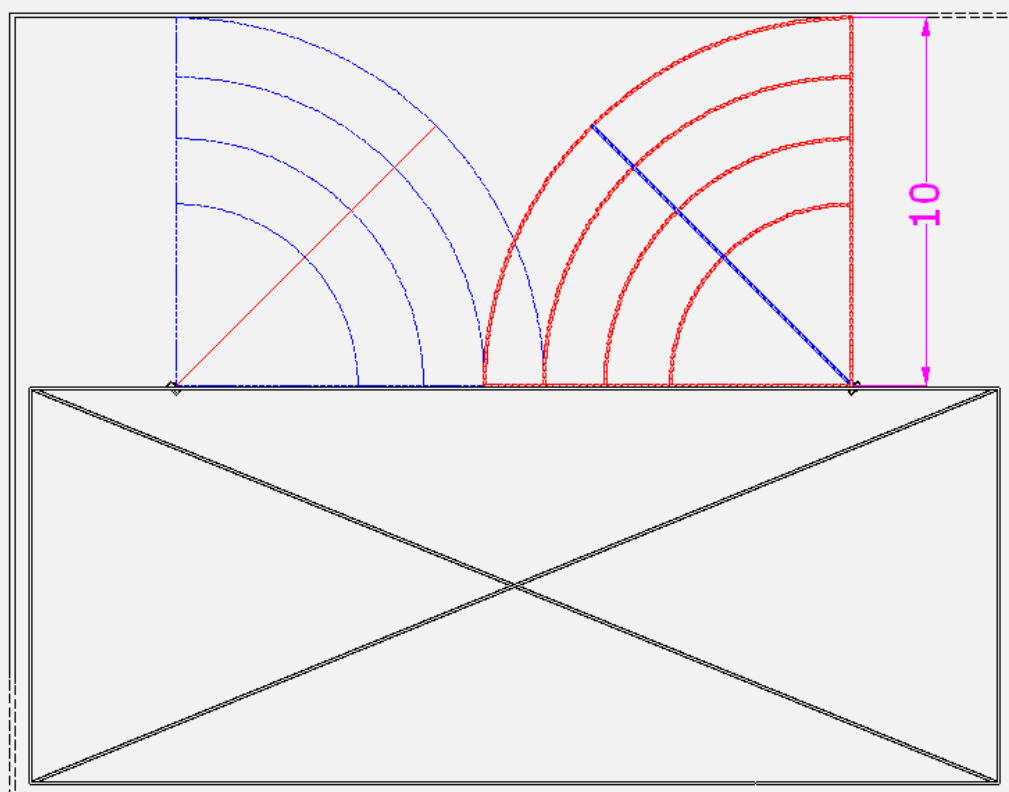


Murena Plus 12 meters FAN

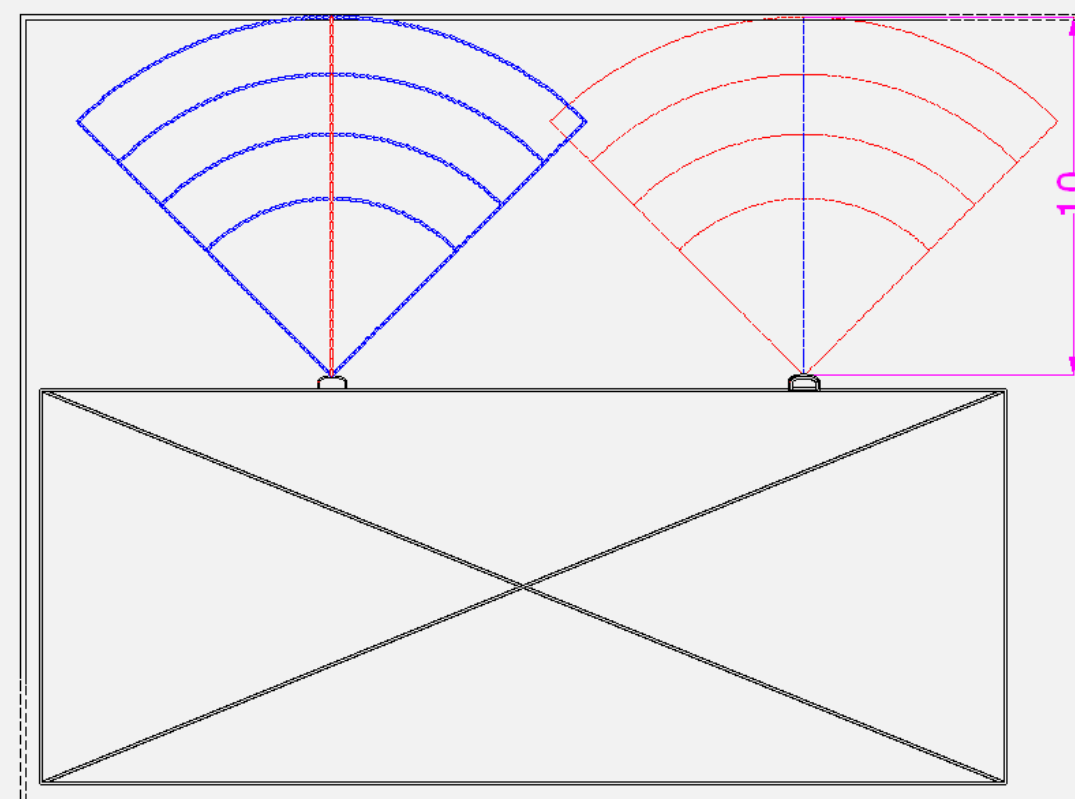
Presence of a fence/wall, installation examples

- In case of a fence/wall standing in front of the sensor is preferable a lateral aiming of the antenna instead of a perpendicular one.

Correct



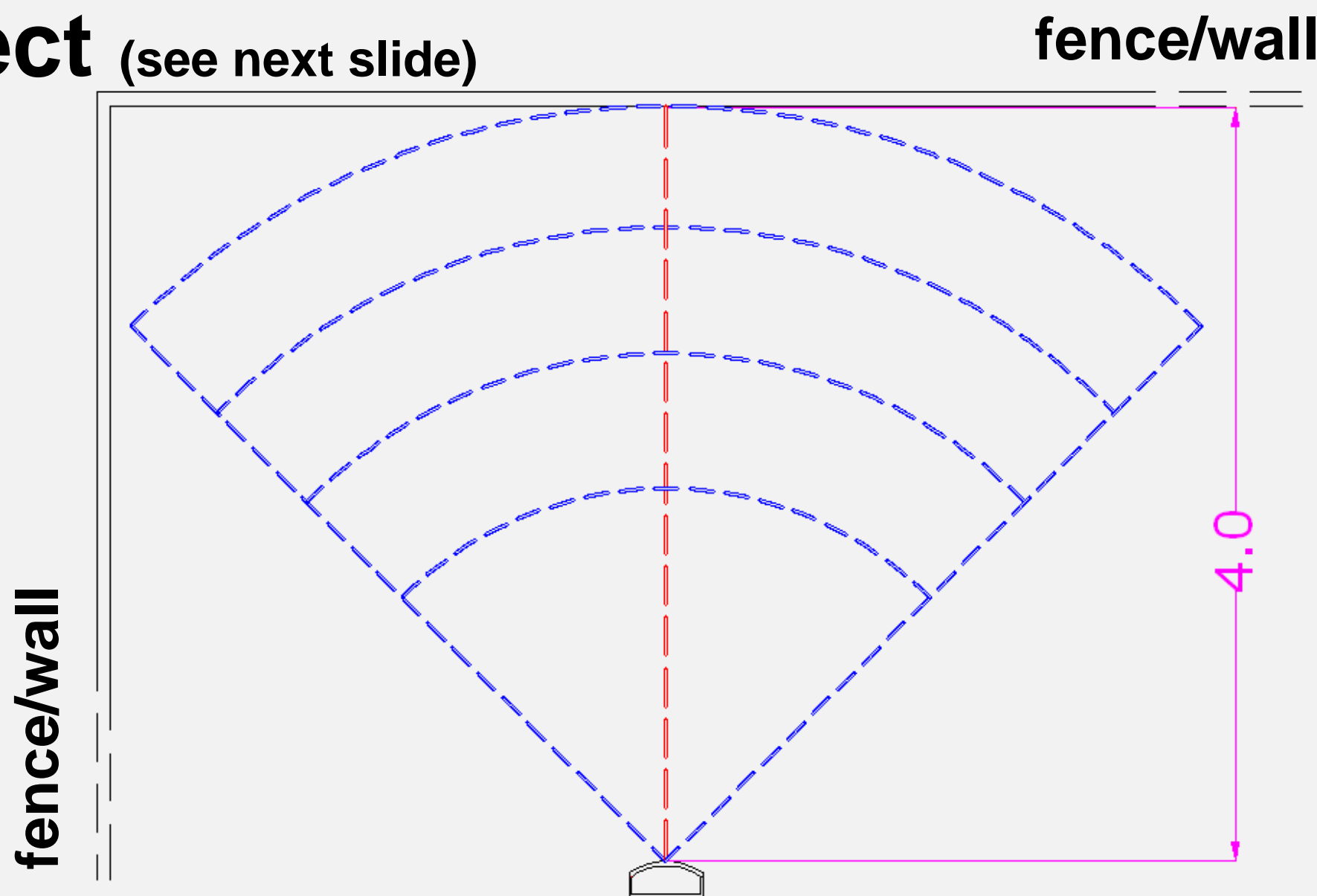
Wrong (Perpendicular aiming)



Murena Plus 12 meters FAN

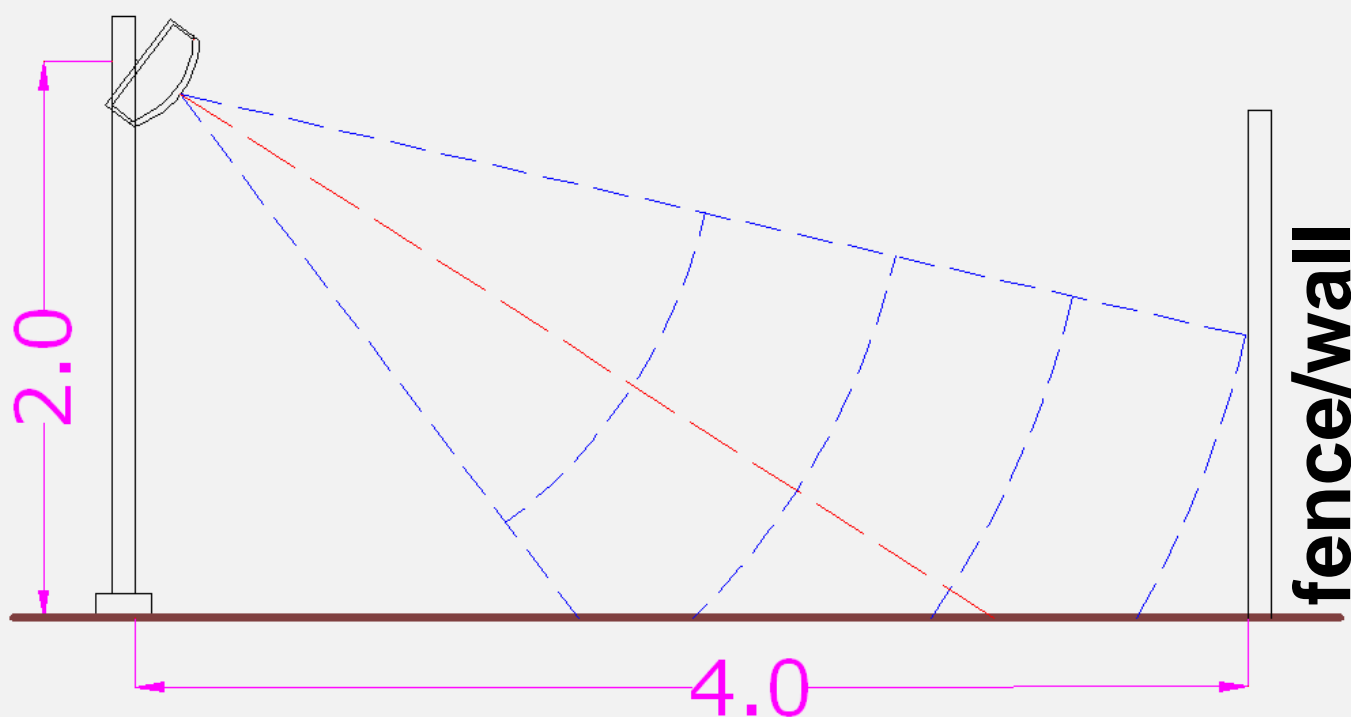
Installations close to a fence/wall

Correct (see next slide)



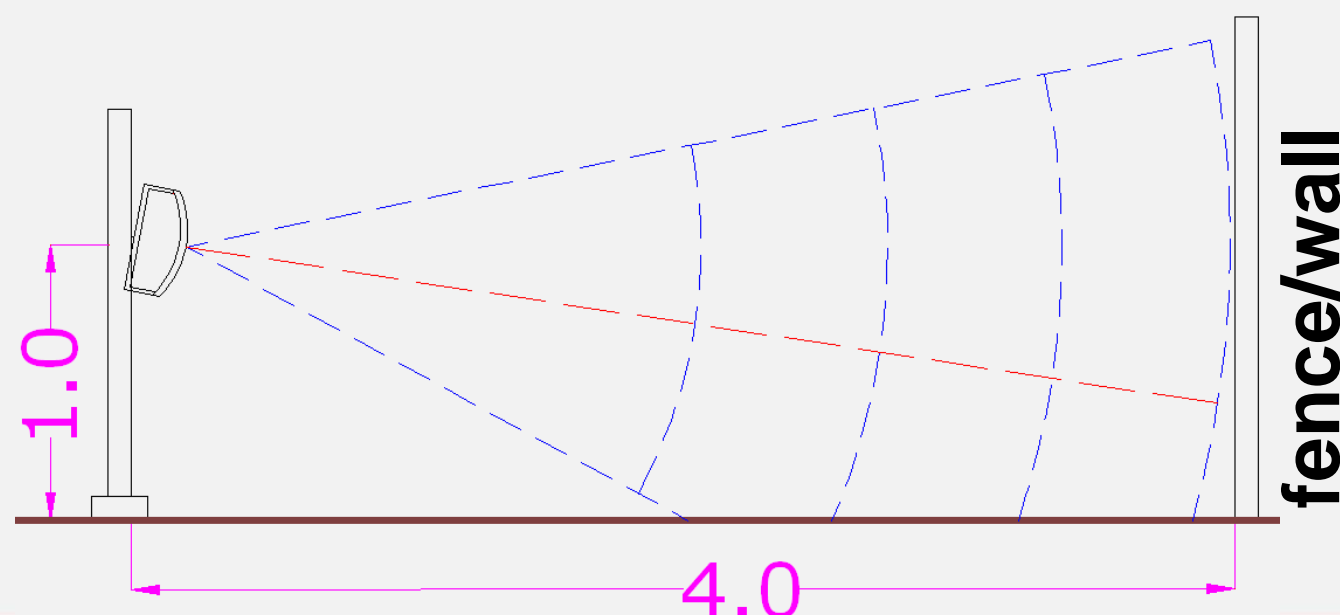
Murena Plus 12 meters FAN

Installations close to a fence/wall



Correct

(The higher is installation, the higher inclination)



