HOCHIKI

World Class Leaders in Fire Detection Since 1918

esp FIREbeam

INSTALLATION MANUAL

This manual details the installation of:

ESP FIREbeam Reflective Optical Beam Smoke Detector

If you have any queries regarding these products or their functionality please contact:

- Hochiki Europe (UK) Limited
  Grosvenor Road
  Gillingham Business Park
  Gillingham
  Kent ME8 0SA
- Tel: +44 (0) 1634 260133
- Fax: +44 (0) 1634 260132
- Web: http://www.hochikieurope.com
- Email: psupport@hochikieurope.com

©2011 Hochiki Europe (UK) Ltd. All rights reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior permission in writing of Hochiki Europe (UK) Ltd.

Hochiki Europe (UK) Limited reserves the right to alter the specifications of its products from time to time without notice. Although every effort has been made to ensure the accuracy of the information contained in this document it is not warranted or represented by Hochiki Europe (UK) Limited to be a complete and up-to-date description.

Document Details:

Title:	ESP FIREbeam Reflective Optical Beam Smoke Detector - Installation Manual
Issue	2.0
Issue Date	December 2011
Part No.	2-3-0-1340

Table of Contents

1 Distance and Position Guidelines 4
1.1 Distance 4
1.1.1 5 to 40 metres - The Standard ESP FIREbeam 4
1.1.2 40 to 80 metres - The Standard ESP FIREbeam + Mid Range 40 to 80m Kit 4
1.1.3 80 to 100 metres - The Standard ESP FIREbeam + Long Range 80 to 100m Kit 4
1.2 Position 5
2 Installing, Commissioning and Testing 6
2.1 Step 1 - Mounting the Head 6
2.2 Step 2 – Programming the Analogue Address 6
2.3 Step 3 - Mounting the Controller 7
2.4 Wiring Configuration 7
2.5 Step 4 - Commissioning 8
2.5.1 Stage One - Language and Commissioning Speed 8
2.5.2 Stage Two - Pre-alignment 8
2.5.3 Stage Three – Manual Alignment 9
2.5.4 Stage Four - Auto-Alignment 11
2.6 Step 5 - Testing 11
2.6.1 Fault Test 11
2.6.2 Fire Test 11
3 Screen and Menu Systems 12
3.1 Home Screen 12
3.2 How To Use the Menu System 13
3.3 Individual Menu Items 14
3.3.1 Language 14
3.3.2 Commissioning 14
3.3.3 Mode Change 15
3.3.4 Beam Maintenance 17
3.3.5 Diagnostics 18
4 Technical Specifications 19

© 2011 Hochiki Europe (UK) Ltd.

1 Distance and Position Guidelines

These guidelines are recommendations only and it is important that you refer to your appropriate governing standards at all times.

When positioning your ESP FIREbeam there are important factors that you should consider, mainly what distance you are covering and the optimal position in the building.

1.1 Distance

The standard ESP FIREbeam is suitable for distances of 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 extension kit.

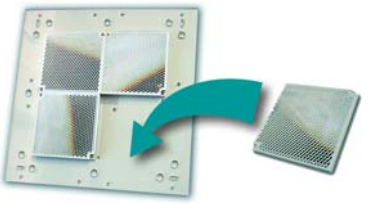
1.1.1 5 to 40 metres - The Standard ESP FIREbeam

The standard ESP FIREbeam comes boxed with the head unit, low level controller, one reflector, 3mm allen key and quick start installation guide, this should be used for distances over 5m and up to 40m.



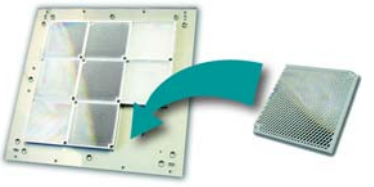
1.1.2 40 to 80 metres - The Standard ESP FIREbeam + Mid Range 40 to 80m Kit

For distances of 40 to 80 metres you will need to use the standard ESP 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).



