distance & positioning guidelines

these guidelines are given as a guide only and it is important that you refer to your appropriate governing standards at all times.

what distance?

The standard fire beam will be suitable for distances of over 5m to 40m to the reflector. If you require 40m to 80m you will need to use the mid range reflector extension kit. For ranges of 80m to 100m you will require the long range reflector kit.

5-40 metres the standard firebeam
The standard firebeam comes boxed with the head unit, low level controller, one reflector, 3mm allen key, test filter and quick start installation guide. This should be used for distances of 5m and up to 40 meters.

40 - 80 metres = the standard firebeam + mid range 40 to 80m kit
For distances of 40 metres to 80 meters you will need to use the standard firebeam and a mid range extension kit (the mid range kit comes with a backing plate and 3 extra reflectors, you will need to add the reflector from the standard kit to the mid range kit with the screws provided.
80 - 100 metres = the standard firebeam + long range 80 to 100m kit

For distances of 80 metres to 100 metres you will need to use the standard firebeam and a long range extension kit (the long range kit comes with a backing plate and 8 extra reflectors, you will need to add the reflector from the standard kit to the long range kit with the screws provided).

What position?

A roof is considered flat unless the height of the apex is greater than 0.6m. If the roof is flat, the firebeam system can be placed anywhere under the roof between 0.3m and 0.6m below the roof, up to a maximum height of 40m from the floor. The firebeam has a detection area of 7.5m either side of the beam.

If the roof is considered to have an apex, place the firebeam system 0.3m to 0.6m down from the top of the apex, up to a maximum height of 40m from the floor. The maximum protected area either side of the beam can be extended by 1% for every degree of roof pitch, see the example below.

Always mount the firebeam system on a solid construction that is unlikely to flex.

Mount over 2.7m from floor level to avoid people walking through the beam, and consideration should also be given to the possibility of obstruction by fork lift trucks and the like.

Avoid pointing the head into direct sunlight.
installing and commissioning

**step one. mounting the head**

screw the head backing plate to the wall - always try to use as sturdy location as possible, such as brick or major structural steels (avoid mounting to outer metal cladding etc)

2 knock outs are provided on both sides

wire into system as required. See generic wiring diagram on the following page. For other configurations contact us or view our website.

wire to low level controller using bottom colour coded terminals

screw in through holes provided outside of the rubber seal

Also available adapter plate

use this accessory for easy mounting to unistrut fabrication. Holes are pre drilled to the correct pitch of the head and conveniently positioned for use with unistrut.

connect the head to the base plate by first plugging in the connector

then screw down the head screws with the 3mm allen key provided

**step two. mounting the controller**

**Important** mount the controller at eye level and with easy access

screw in through holes provided outside of the rubber seal

wire to head using colour coded terminals
**generic wiring configuration**

- **BROWN**: ➢ + supply (10.2-30 Vdc)
- **BLUE**: ➢ - supply (return)
- **BLACK**: ➢ zone +
- **GREY**: ➢ zone -
- **GREEN**: ➢ earth (screen)

**Supply Voltage**: 12Vdc to 24 Vdc +25% -15%
**Quiescent Current**: 3mA
**Alarm Current**: 3mA
**Aligning Current**: 3mA
**Fault / Fire relay contact rating**: 2A @ 30Vdc

FIRE and EOL components as specified by the panel manufacturer

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**switch 4 on all rest off**
step three. commissioning

to commission the fire beam you must follow the simple procedure below

1. do **NOT** put up the reflector or **COVER** it if in place already!

2. power up the unit - you will see then the screen will default to

3. access the menu system by pressing enter

4. scroll through the menus until you get to commissioning

5. **enter** commissioning and **enter** pre-alignment

   *(pre alignment is probably the most important part of commissioning)*

6. you will see this screen
7. Signal power starts at 10% and the receiver sensitivity starts at 5% and automatically increases until a received signal from the blank wall without the reflector of between 5 and 7% is achieved, it will then stop.

If you are covering a distance of over 50 meters you should be achieving signal power of over 60%, if you are receiving less it's possible that you are picking up a reflection from something other than the target blank wall. By moving the beam (looking at the wall) left (x-) right (x+) up (y+) and down (y-) you can move the beam away any obstacles to achieve higher signal power.

8. Once you are happy with the power readings press enter and confirm by pressing the right key. The manual alignment menu will appear press enter to enter.

You will see this screen:
9. **NOW** place or uncover the reflector on the blank wall directly opposite the beam head with a clear path though obstructions such as girders etc.

It is important that there is a clear line of vision between the reflector and any obstruction - the beam head must see at least 200mm of clear wall around the reflector to enable successful auto alignment.

Once the reflector is in place the AQ value should jump up meaning that the head is now seeing the reflector.