Wrong

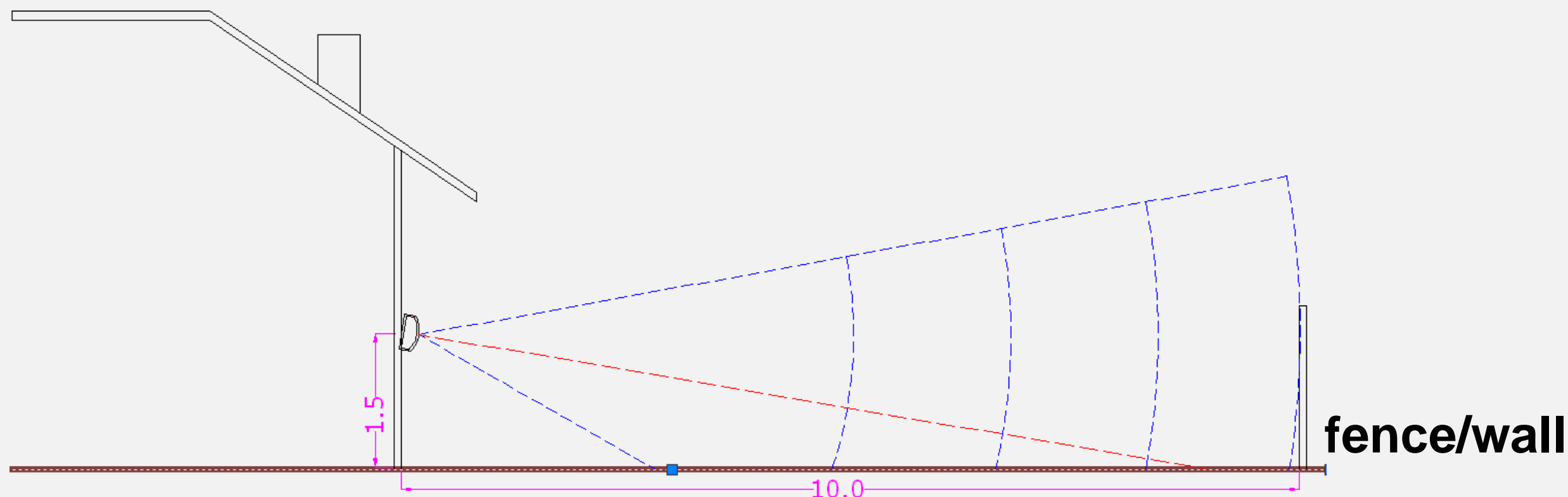
(Sensor's height inclination too low)

Murena Plus 12 meters FAN

Distance from the fence shorter than 12 m

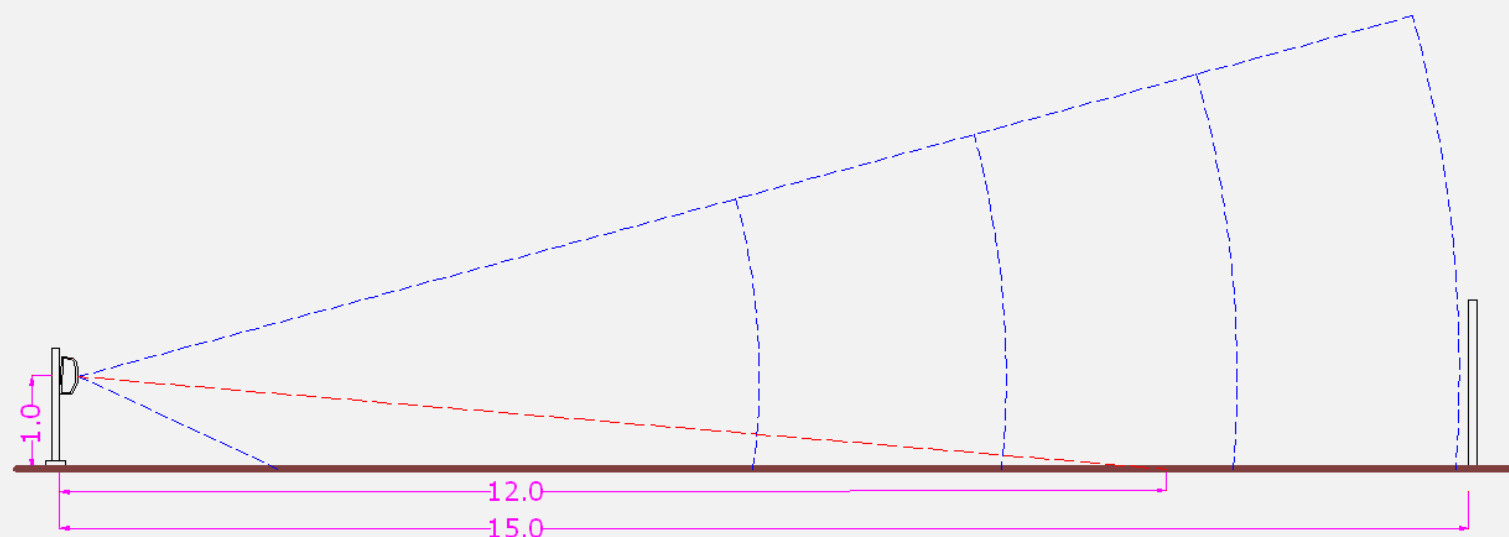
- In order to achieve best results from the sensor it is necessary to identify the most sensible point to protect and install Murena as shown.

Correct (Aim the sensor to the ground)



Murena Plus 12 meters FAN

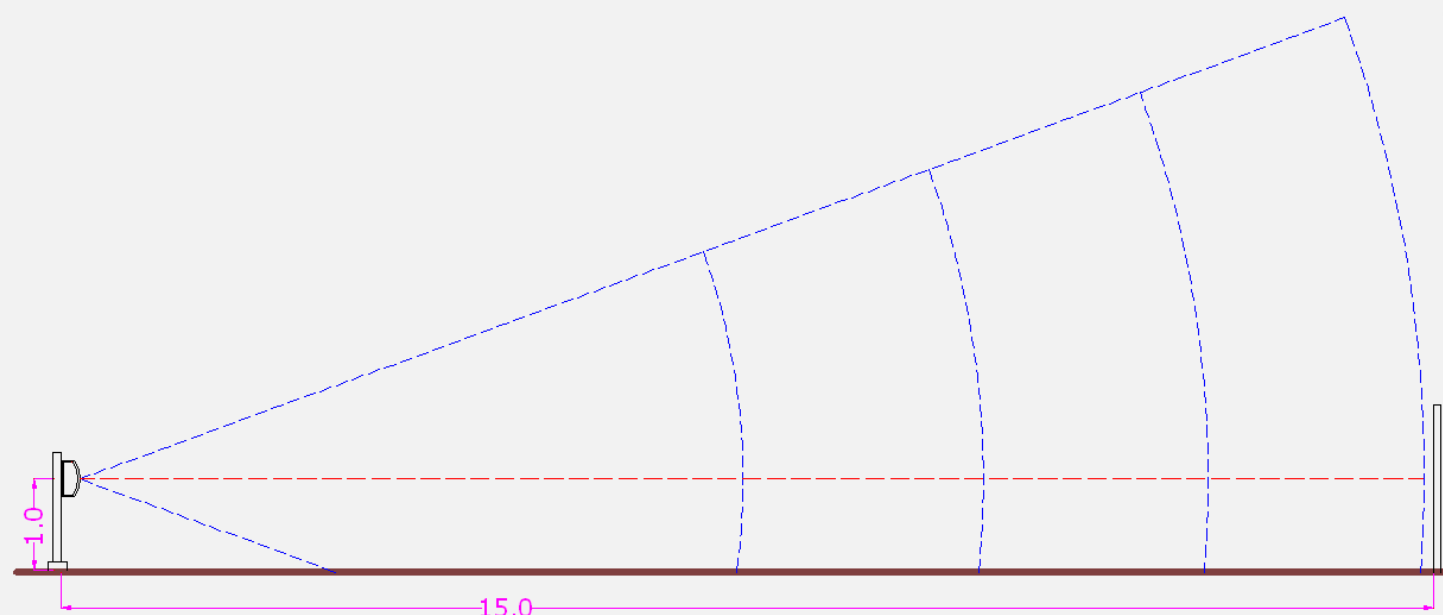
Distance from the fence longer than 12 m



Correct

(Aim the sensor to the ground)

fence/wall



Wrong

(Avoid to be perpendicular to the fence/wall)

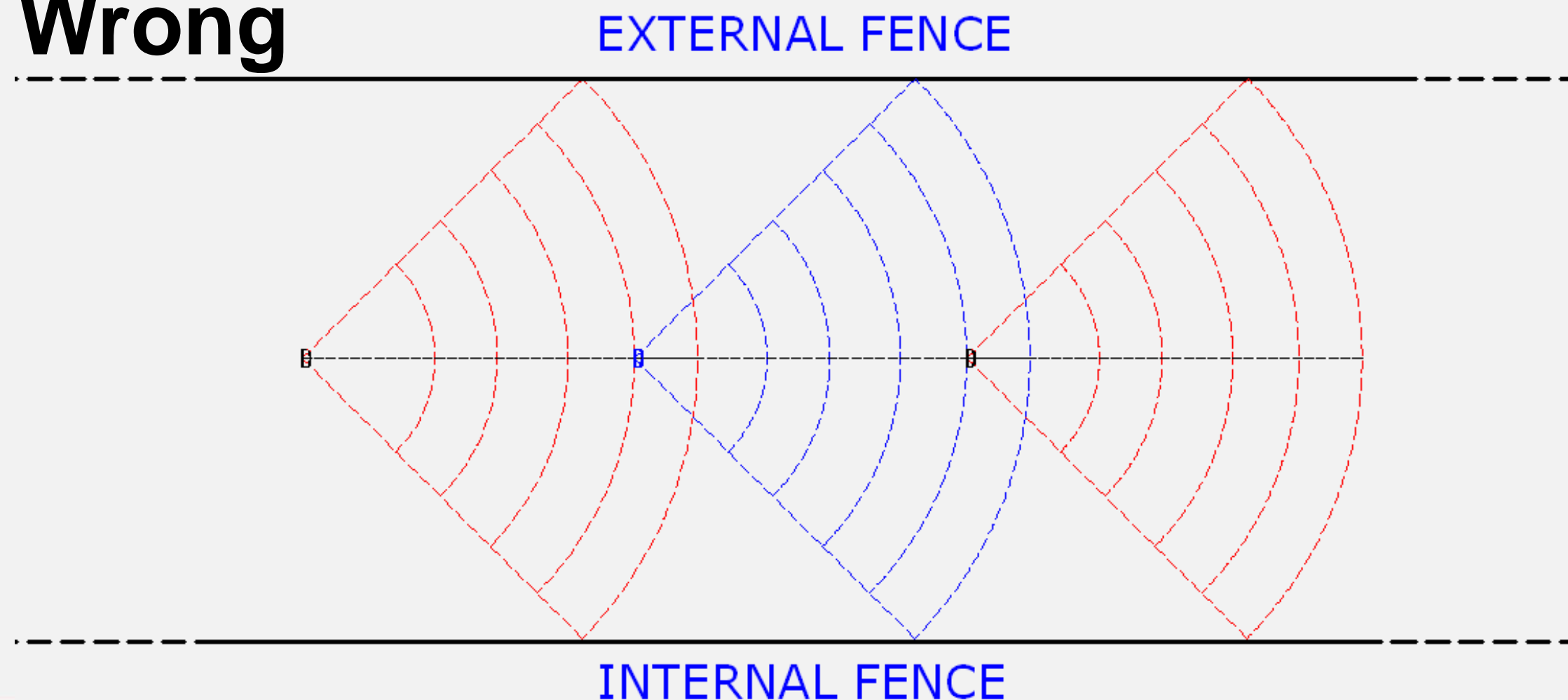
fence/wall

Murena Plus 12 meters FAN

Installation between two walls or fences

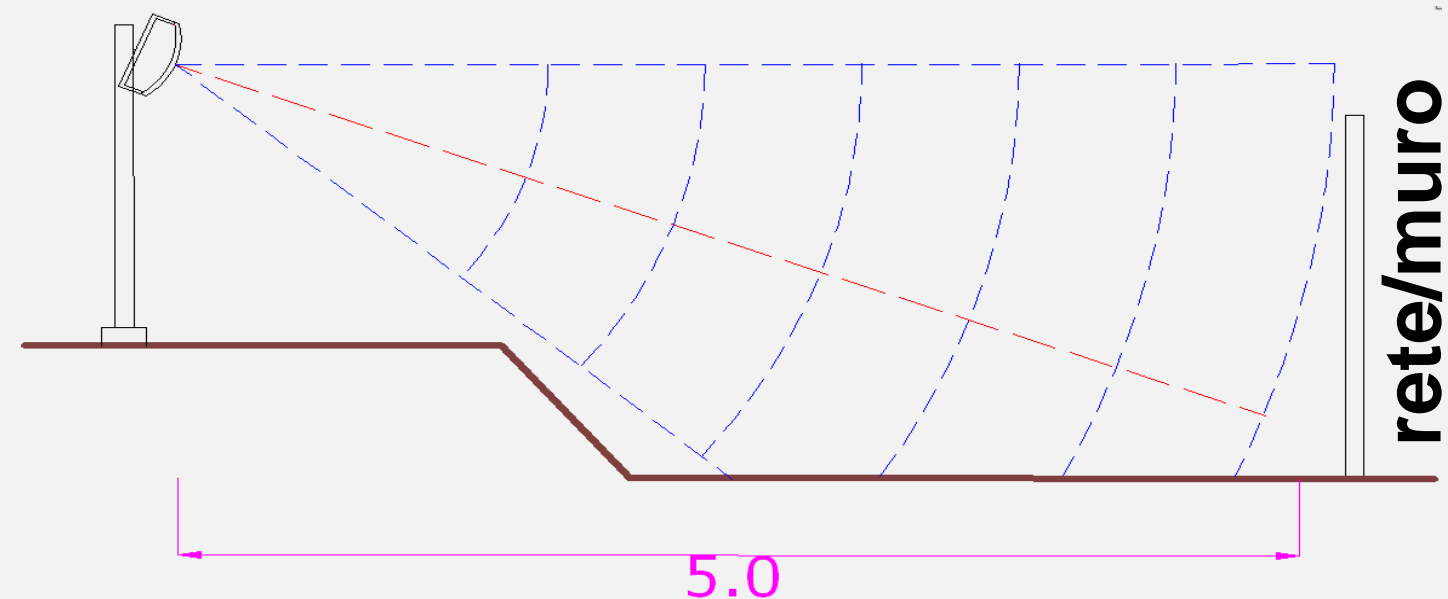
- Do not install more Murenas in a row between two walls or fences