1.1.3 80 to 100 metres - The Standard ESP FIREbeam + Long Range 80 to 100m Kit

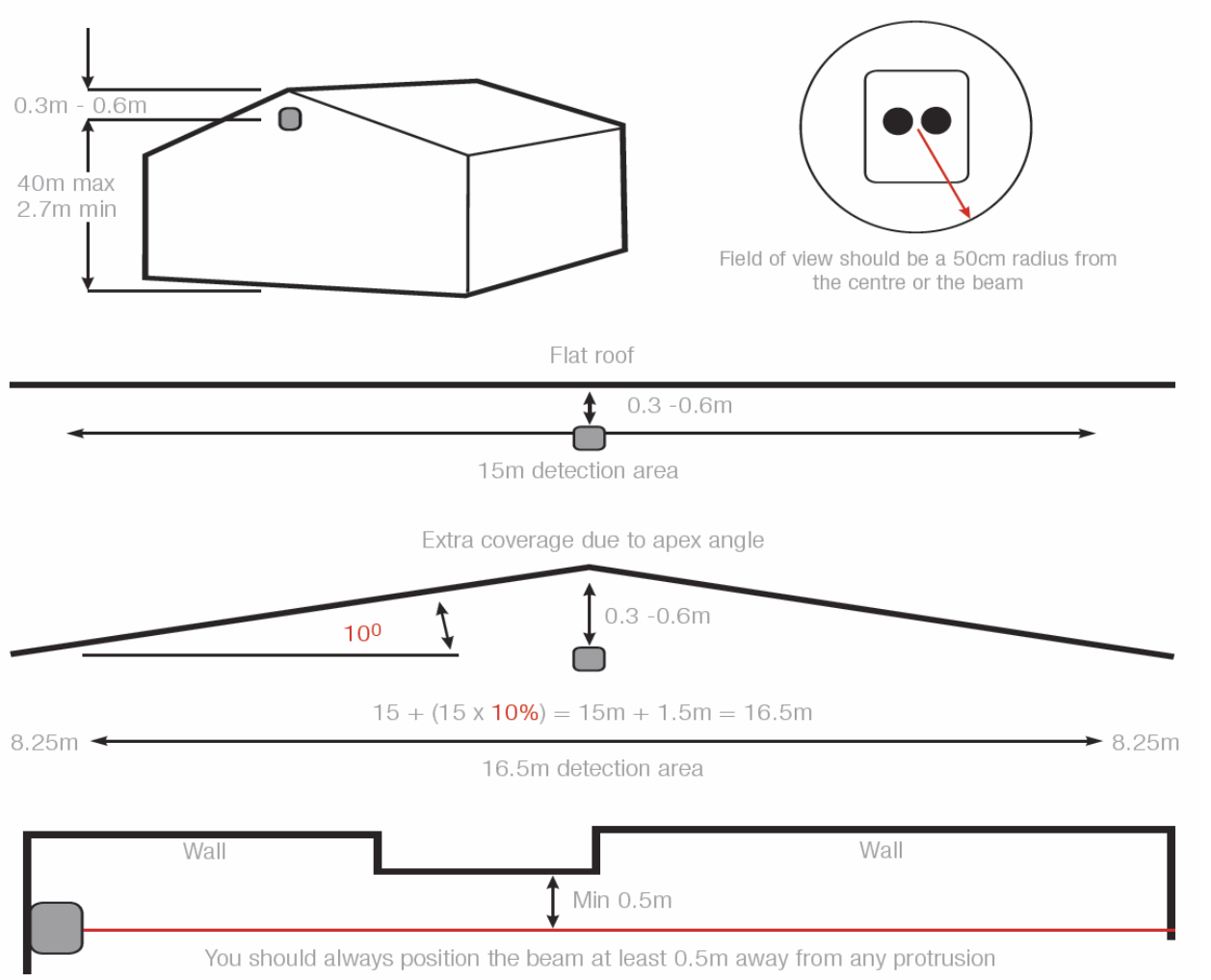
For distances of 80 to 100 metres you will need to use the standard ESP FIREbeam and a long range extension kit (the long range kit comes with a backing plate and 8 extra reflectors, you will need to add the reflector from the standard kit to the long range kit with the screws provided).



© 2011 Hochiki Europe (UK) Ltd.

1.2 Position

A roof is considered flat unless the height of the apex is greater then 0.6m. If the roof is flat the ESP 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 ESP FIREbeam has a detection area of 7.5m either side of the beam. If the roof is considered to have an apex, place the ESP 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:



NOTE: Careful design consideration should be made when positioning beams and reflectors in environments that can be susceptible to condensation i.e. warehouses near to water that have areas open to the outside environment or that are exposed to quick extreme changes in temperature. To assist with this problem that can affect all beam detectors we produce an anti-fog kit comprising of a specially coated reflector and lens cover. Individual reflectors are also available. The standard ESP FIREbeam and range kits can be supplied as anti-fog sets as a special order.



© 2011 Hochiki Europe (UK) Ltd.

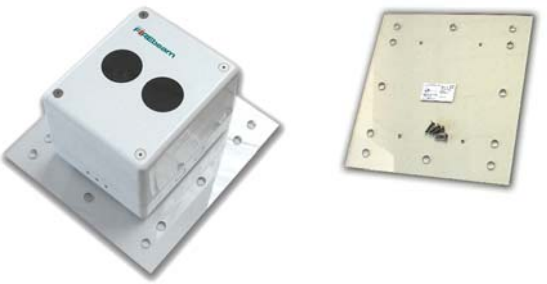
2 Installing, Commissioning and Testing

2.1 Step 1 - Mounting the Head

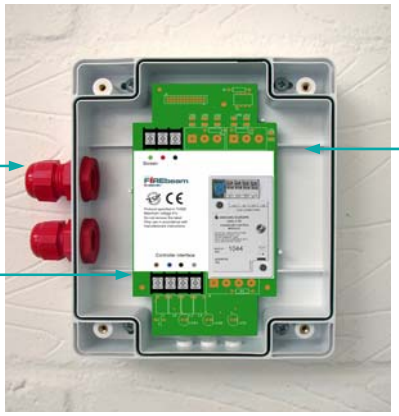
Screw the head backing plate to the wall - always try to use as sturdy a location as possible, such as brick or major structural steels (avoid mounting to outer metal cladding etc). Avoid mounting the head where direct sunlight can shine directly into the 'eyes' of the beam (care should be taken when mounting in glass atriums). Ambient sunlight will not affect the beam.

Also available - unistrut 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.



2 knock-outs are provided on both sides. Take care when using drills not to damage the circuit board.



Wire into system as required (see "Wiring Configuration" on page 7). Ensure that all wiring is below the level of the front edge of the box.

Wire to low level controller using bottom colour coded terminals.

Screw in through holes provided outside of the rubber seal.

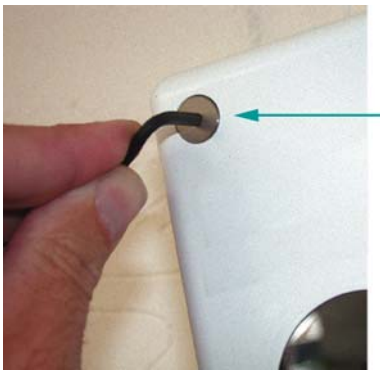
2.2 Step 2 – Programming the Analogue Address

The FIREbeam is programmed via the integral FIREbeam Control Module situated on the main PCB within the head unit. To program an address you will require a TCH-B100 Hand Held Programmer and a PL-3 Programming Lead (both provided separately). Connect the PL-3 Programming Lead to the TCH-B100 Hand Held Programmer and then to the blue programming socket on the FIREbeam Control Module. Refer to the TCH-B100 Instructions for further details on programming addresses. The programmed address can be written on the module label in the space provided.