The minimum response you need to see is 40% (below this figure the beam will not self align in the next procedure) the higher the number the better - this can be over 100%

*If you have received a AQ reading of over 40% go to Auto Alignment point 10.*

You need a reading of at least 40% to proceed to Auto alignment. If you do not receive an AQ signal of 40% it means the beam head is not seeing the reflector. You will need to move the beam head until you receive an AQ reading of above 40% ideally over 100%

If you are presented with the screen below (AQ-air quality could be any number up to 40%)

Now look at the position of the reflector in relation to the beam head. You will need to angle the beam toward the reflector by moving the head about its X or Y axis using the internal motors

In the example on the next page you will notice that the reflector is below the line of fire of the beam. So in this case you would need to lower the angle of the beam (-Y) until you receive a AQ (Air Quality) reading above 40% sensitivity. (40 steps of the motor = 1 degree of movement)
Adjustments can now be made to the X and Y axis by using the **left**(x−), **right**(x+), **up**(y+), **down**(y−) keys. **Looking at the reflector** this will move the beam across the reflector like so (40 steps = 1 degree) (you can hold the key down for faster increments).

In the example above moving the y axis down(y−) results in a greater % air quality

Wait for x / y values to finish moving to assess your AQ result

Try and achieve as good a result as possible - it must be **over 40%** or auto align will abort. (the better the result the shorter the auto align time will be - a result over 100 is good!)

Press enter to exit manual mode and enter Auto Alignment

**10. Having received a AQ reading of over 40% in manual mode press enter to exit manual and enter again to enter auto alignment**

press enter and the beam head will automatically align on the reflector
first you will see the signal power readings and receiver sensitivity drop if the received signal reading is over 100%. once at 100% or if the reading is under 100% the firebeam will automatically move its X and Y axis until it is positioned on the reflector. (This operation could take 30 minutes or more)

Note: if you break the beam whilst it’s auto aligning it will automatically abort, reset by pressing the left back button and pressing enter to re-start auto alignment

the alignment could take up to 30 minutes or more depending on how much aligning is required. Once complete you will see a Align Complete notification, simply press the left back button to exit and your firebeam is now ready and commissioned

you will now see this screen. Air Quality may fluctuate slightly around a couple of %.above and below 100

step four. testing

to test that the firebeam is aligned correctly you will need to carry out two tests.

1. a filter test for ‘Fire’
place the filter provided over the eyes of the firebeam. having done this (after 10 seconds) the red fire LED will flash on both the head and on the controller and the word FIRE will replace NORMAL on the low level controller display

2. a reflector test, to check that the beam is reflected back from the reflector
cover the reflector completely within one second. If the beam is correctly targeted on the reflector a fault condition will occur (after 10 seconds). A amber LED will flash on both the head and on the controller, the word FAULT will appear in the display

Your firebeam has now been commissioned and tested.
screen and menu system

**Normal** — **Fire** — **Fault** — **Error** — **Align**

- **Air Quality 100**
  - Status: NORMAL

- **Mode Change**
  - Enter menu to enter menu system
  - Down to exit sub menus

- **Alarm Reset**
  - If alarm is set to latching and you need to reset from fire press 'enter' to see this screen and 'enter' again to reset and return to the normal screen, if in fire you will need to press 'back' to go back to the main menu. If set to auto reset it will reset to normal automatically.

- **Threshold — 35%**
  - Default autoreset
  - Use left and right buttons to change
  - Shows (*) when updating

- **Alarm AutoReset**
  - Default autoreset
  - Use left and right buttons to change
  - Shows (*) when updating

- **Time → Fire 10s**
  - Default 10s
  - Use left and right buttons to change
  - Shows (*) when updating

- **Time → Fault 10s**
  - Default 10s
  - Use left and right buttons to change
  - Shows (*) when updating

- **Green Flash Off**
  - Default off
  - Use left and right buttons to change

- **Fire 10s**
  - Use left and right buttons to change
  - Shows (*) when updating

- **Fault 10s**
  - Use left and right buttons to change
  - Shows (*) when updating

- **Flash On**
  - Use left and right buttons to change

- **Beam Head**
  - No comms
  - Beam head is performing a self re-alignment procedure

- **Threshold**
  - Default 35%
  - Adjustable between 25% and 50%

- **Alarm**
  - If alarm is set to latching and you need to reset from fire press 'enter' to see this screen and 'enter' again to reset and return to the normal screen, if in fire you will need to press 'back' to go back to the main menu. If set to auto reset it will reset to normal automatically.
Beam Maintenance

Air Quality 100%
Dirt Comp + 0%

view amount of internal gain made to compensate for dirt build up on beam lenses
-128% to +128%

to test beam press enter - the power will slowly drop as can be seen in the dropping air quality.
When the air quality drops past the pre set threshold the beam will fall into fire
remember that there is a delay time set for time to fire

Alarm Events 1
Fault Events 3

counts events since alignment or reset 0-255

Press 'ENTER' To Clear Events

Alarm Events 0
Fault Events 0

Air Quality 100%
Test

Beam ON

Beam OFF
pre-alignment is the first stage of alignment - this should only be used without the reflector

make adjustments by using the left, right, up and down keys (this moves the beam in these directions across the face of the reflector - with your back to the beam)

this symbol will appear next to the number when you move the beam

Press ‘Right’ To Confirm

make adjustments by using the left, right, up and down keys (this moves the beam in these directions across the face of the reflector - with your back to the beam)

this symbol will appear next to the number when you move the beam
If the beam is obstructed during auto alignment, the alignment will be aborted. Press back to return to auto alignment and enter to resume auto-alignment.