Wrong



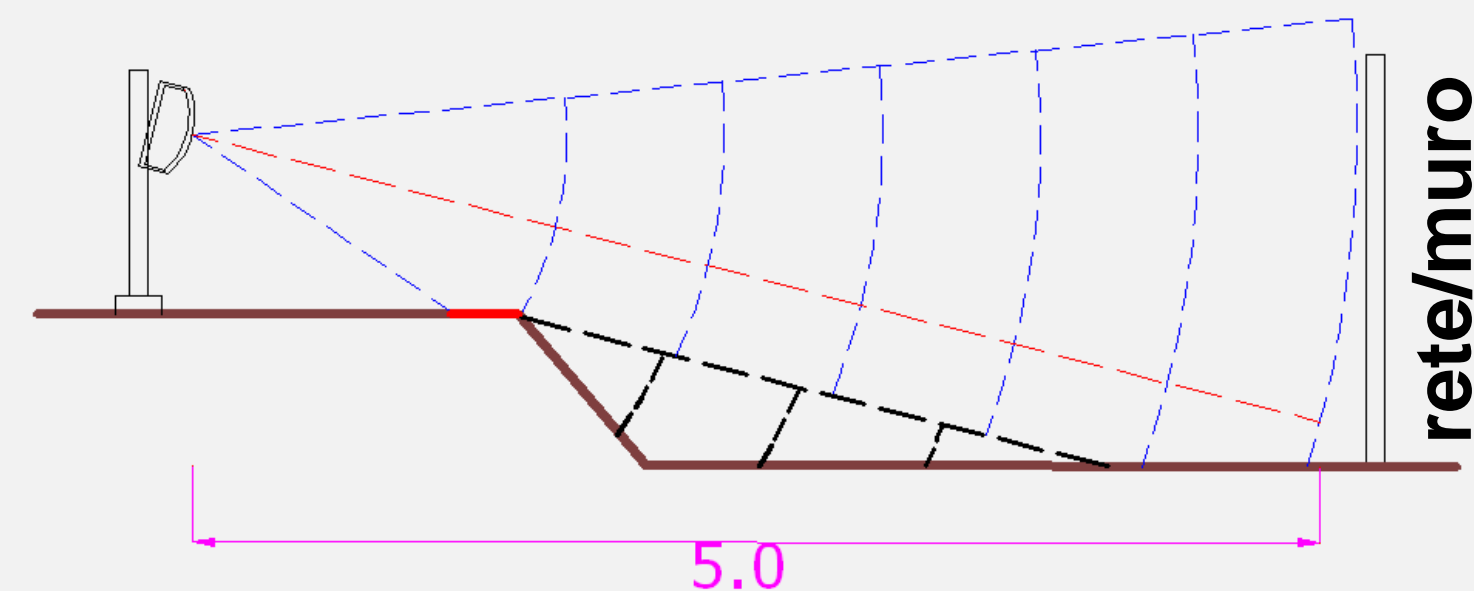
Murena Plus 12 meters FAN

Dead zone protection with slope



Correct

(Lift and tilt the sensor up to a correct detectione)



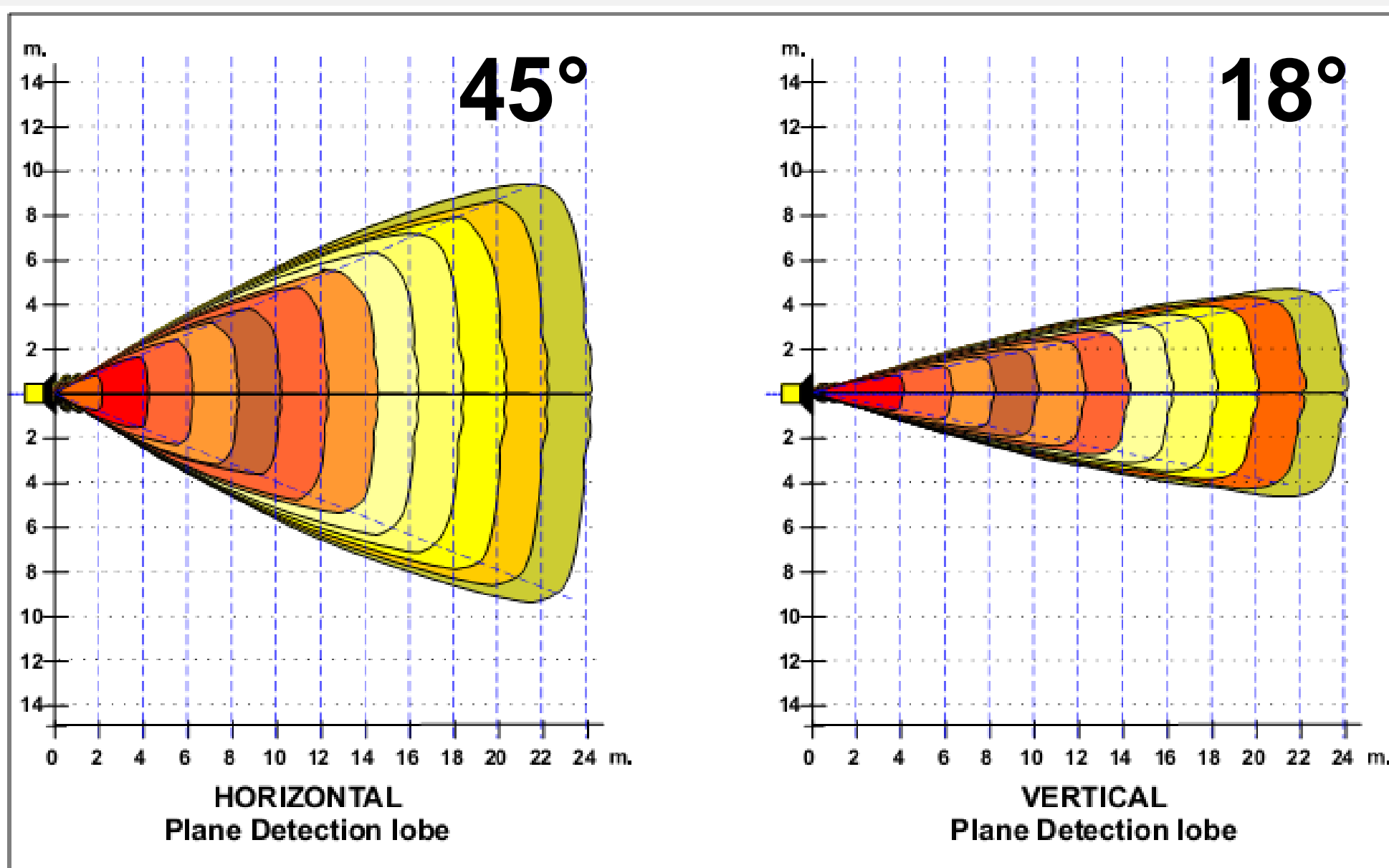
Wrong

(Slope is a dead zone)

Murena 24 meters FAN version

Murena Plus 24 meters FAN

Technical Advices



Murena Plus 24 meters FAN

Technical Advices

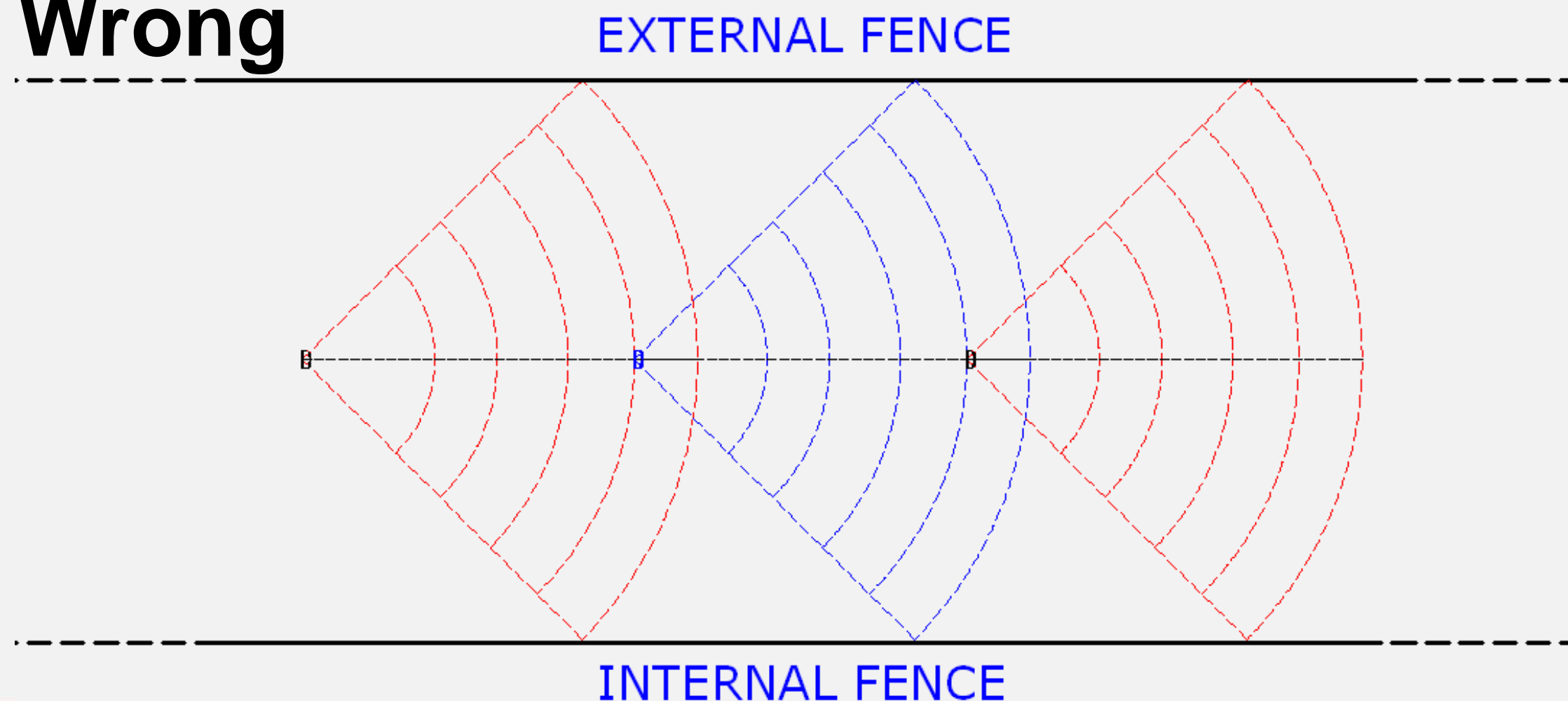
- Murena Plus 24 used with **FAN** configuration should be installed from 1 m to 2 m from the ground. Suggested installation is 1,5 m to adjust later in height during software set-up and walk tests.
- **Warning:**
 The higher the sensor is installed from the ground, the bigger is the dead zone.
- **Examples of installation are same as for Murena 12**
- Considering that its microwave lobe is half compared to the 12 m version, **the best detection is performed between 5 to 24 m.**

Murena Plus 24 meters FAN

Installation between two walls or fences

- Do not install more Murenas in a row between two walls or fences

Wrong



Murena 12 meters CURTAIN version

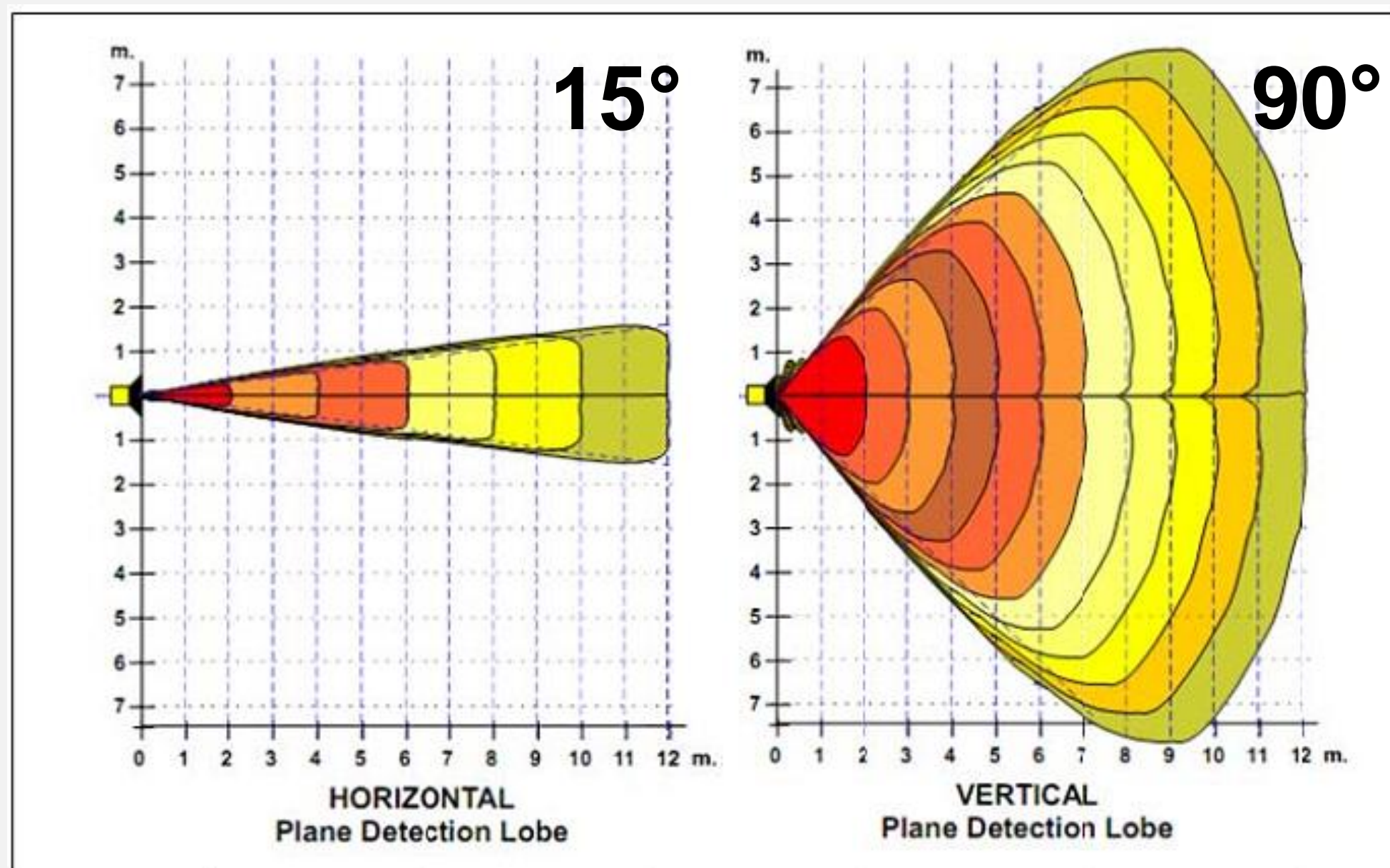
Murena Plus 12 meters CURTAIN

Technical Advices

- **Do not target free spaces! (see example pag. 51)**
- **Choose a stable working plane and avoid oscillating or unstable surfaces like gates, entrance gates, sectional doors in plastic (see example pag. 52)**
- **The flow of water in plastic pipes can cause false alarms, it is necessary to replace or cover them with metal.**
- **Eaves, projections, columns, flues etc. create dead zones into the microwave lobes (i.e. absence of signal). It is necessary to install two sensors. Please refer to drawing at pages 44 and 45.**