Once the unit is programmed connect the head to the base plate by first plugging in the connector.

Do not force in, white wires should be uppermost. Should you forget to connect this the controller screen will read ERROR.





Screw the head screws down with the 3mm allen key provided.

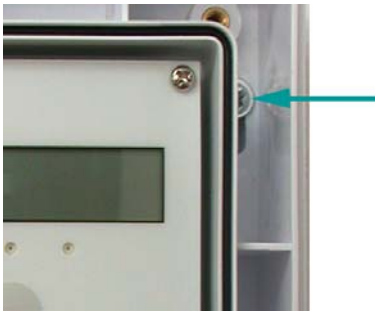
Your wiring should be flush and not flattened by tightening down screws.

© 2011 Hochiki Europe (UK) Ltd.

2.3 Step 3 - Mounting the Controller

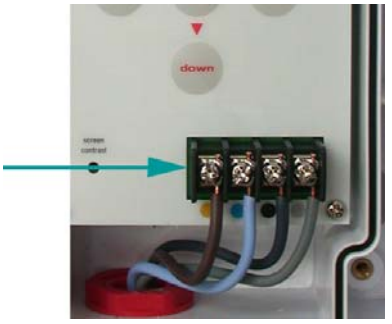
Important mount the controller at eye level and ensure easy access.





Screw in through holes provided outside of the rubber seal. Wire to head using colour coded terminals.

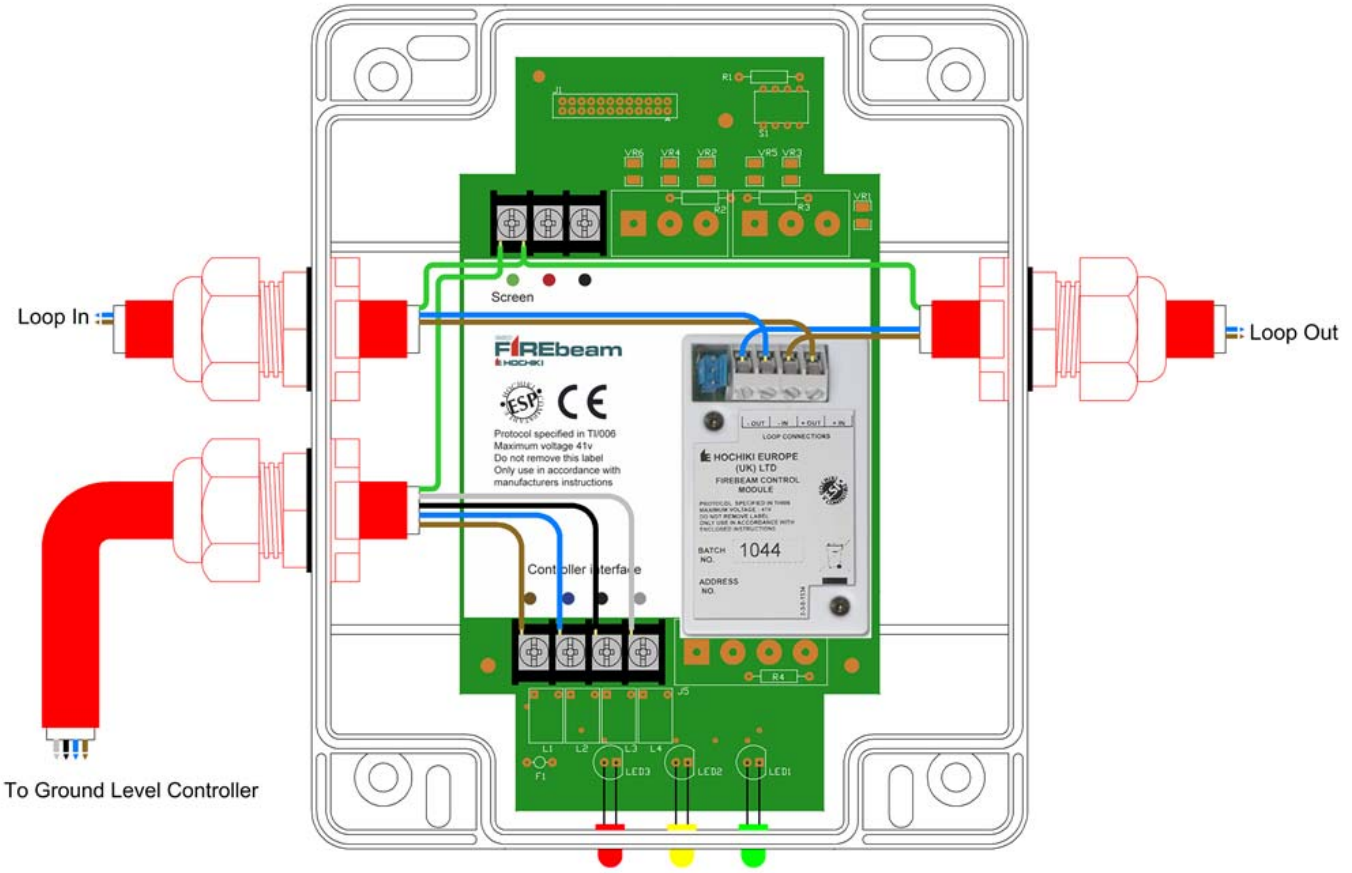
If this connection is not made ERROR will appear on the controller, this connection can be checked by reading the resistance across the black and grey terminals, they will read 110 ohm if OK or 220 ohm if not connected properly.