Once alignment is complete, you will see the screen below:

**Align COMPLETE**

Press back to return to the main screen.
to enter sub menus

Diagnostics

to exit sub menus

Air Quality 100%
IRpower 4.5%

shows output power strength
up
down
to decrease to increase
left back right
4.6*
shows (*) when updating

Air Quality 100%
AmpGain1 61.5%

compensation amplifier
up
down
to decrease to increase
left back right
62.0*
shows (*) when updating

Air Quality 100%
AmpGain2 5.0%

shows sensitivity of receiver
up
down
to decrease to increase
left back right
6.5*
shows (*) when updating

Temp +30 Deg C

shows temperature at beam head
up
down

Air Quality 100%
Vref 1.97 Vdc

screen used by The Fire Beam help desk
up
down

Air Quality 100%
VBB 12.26 Vdc

screen used by The Fire Beam help desk
up
down

Beam Head 2.61
Controller 2.00

software versions for the head and controller
**Technical Specifications**

**Electrical Specifications:**
Supply Voltage. 10.2 to 40 VDC
Supply Current. 3mA (constant current) in all operational states

**Environmental Specifications:**
Temperature. -10°C to +55°C
Humidity. 10 to 95% RH Non-condensing
Protection Index. IP65 when suitably mounted and terminated

**Mechanical Specifications:**
Beam Head. 180mmH x 155mmW x137mmD
Weight 1.1Kg
Controller. 185mmH x 120mmW x 62mmD
Weight 0.55Kg
40KIT80 Mid-Range Reflector. 293mmH x293mmW x 5mmD
Weight 0.8Kg
80KIT100 Long Range Reflector. 394mmH x 394mmW x 5mmD
Weight 1.8Kg
ADAPTER. 270mmH x 250mmW x 5mmD
Weight 0.6Kg
(mounts the Beam Head onto unistrut)

**Optical Specifications:**
Optical Wavelength. 870nm
Maximum Angular Alignment. ±15°
Maximum Angular Misalignment. (static not auto-aligning)
Beam Head ±0.75° Reflector ±2°

**Operational Specifications:**
Protection Range:
FIREBEAM. Standard Product 5 to 40 metres
40KIT80. Mid-Range Reflector Kit 40 to 80 metres
80KIT100. Long Range Reflector Kit 80 to 100 metres

Alarm Sensitivity Levels:
25%(1.25dB) to 50%(3dB) in 1%(0.05dB) increments (default 35% (1.87dB))

Alarm Condition:
Obscuration drops to below pre-defined sensitivity level.
Time to Alarm Condition adjustable 2 to 30 seconds in 1 second increments (default 10 seconds)

Alarm Indication:
Controller Status – FIRE
Controller Red Flashing LED 0.5 Second
Head Red Flashing LED 1Second
Alarm Relay Change Over (CO) Contact Rating 2A @ 30 VDC

Test/Reset Features:
Beam test function by controller
Alarm latching/auto-reset selectable (default auto-reset)
Alarm reset in latching mode by controller reset function, removing power for >5 seconds, apply 12 to 24 VDC to reset connections in Beam Head.

Fault Sensitivity Level:
90%

Fault Condition:
Obscuration drops to below the fault sensitivity level within 1 second
Power Down or Supply Voltage <9 VDC
Commissioning modes, Pre-Alignment and Auto Alignment
Beam turned off during Beam Maintenance (auto resets in 8 hours to normal)
Time to Fault Condition adjustable, 2 to 60 seconds in 1 second increments (default 10 seconds)

Fault Indication:
Controller Status – FAULT
Controller Yellow Flashing LED 1Second
Head Yellow Flashing LED 1Second
Fault Relay Change Over (CO) Contact Rating 2A @ 30 VDC

Normal Condition:
Obscuration level is above the Alarm sensitivity level
Controller Status – NORMAL
Controller Green Flashing LED 1Second
Programmable on/off
Head Green Flashing LED 1 Second
Programmable on/off

Auto-align/Beam Contamination Compensation:
Auto-align during normal operation if obscuration drops below 90%
(doesn’t effect normal operating mode)
Beam Contamination Compensation 4 hour monitoring. Compensation data available at the controller