Murena Plus 12 meters CURTAIN

Microwave lobe



Murena Plus 12 meters CURTAIN

Technical Advices

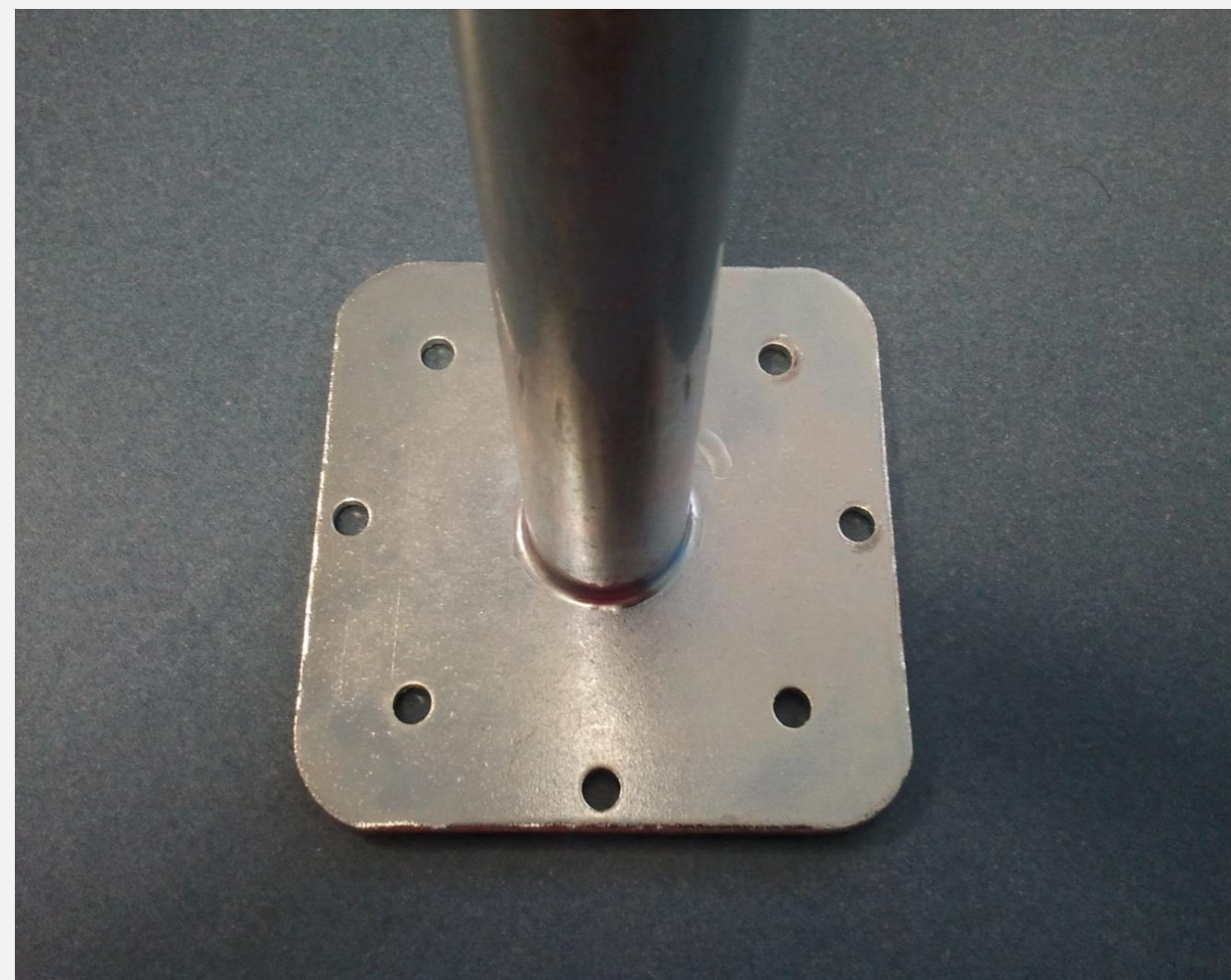
Curtain Installation

- Use the 30 cm special bracket (STAFFAMURO-30C)
- Minimum height of installation 2,5 m
- Lean the sensor about 45° downwards (see examples)
- Always install rain-shield and back-cover kit (MURENA-RS)