2.4 Wiring Configuration

The output current will need to be set at 22mA. The output will also need to be programmed so that it is powered in its normal state. On a control panel reset the output will need to change state for a minimum period of 5 seconds.

NOTE: You should consult the relevant control panel documentation on how to program this functionality.



© 2011 Hochiki Europe (UK) Ltd.

2.5 Step 4 - Commissioning

Commissioning the ESP FIREbeam is a simple procedure outlined in the following step by step explanation.

2.5.1 Stage One - Language and Commissioning Speed

IMPORTANT. Do **NOT** put the reflector up or **COVER** it if already in place.

Power up the unit and you will see



the screen will then default to



or



Access the menu by pressing the **enter** button



The first screen you see is **English**. If you need to change this use the **right** and **left** hand keys to scroll through languages, when you have found your language press **enter** or if you are happy with English press the **down** key to continue. If you have changed the language the system will continue in your chosen language.

Press **enter** and you will now see the **commissioning speed** screen. In most cases it is recommended to use **fast** mode (in normal mode the system uses 3.5mA, in fast mode it uses 17mA) - if you are commissioning more than one beam at a time and the system cannot support the extra draw it may be necessary to use normal mode to prevent excessive current draw. Fast mode allows x 4 times faster motor response and it may be quicker to commission each beam in turn. Once commissioning is complete the ESP FIREbeam will automatically revert to normal low power mode - (3.5mA).

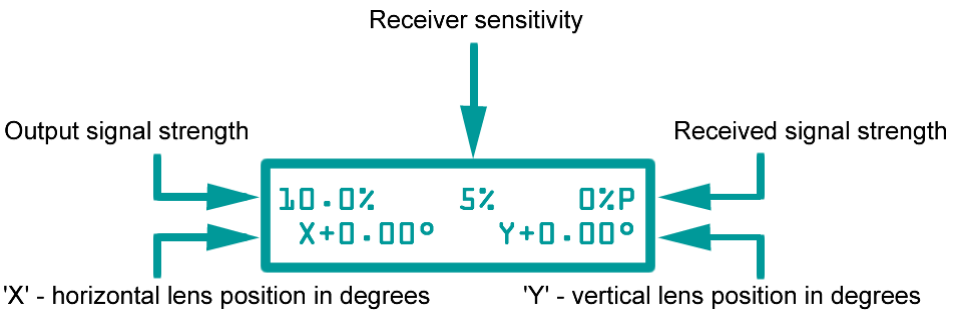
Use the **left** and **right** keys to toggle between fast and normal, the * indicates which mode is selected. Press the **enter** key to continue.



2.5.2 Stage Two - Pre-alignment

The next screen is pre-alignment - this is probably the most important part of setting up your beam. Pre-alignment sets up the amount of power you need for the distance you are covering and can indicate if you are receiving unwanted reflections from anything else in the beam path.

Press **enter** to begin pre-alignment. Remember no reflector. You will see the screen below, take a moment to understand what the figures on the screen mean.



© 2011 Hochiki Europe (UK) Ltd.

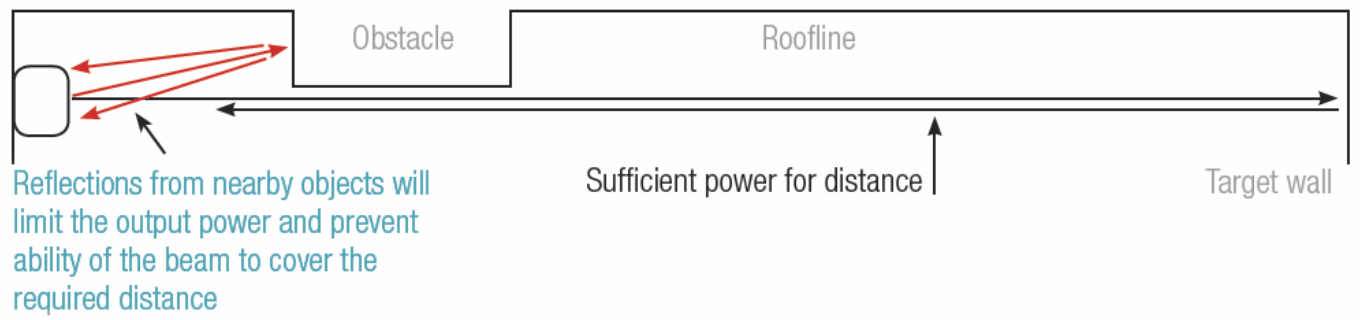
Receiver sensitivity starts off at 5% and output power starts at 10%. The beam will start by raising its sensitivity first and can rise all the way up to 100%, after this the output power will rise. The objective of pre-alignment is to adjust the output power to the correct levels for the distance to be covered. As there is no reflector we are looking for a reflection off the far wall. Power levels will rise until they reach a maximum of anything up to 6 to 7% of received signal strength (figures may fluctuate between these values), once this is achieved the power level will automatically stop rising any further.

By looking at the table below you need to judge if you are receiving enough power to cover the required distance.

5m.....5%	30m.....20%	60m.....40%	90m.....65%
10m.....10%	40m.....25%	70m.....50%	100m....75%
20m.....15%	50m.....30%	80m.....60%	

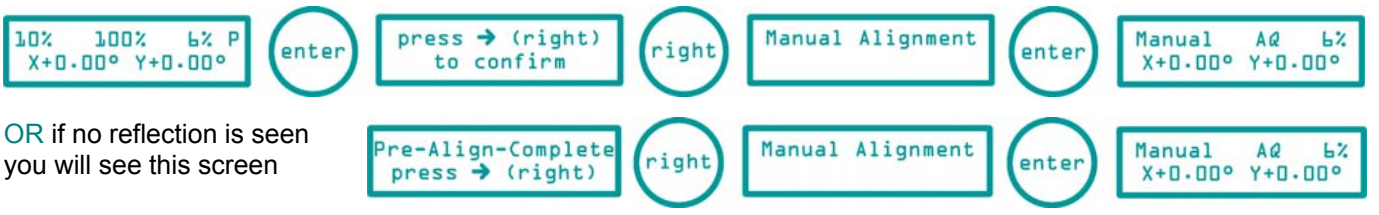
NOTE: Anything more than these levels is good and continue down to 9. If you are receiving noticeably less read on below.

These figures are approximate but if you are receiving noticeably less than these figures you may be receiving a reflection from an object nearby and not the far wall. By moving the beam (looking at the far wall) left (x-) right (x+) up (y+) and down (y-) you can move the beam path away from the obstacle. By doing this you will be able to achieve a suitable output power. In extreme cases it may be necessary to physically move the beam head to obtain a clear line of sight.



Once you are happy with your power readings press **enter** to accept pre-alignment and confirm these settings by pressing the **right key**.

NOTE It may be that no reflection is received and power and sensitivity levels rise to their maximum, if this is the case pre-alignment will automatically register Pre-Align - Complete. Confirm these settings by pressing the right key.



2.5.3 Stage Three – Manual Alignment

You will now see the manual alignment screen showing anything between 0 and 6%. This is the amount of received signal with no reflector that the beam is picking up from the environment.

© 2011 Hochiki Europe (UK) Ltd.

NOW place or uncover the reflector on the blank wall directly opposite the beam head ensuring there is a clear path through any obstructions such as structural steels etc.

NOTE: It is important that there is a clear line of sight between the reflector and beam head. The beam must see at least 200mm of clear space around the reflector to enable the beam to see the edges of the reflector to allow successful auto alignment in the following stage.

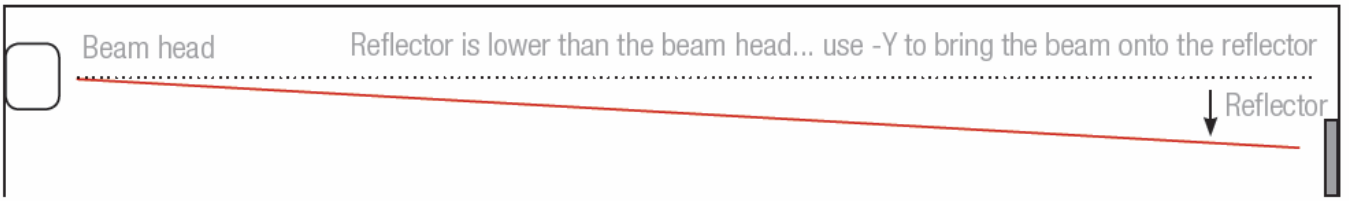
Once the reflector is in place and visible there should be a big jump in the received signal (AQ). This means that the head is seeing and receiving a signal back from the reflector. In most cases this will result in a received signal of over 100%.



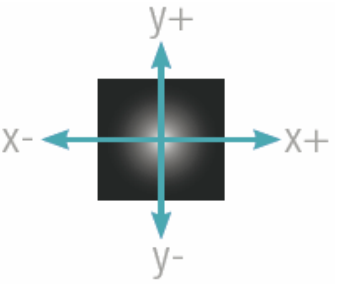
As long as there is a received signal of over 40% you can move onto the next stage, see “Stage Four - Auto-Alignment” on page 11.

If the AQ reading is below 40% it means the head is not seeing the reflector and will abort Auto Alignment. The next stage is to manually move the beam to achieve an AQ reading of over 40%, ideally over 100%. The higher the AQ the quicker it will auto align. This is done by manually moving the x and y motors to obtain a received signal from the reflector.

In the example below we can see that the reflector is below the eye line of the beam head, so in this case you would need to lower the angle of the beam (-Y) until you receive an AQ of over 40%.



The beam can be moved on both X and Y axis to a maximum 5 degrees using the **left** (x-), **right** (x+), **up** (y+) and **down** (y-) keys. Looking at the reflector this will move the beam across the reflector as shown:



Holding the keys down will quickly scroll through to your desired position, on release of the button the screen will revert to the actual beam position and can be seen stepping toward the requested position.

To confirm the beam is seeing the reflector, cover the reflector as this should drop the AQ and therefore prove the beam is on the reflector.

In the example above moving the y axis down (y-) results in a greater AQ	Try and achieve as high an AQ as possible, it must be over 40% to auto align. The higher the AQ the quicker the auto align, above 100% is good
	

You will now see the manual alignment screen showing anything between 0 and 6%. This is the amount of received signal with no reflector that the beam is picking up from the environment.

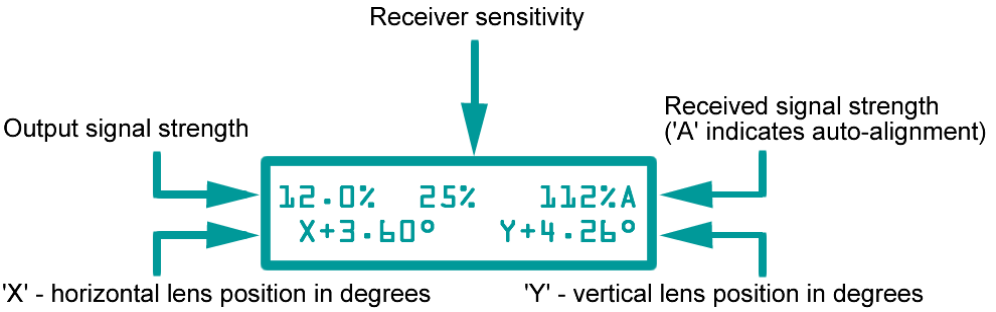
© 2011 Hochiki Europe (UK) Ltd.