Murena Plus 12 meters CURTAIN

Technical Advices

Wall bracket 30C



Murena Plus 12 meters CURTAIN

Curtain installation

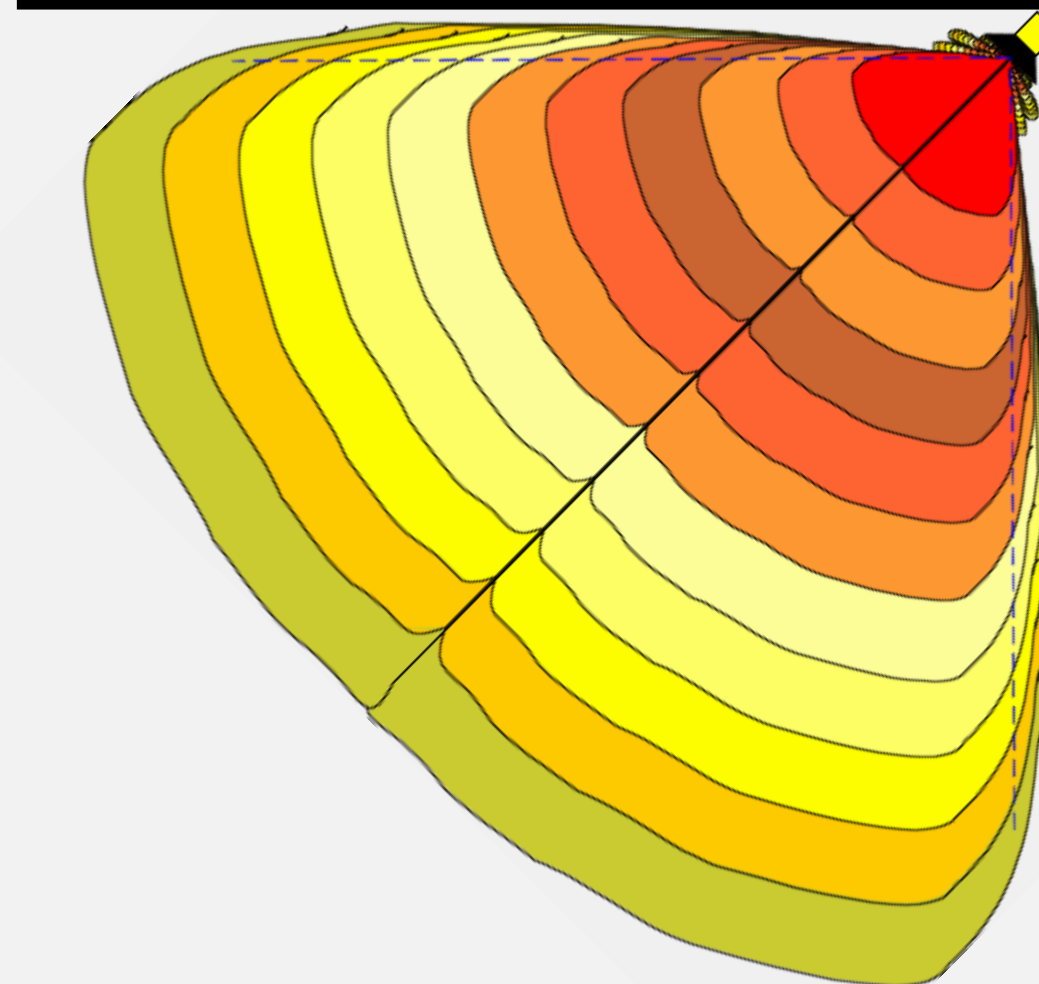


Murena Plus 12 meters CURTAIN

Microwave lobe

Curtain Installation

Shape of microwave
lobe at 45° inclination



Murena Plus 12 meters CURTAIN

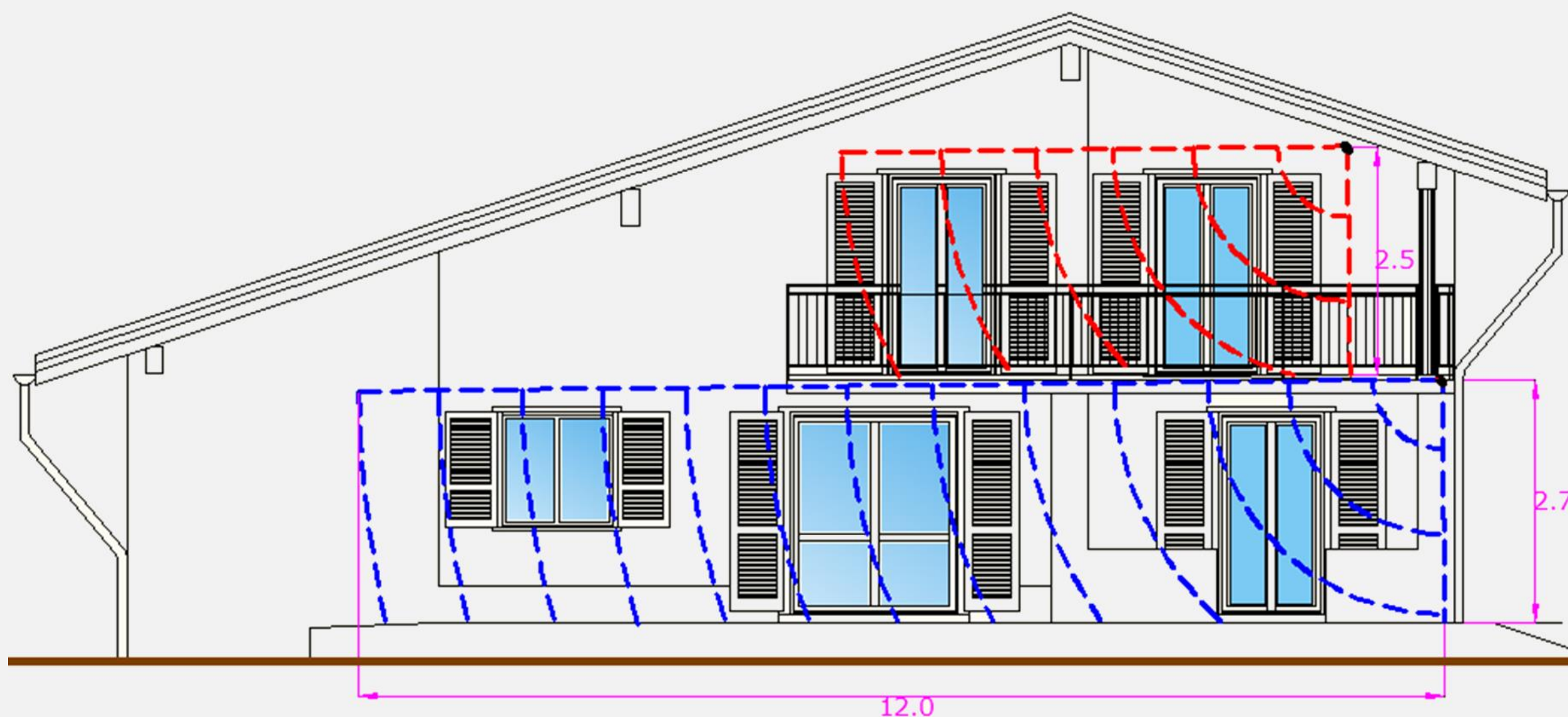
Curtain installation



Murena Plus 12 meters CURTAIN

Private - curtain installations

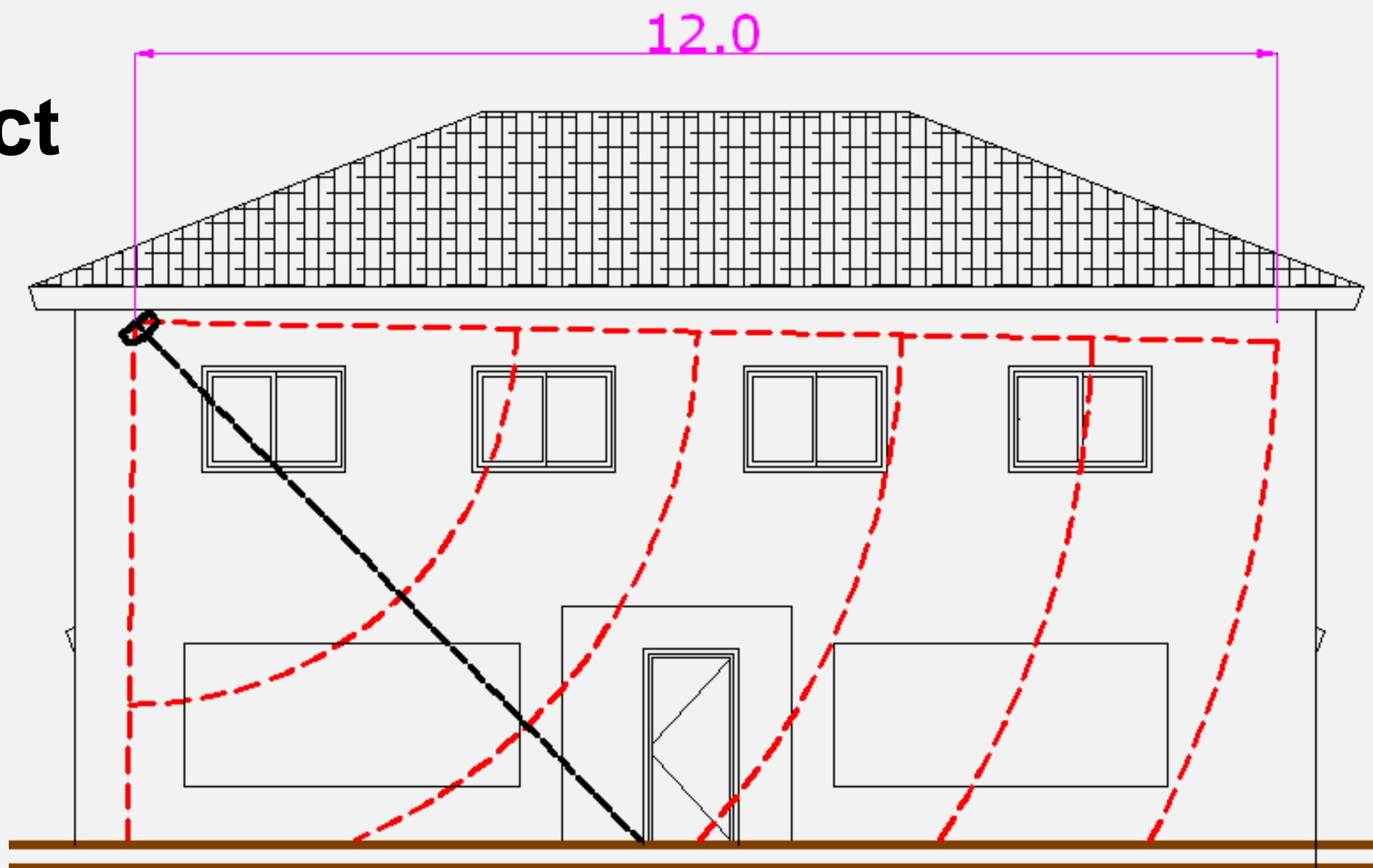
Correct



Murena Plus 12 meters CURTAIN

Private - curtain installations

Correct

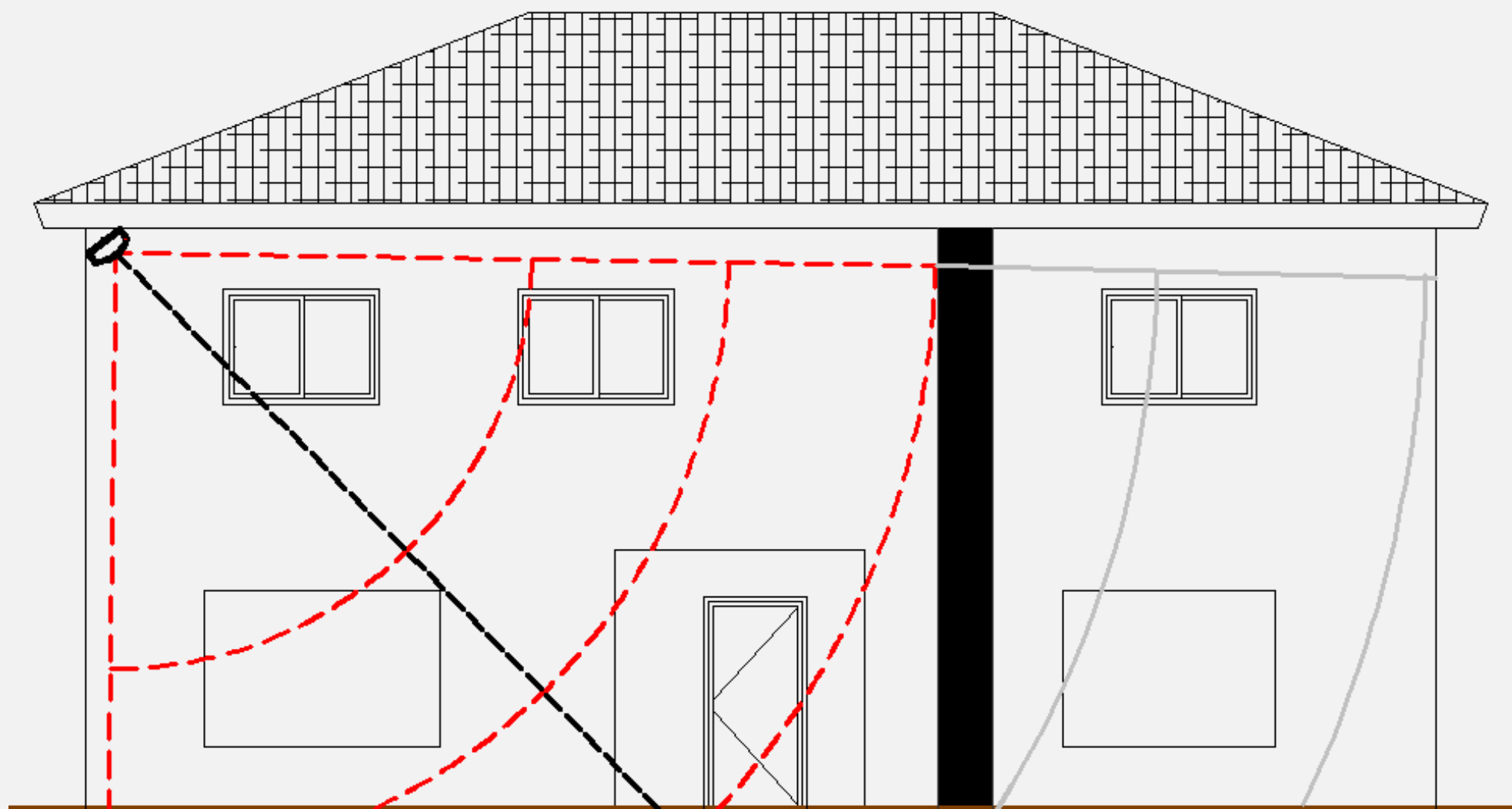


Murena Plus 12 meters CURTAIN

Private - curtain installations

**Beware of eaves, projections, columns, flues etc.
Such obstacles affect the signal totally blocking detection.**

Wrong

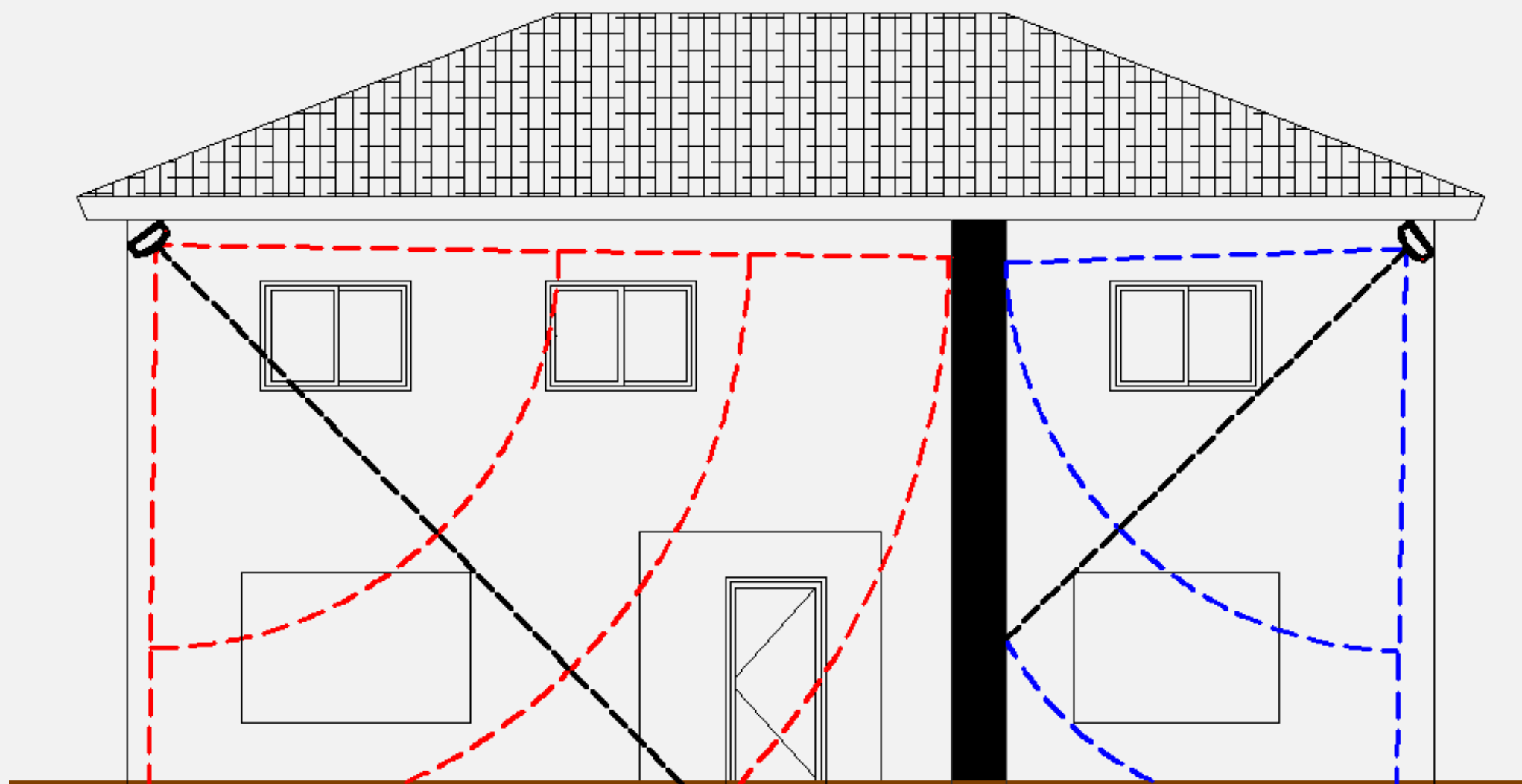


Murena Plus 12 meters CURTAIN

Private - curtain installations

Install two sensors and in case of disturbances change the channel, as per instruction at page 53.

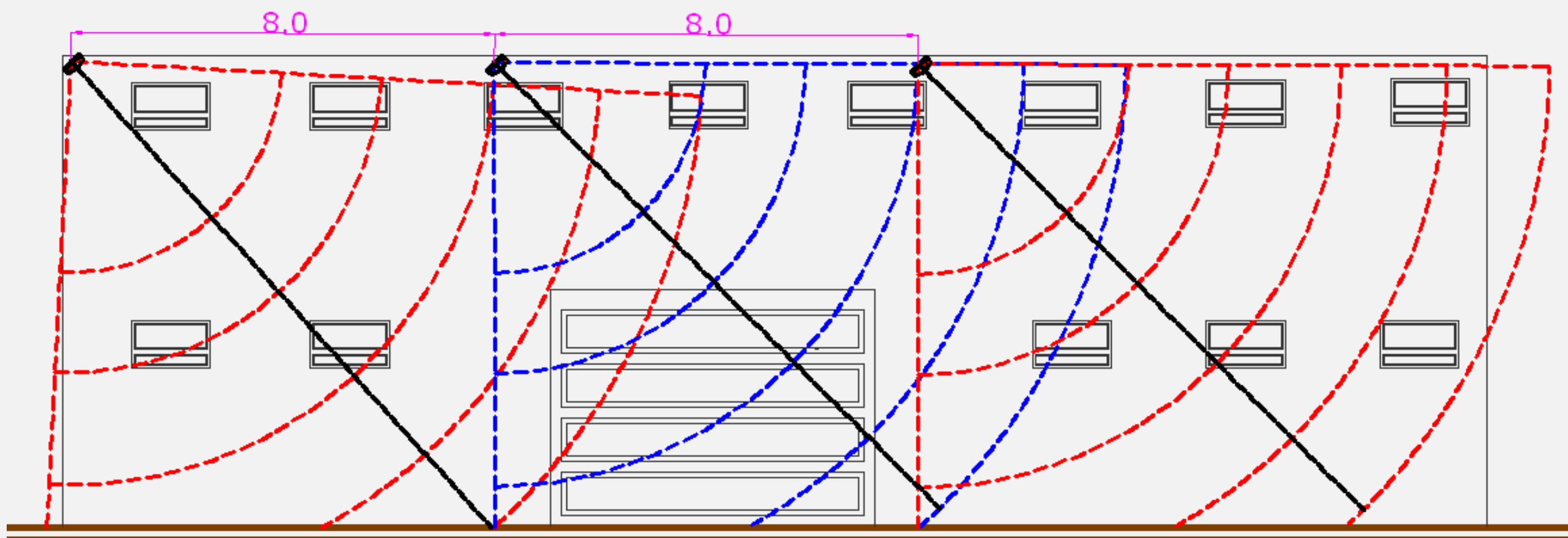
Correct



Murena Plus 12 meters CURTAIN

Industrial - curtain installations

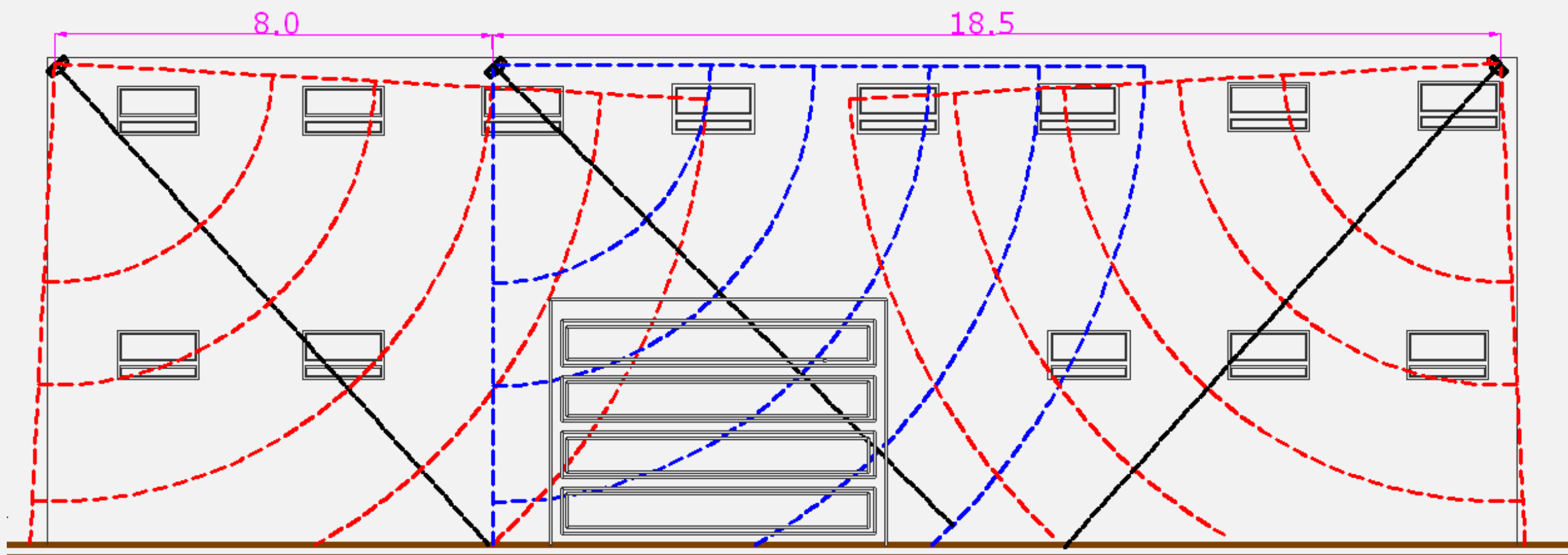
Correct (Installation in series)