2.5.4 Stage Four - Auto-Alignment

Having received an AQ reading of over 40% in manual mode press enter to exit manual and enter again to go into auto alignment mode.



First you will see the sensitivity and power readings drop if the received signal is over 100%. Once at 100% or if the reading is under 100% the ESP FIREbeam will automatically move its y and x axis until it centres itself onto the middle of the reflector. It does this by seeing highs and lows as it falls on and off the reflector (seeing the edges of the reflector) once it has found all the edges it will then calculate and move to the centre of the reflector.



Auto alignment in 'fast' mode will take, on average, 3 minutes and in normal mode up to 30 minutes; the better the beam is aligned before auto alignment (high AQ readings) the shorter the align time. Once finished **Align Complete** will appear on the screen, simply press **left** to get back to OK and exit.

You will now see this screen, AQ may fluctuate a couple of % above and below 100%



Now proceed to Step 4 – Testing, the final stage of commissioning.

2.6 Step 5 - Testing

2.6.1 Fault Test

This is done to confirm that the returned signal is from the reflector. Cover the entire reflector within one second. If the beam is correctly targeted onto the reflector the AQ will drop to 0% (max 10%) and will fall into a 'fault' condition (after 10 seconds). Amber LEDs will flash on the controller and the beam head, the word **FAULT** will appear on the display. If the AQ is still above 10% reflections are also being returned from something else other than the reflector. This should be rectified and a fault test performed again until AQ drops below 10%.

2.6.2 Fire Test

Having completed the fault test the fire test confirms the functionality of the beam. Having just covered the reflector completely for the fault test now let the beam recover to its normal state and then cover half the reflector, in effect restricting the returned signal to 50%, the beam should then fall into a 'fire' condition (after 10 seconds).

Once you have successfully completed both tests your ESP FIREbeam is commissioned. You can now fine tune your beam to suit the environment if needed. Look through the following menus to see adjustments that can be made.

© 2011 Hochiki Europe (UK) Ltd.

3 Screen and Menu Systems

3.1 Home Screen

NORMAL



This is the screen you would normally see when the beam is commissioned.

FIRE



The air quality level has fallen below the fire threshold setting.



If alarm is set to latching and you need to reset from fire press **enter** to see this screen and press **enter** again to reset and return to the normal screen.

This can also be reset by dropping the power to the beam for 5 seconds. If set to auto reset it will reset to normal automatically.

FAULT



The beam path has been fully blocked within 1 second (used when fault testing in commissioning.

ERROR



No communication with the controller. This could be that the flying lead is not connected, or that the head is not connected to the controller. This can be checked by reading the resistance across the black and grey terminals, if connected it should read 110ohms, if not connected at one end this will read 220ohms.

ALIGN



This screen will appear when the beam is performing a self alignment, normally because of building movement.

DIRT COMP

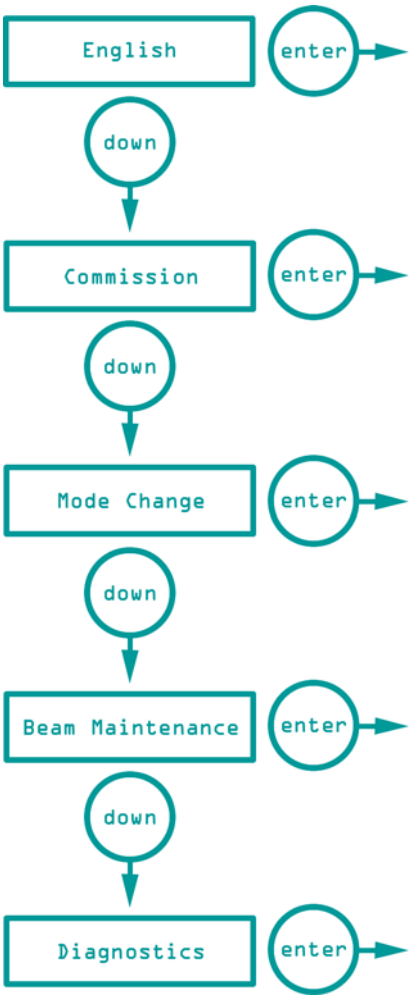


This is due to the compensation for dirt build up reaching its maximum - FAULT or FIRE LED may be flashing.

© 2011 Hochiki Europe (UK) Ltd.

3.2 How To Use the Menu System

Press **enter** to go into the menu system, then press **down** to go through the main menu options:



Select this option to change system language

Select this option to commission the ESP FIREbeam

Select this option to make all changes and adjustments to the beam

Select this option to carry out routine maintenance

Select this option to access power and temperature headings

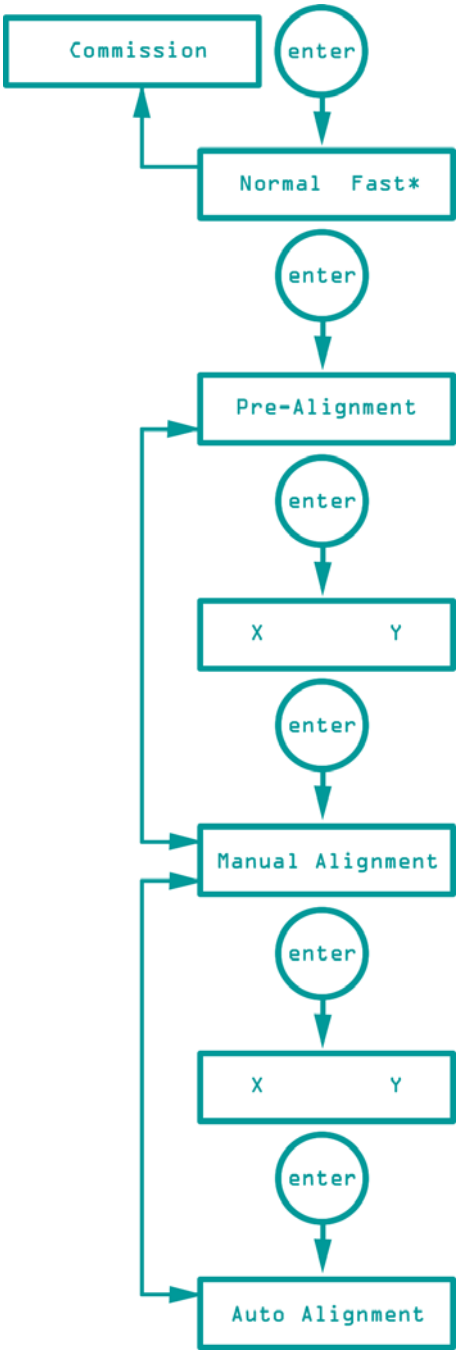
© 2011 Hochiki Europe (UK) Ltd.