Murena Plus 12 meters CURTAIN

Industrial - curtain installations

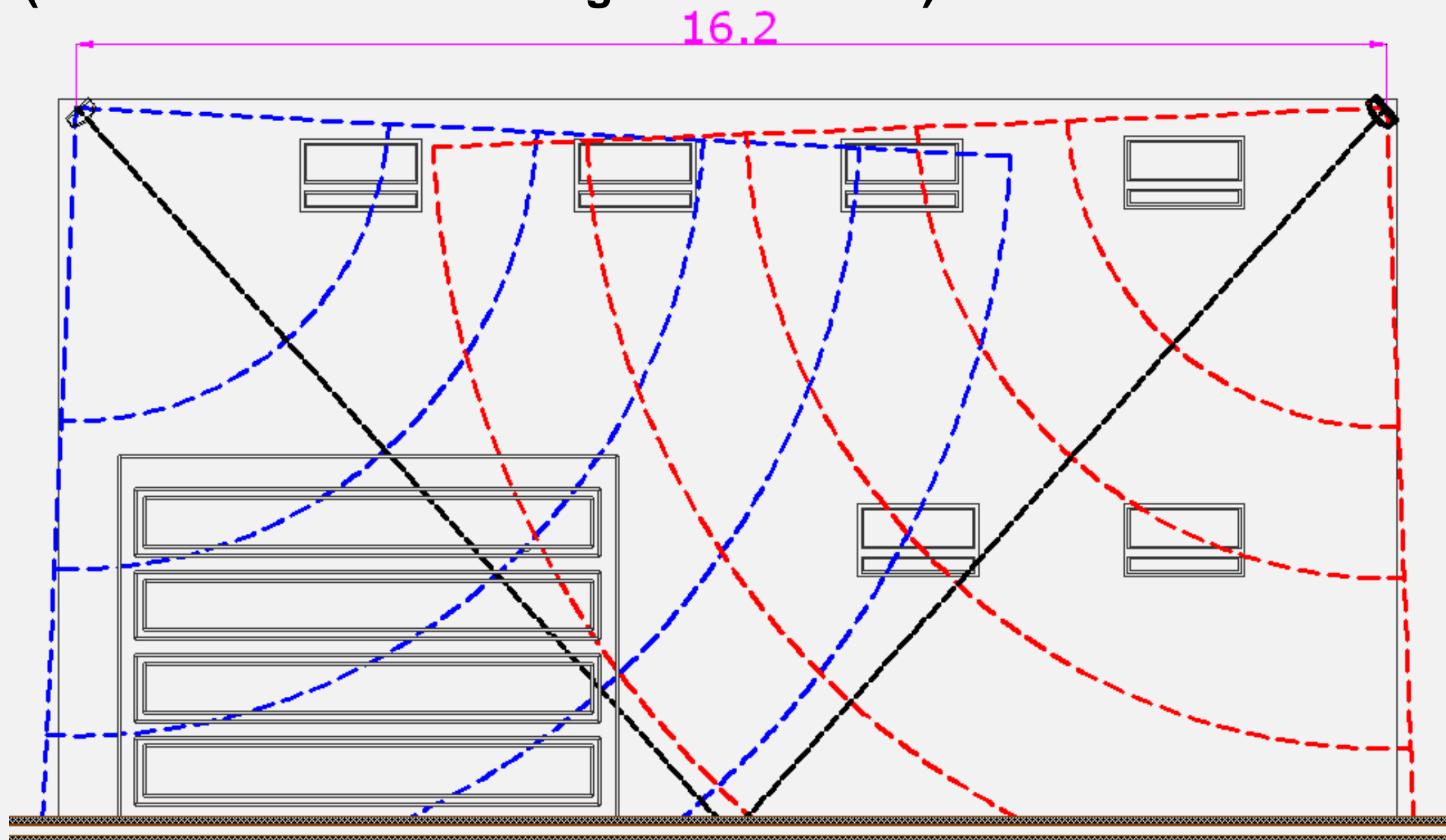
Correct (Installation in series/front: change the channel!)



Murena Plus 12 meters CURTAIN

Industrial - curtain installations

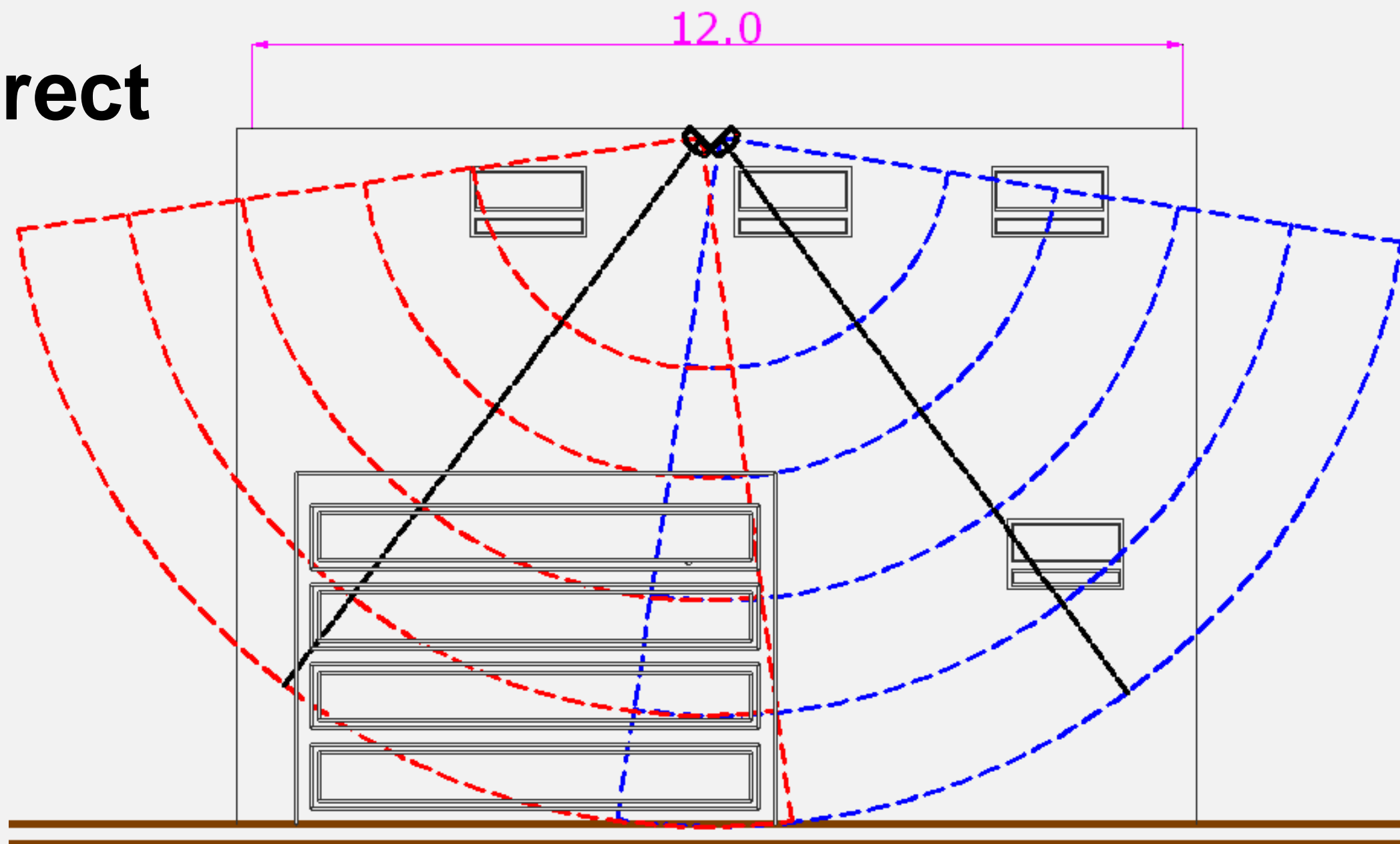
Correct (Frontal installation: change the channel!)



Murena Plus 12 meters CURTAIN

Industrial - curtain installations

Correct

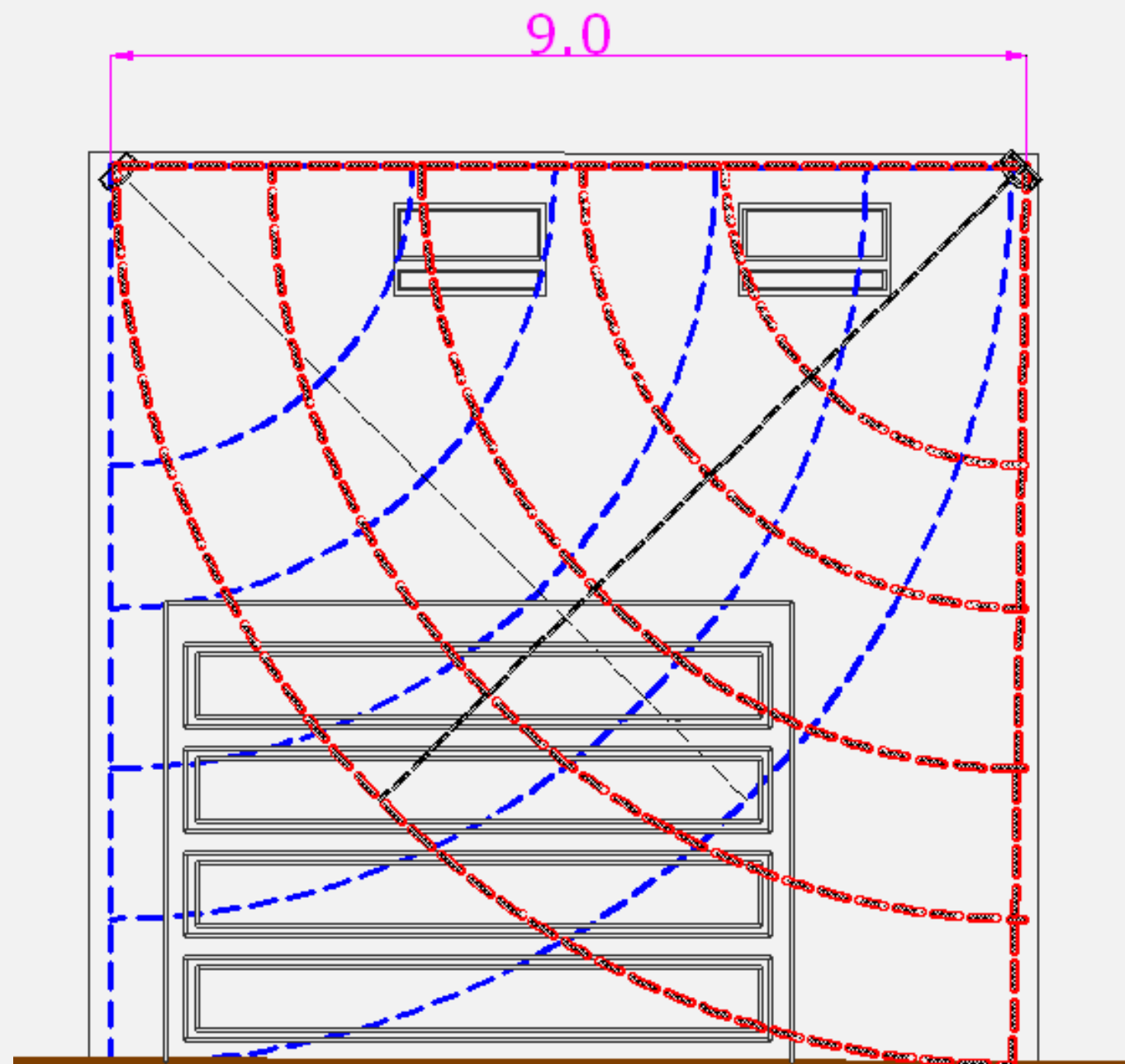


Murena Plus 12 meters CURTAIN

Industrial - curtain installations

Wrong

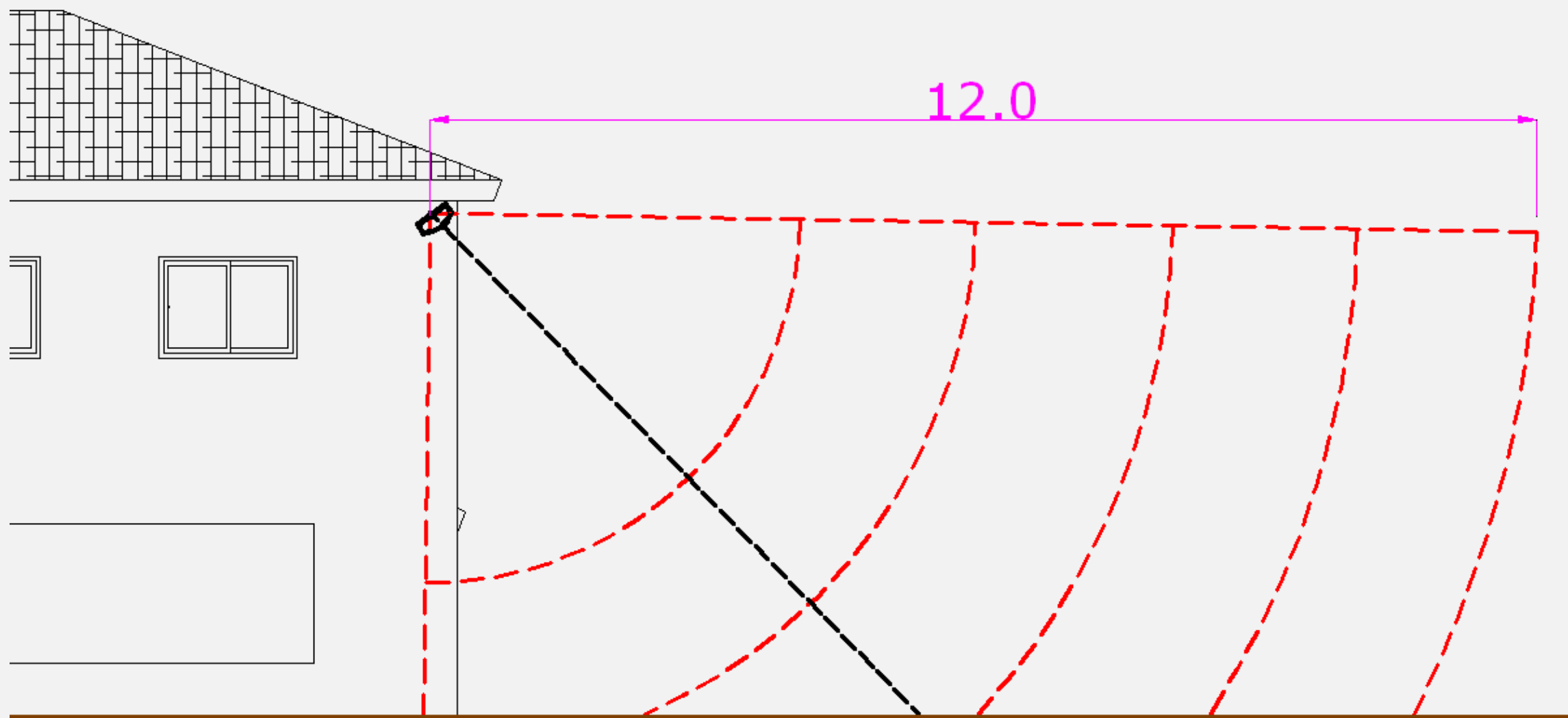
(It's enough to install only one sensor)



Murena Plus 12 meters CURTAIN

Private - curtain installations

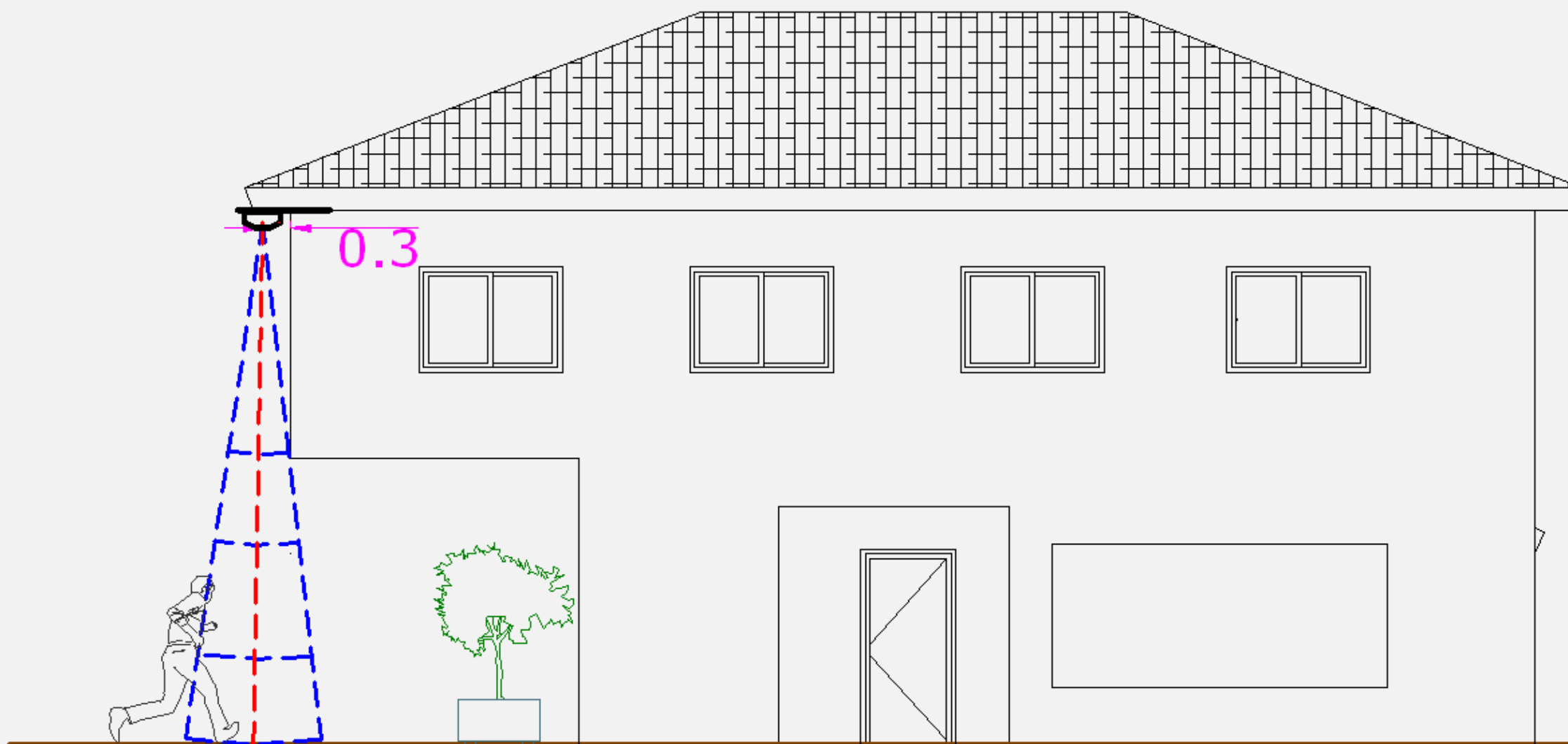
Wrong (Murena doesn't work in free space)



Murena Plus 12 meters CURTAIN

Private – curtain or rain installations

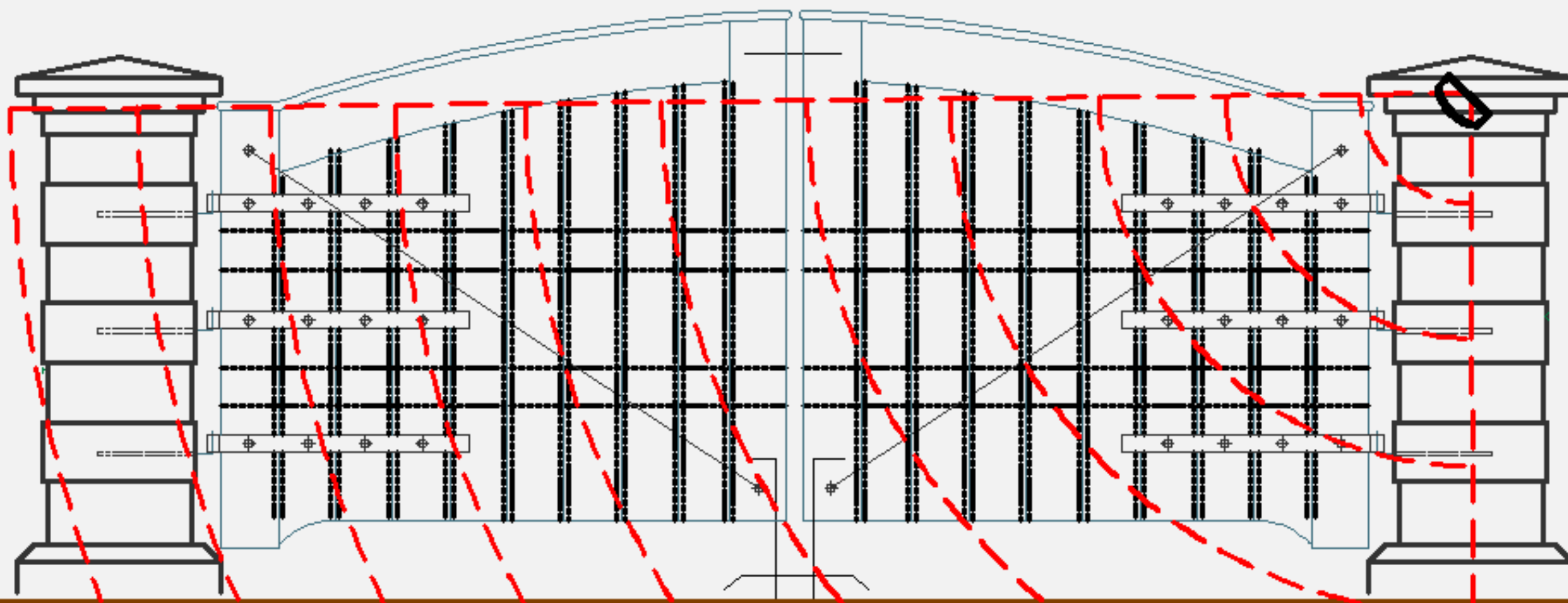
Wrong (Murena cannot detect in open space)



Murena Plus 12 meters CURTAIN

Private and industrial - curtain installations

Wrong (Don't install over oscillating surfaces)



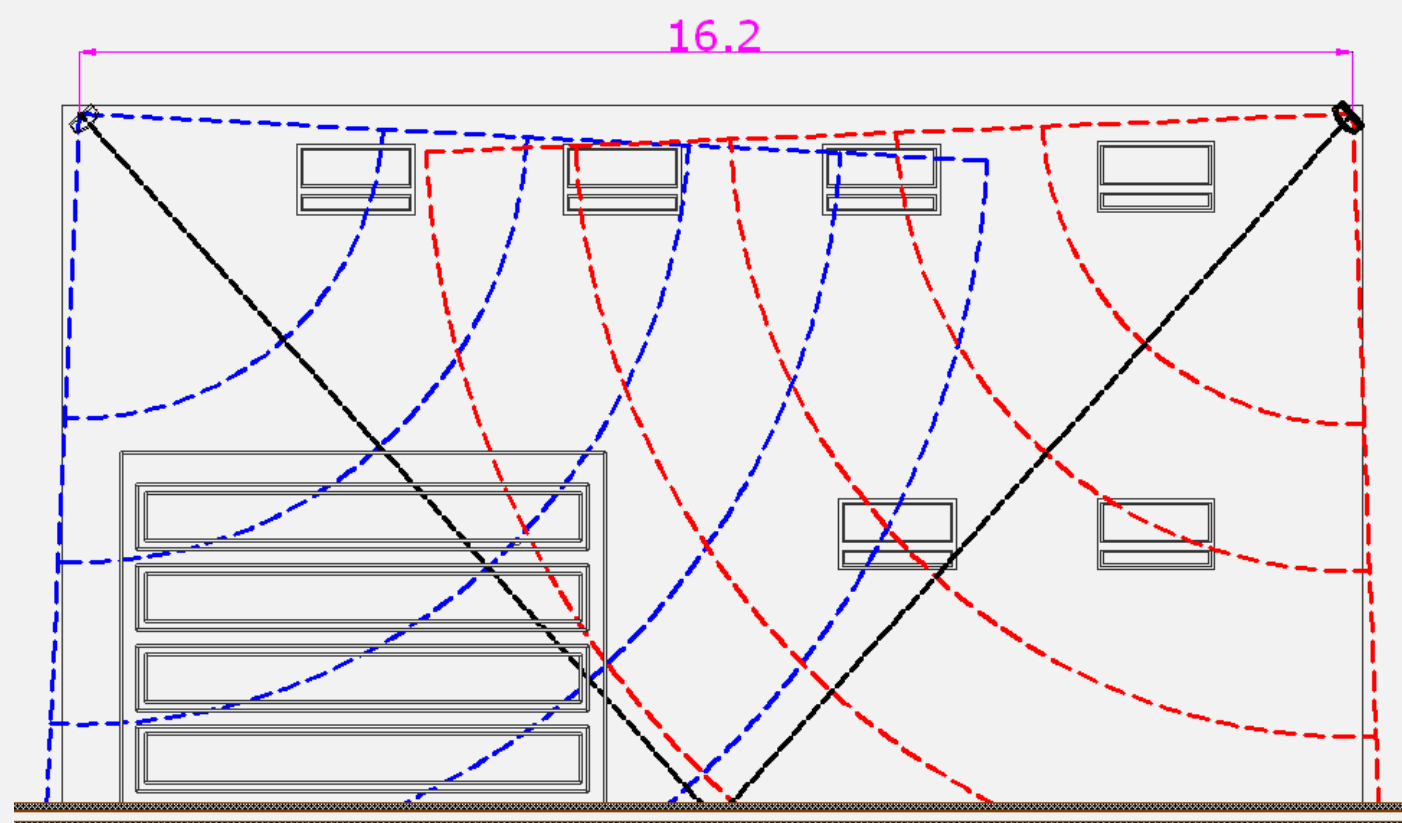
How to avoid interferences between two Murena CURTAIN

Murena Plus 12 meters CURTAIN

Disturbances between two Murena

Unstable signal and false alarms caused by disturbances between Murenas

When installing two Murena Curtain one facing the other, you may have interferences in some cases.



Murena Plus 12 meters CURTAIN

Disturbances between two Murena

Test conditions:

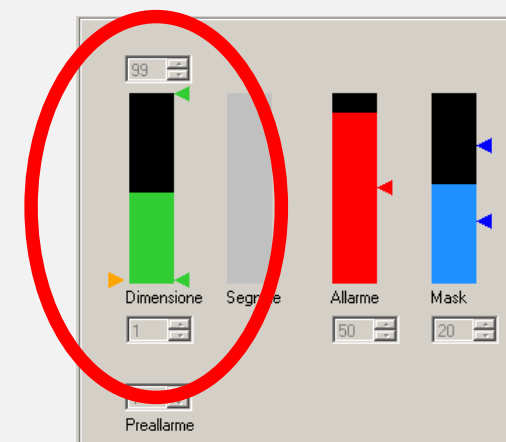
- Both Murena are installed in Curtain version
- Both devices are turned on
- Connect to the more troublesome sensor (take **Murena 1** here as an example)
- Set the following parameters (Wave Test2) on both devices :
 - **Pre-alarm 1**
 - **Dimension Min 1**
 - **Dimension Max 99**
 - **Alarm default, Mask default**

Go on as follows to check for the trouble and troubleshoot it.