3.3 Individual Menu Items



3.3.1 Language

The language is factory set to English as default. If this is okay press **enter** to continue to commissioning or **up** to return to the home screen. To change the language use the **right** and **left** keys to change to your preferred language and press **enter** to confirm your choice – you will then continue in the language of your choice. Languages currently available are: English, Dutch, Italian, French, Spanish, Czechoslovakian and German.



3.3.2 Commissioning

Press **enter** to go into the 'Commissioning' menu and access the sub menus.

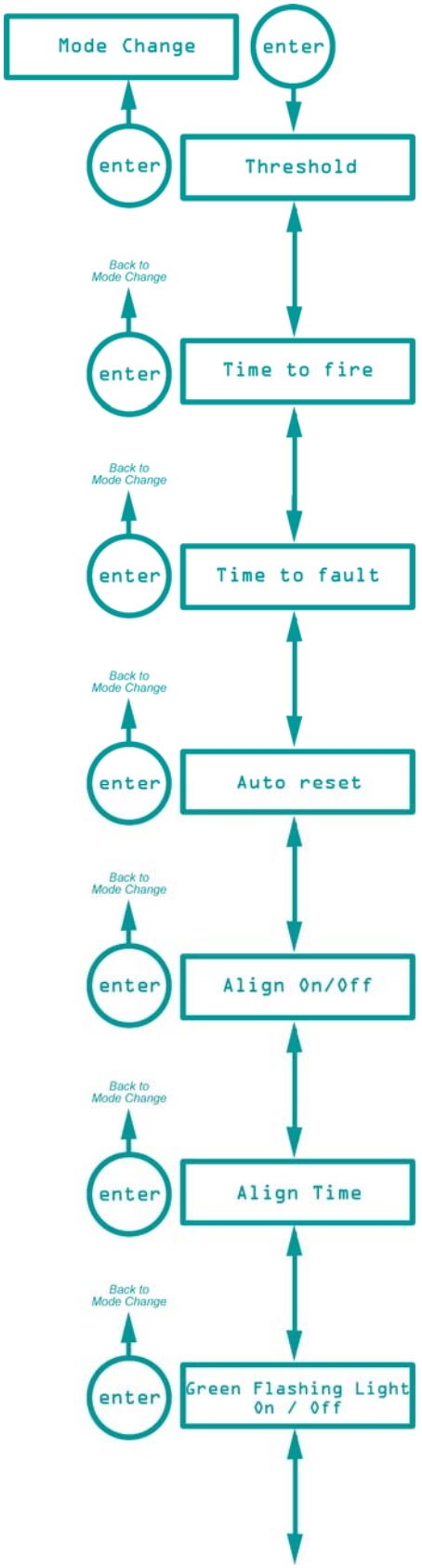
In Commission Speed, pressing **right** or **left** changes between normal and fast. It is recommended in most cases to use fast mode (in normal mode the system uses 3.5mA, in fast mode it uses 17mA). If you are commissioning more than one beam at a time and the system cannot support the extra draw it may be necessary to use normal mode to prevent excessive current draw. Fast mode allows four times faster motor response and it may be quicker to commission each beam in turn. Once commissioning is complete the ESP FIREbeam will automatically revert to normal low power mode - (3.5mA).

Press **enter** here to start pre-alignment. In pre-alignment you should ALWAYS COVER THE REFLECTOR. Starting at 10% power and 10% receiver sensitivity, the receiver sensitivity will automatically increase to a maximum of 100% then the output power will increase. These settings will automatically stop when a received signal strength reaches 6% - this received signal is the returned strength of the output signal without a reflector (if no return signal is received the beam will reach full power and the screen will say Pre-Align - complete). If you don't receive high enough output power and receiver sensitivity readings this will usually be because you are receiving a reflection from an object nearby - use the left, right, up and down keys to avoid the obstruction. When happy with your readings press enter and confirm by pressing the right button, this will take you to manual alignment - if you wish to abort Pre-Align press the left button.

Press **enter** to go into manual alignment - NOW THE REFLECTOR CAN BE PLACED OR THE COVER CAN BE REMOVED. You should see a large jump in signal strength. If no jump is seen use the X and Y keys to locate the reflector (the better the single strength the better the beam is aligned) try to achieve a figure of around 100% or over for optimum auto alignment times - you must achieve signal strength over 40% to start auto alignment. Press **enter** to okay this and go to auto alignment.

Press **enter** to start auto-alignment. The beam will calibrate its power and search for the edges of the reflector – adjusting its power as it aligns itself onto the reflector. Once it has found all four edges twice it will then centre itself on the middle of the reflector and the screen will say **align complete**. Press enter to return to the home screen. If you see **align aborted** this means something has crossed the beam path of the received signal and the signal has dropped out. Press **back** / **left** to return to auto alignment.