Murena Plus 12 meters CURTAIN

Disturbances between two Murena

Checking for the trouble in Murena 1:

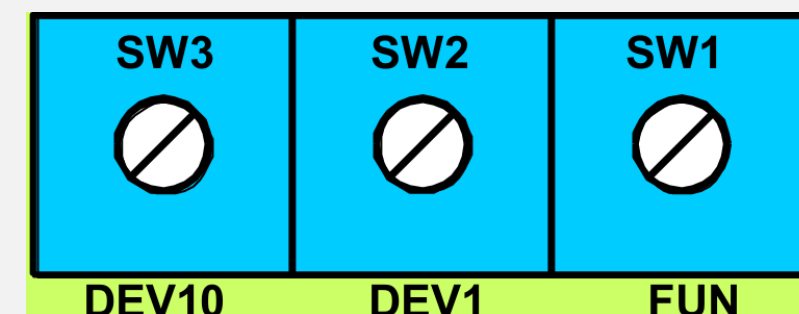


1. Connect to **Murena 1**
2. Be sure that the field is protected against environmental disturbances, such as: vegetation, puddles and/or streams, people and/or animals moving around
3. Push Start and watch **Signal and Dimension** at the same time
4. **Signal** and **Dimension** change continuously
5. Switch off **Murena 2**
6. **Signal** and **Dimension of Murena 1** do not increase
7. **Murena 1** is therefore disturbed by **Murena 2**
8. Once located the disturbance on one or **both** devices, change the channel of **Murena 1** or **Murena 2** as per following chart instructions. At the end check if the disturbance disappeared.

Murena Plus 12 meters CURTAIN

How to change the channel in case of interference (note page 2)

- In particular cases where, due to reflection, two/three transceivers are interfering each others it is possible to modify the channel using function 2 of FUN.
- Turn FUN to position 2
- Turn DEV10 to position 0
- Turn DEV1 to position 0 for channel 1 or
- Turn DEV1 to position 1 for channel 2 or
- Turn DEV1 to position 2 for channel 3 or
- Turn DEV1 to position 3 for channel 4
- Push red button S1 to apply changes
- Lighting of the leds DL8 and DL9 confirms the adjustment
- Turn FUN back to position 0

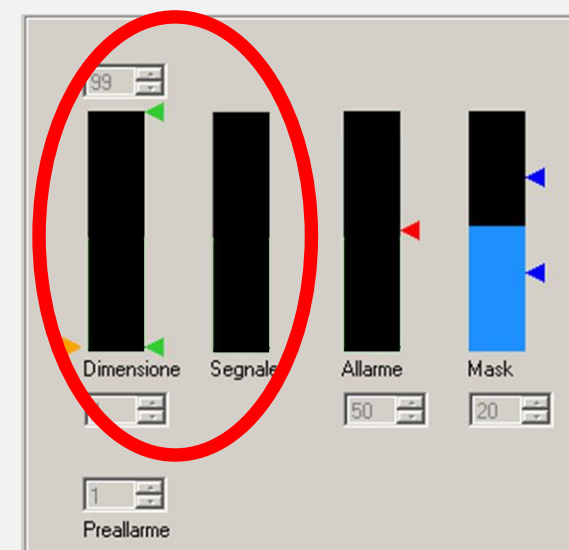


Murena Plus 12 meters CURTAIN

Disturbances between two Murena

Lack of disturbancies:

1. Turn on both devices
2. Connect to **Murena 1**
3. Be sure that the field is protected against environmental disturbancies, such as:
vegetation, puddles and/or streams, people and/or animals moving around
4. Push Start and watch **Signal and Dimension** at the same time
5. **Signal and Dimension** do not increase
6. **Murena 1** is not disturbed by **Murena 2**



Wave Test2 Software

Wave Test2 & Murena Plus

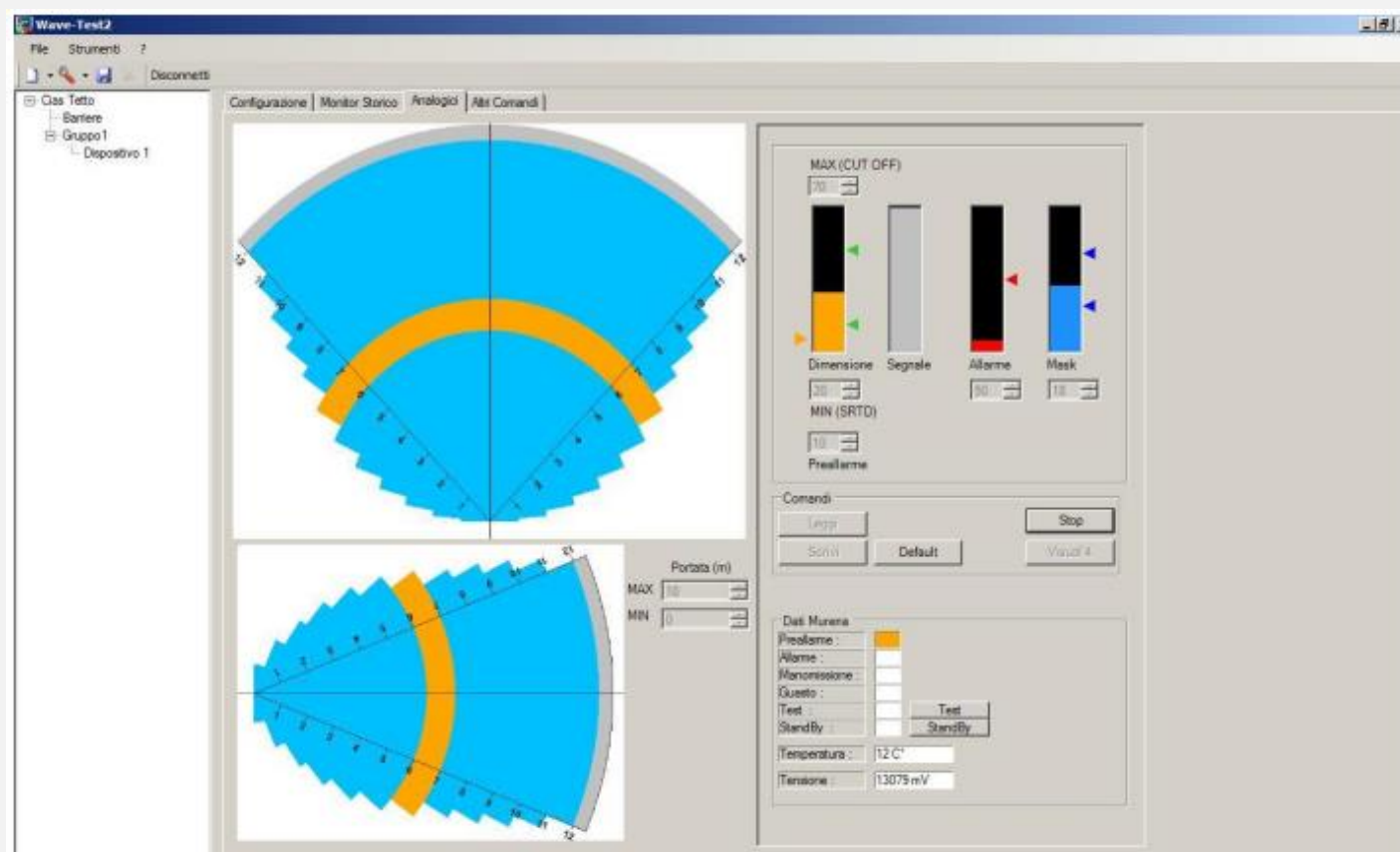
Software

- Use the software Wave Test2 to manage and display all the parameters of Murena (setting thresholds, history, monitors, etc.)
- **The software only works with sensors equipped with RS 485 serial line**

Murena 12 Plus fan

Murena 24 Plus fan

Murena 12 Plus curtain



Wave Test2 & Murena Plus

Target dimension

This represents the dimensions (mass) of the target that should be detected and it is possible to set a minimum threshold and a maximum threshold using the appropriate drop down boxes.

The values can be from 0 to 100, 20 representing the approximate dimensions of a cat and 50 the average sized man.

Low values represent small masses while high values represent large masses.

As you can see there are many variations on the detection of a target and the optimum settings for all protection situations.

Wave Test2 & Murena Plus

Target dimension

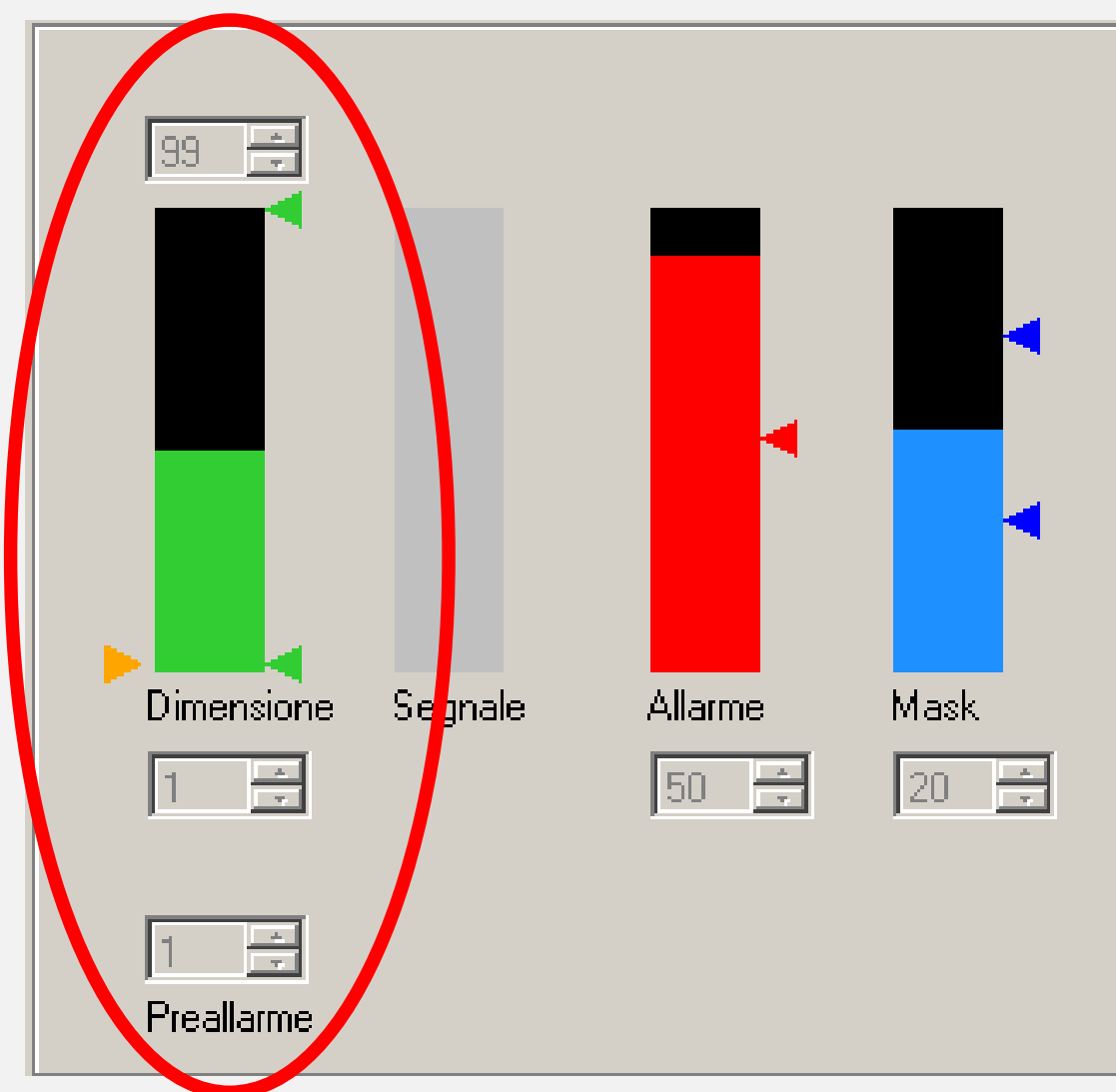
How to determine and correctly set target size

To maintain a high degree of detection and discrimination for small animals and / or background noise, it's important to properly set the size of the target.

N.B:

Phenomena such as reflection / absorption of the microwave can affect the size of the target.

Parameters listed below are for guidance purposes.



Wave Test2 & Murena Plus

Target dimension

Proceed as follows:

- Install Murena (12, 24, curtain), referring to the specific section of this guide
- Use the software Wave Test 2
- Set the distance you want to protect (typically 0 to X meters)
- **Set PRE ALARM 1, DIMENSION MIN 1 and DIMENSION MAX 99**
- Leave as default the other parameters (ALARM and MASK)
- Press Start and perform walk test in the protected field
- Observe which is target's dimension value for an average man (typically around 50)

Wave Test2 & Murena Plus

Target dimension

After noting down this value, you may have different situations:

- **Target size value of the target being lower than half of the scale** (eg. 30), indicates that the signal reflected from the targets within the protected area is smaller than the reference average man.
- **Target size value of the target being higher than half of the scale** (eg 70), indicates that the signal reflected from the targets within the protected area is greater than the reference average man.
- In highly reflective environments, such as balconies, terraces or indoors, distance can be decreased 1m at a time. Do not forget to check that detection is anyhow acceptable.

Wave Test2 & Murena Plus

Target dimension

- Set up **PREALARM 15, MIN DIMENSION 15** and make walk-test trials taking care to let the sensor stand between one test and another
- Increasing **PREALARM** and **MIN DIMENSION** will make the sensor less sensitive to small targets
- Decreasing **PREALARM** and **MIN DIMENSION** will make the sensor more sensitive to small targets
- Make walk-test trials and set up value taking into consideration features of the site to protect.
- Set up the required **ALARM** threshold

Wave Test2 & Murena Plus

Target dimension

- All tests accomplished, check-up on right parameters setting as follows:
- MINIMUM AND MAXIMUM DISTANCE
- PREALARM, MIN DIMENSION, MAX DIMENSION
- ALARM
- MASK
- DATE AND TIME OF THE SENSOR
- STANDBY – IF REQUIRED

Wave Test2 & Murena Plus

Signal, Pre-alarm, Alarm

Signal

Represents the signal received by the Murena and also provides an indication of the background noise from the area to be protected.

Pre-alarm

This threshold refers to the minimum target size above which the sensor will commence fuzzy logic analysis. The pre-alarm threshold value must be less than or equal to the minimum target dimensions.

In the presence of environmental noise (branches, bushes) is recommended to set the value of pre-alarm equal to the minimum size value.

Alarm

Represents the alarm threshold that the sensor uses. It is a value between 0 and 100 with 50 as medium sensitivity. The recommended initial value is 30 and then, during walk tests, set the correct value for the area to be protected.

Wave Test2 & Murena Plus

Masking, Range

Masking

Represents the masking threshold of the sensor. The default parameter is 20; if it is necessary to increase the sensitivity to MASKING it is necessary to set this parameter to a value below 20.

Note:

The value of the masking threshold must not be set below 6 to avoid unwanted alarms.

In the event of a masking alarm the sensor will activate the ALARM and FAULT relays simultaneously.

Range

It is possible to set a minimum and maximum range within which the sensor will detect an intrusion. Movement outside the area selected will not generate an alarm even if the target dimensions are within the target size thresholds set.

Notes

Installator's notes