© 2011 Hochiki Europe (UK) Ltd.



3.3.3 Mode Change

Here we can make changes to how the beam behaves. Press **enter** to go into the 'Mode Change' menu and access the sub menus.

Threshold - use the **right** and **left** keys to increase or decrease the beams sensitivity. It is factory set at 35% (meaning the received signal has to drop by 35% to trigger the fire relay. This sensitivity can be adjusted between 25% (sensitive) and 50% (less sensitive). Press **enter** to return to 'Mode Change' or **down** to go to 'Time to Fire'.

Time to Fire - you can adjust how long the beam has to be in fire before the fire relay is triggered. This is factory set at 10s, you may want to increase this if there is something that may momentarily obscure the beam path (birds/forklift truck etc). This can be adjusted between 2 and 30 seconds by using the **right** and **left** keys. Press **enter** to return to 'Mode Change' or **down** to go to 'Time to Fault'.

Time to Fault - you can adjust the time to fault between 2 and 60 seconds (factory set at 10 seconds). For a beam to go into fault the beam path must be totally blocked within ONE second. By using the **right** and **left** keys. Press **enter** to return to 'Mode Change' or **down** to go to 'Auto Reset').

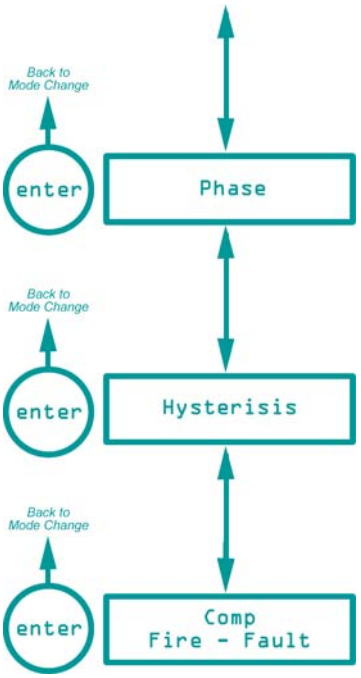
Auto Reset - the beam is factory set to auto reset when the received signal raises above the fire threshold hysteresis. This can be set to latching if your system requires this. Change by using the **right** and **left** keys. Press **enter** to return to 'Mode Change' or **down** to go to 'Align On/Off'.

Align On/Off - you may want to turn the auto alignment function off, for example, in an environment that often gets filled with welding smoke, the auto align function kicks in when the received signal drops below 90%, the point that the beam automatically checks for building movement. The beam will try to align through the smoke which could be a problem if it is unable to see the edges of the reflector. Use the **right** and **left** keys to turn off and on. When turning this function off extra care should be taken to ensure that the beam head is on a sturdy fixing, in other words, a brick wall or major structural steel. Auto alignment will still function in commissioning. Press **enter** to return to 'Mode Change' or **down** to go to 'Align Time'.

Align Time - this is factory set to 4hrs, you can adjust this, by using the **right** and **left** keys, between 0 to 12 hours depending on your environment. Press **enter** to return to 'Mode Change' or **down** to go to 'Green Flashing Light On/Off'.

Green Flashing Light On/Off - you can turn the green flashing LED, located on the head and controller, on or off using the **right** and **left** keys. This is a useful way of identifying the beam head you are working with. Press **enter** to return to 'Mode Change' or **down** to go to 'Phase'.

© 2011 Hochiki Europe (UK) Ltd.

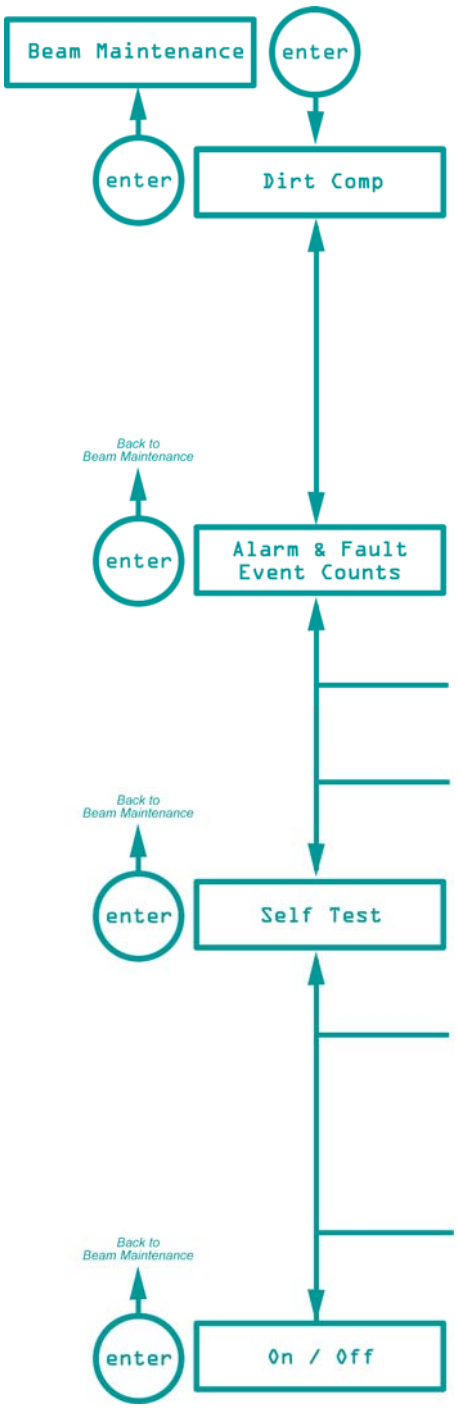


Phase - When using multiple beams that face each other the beam output signals could phase together and can cause unreliable readings, by setting each beam to phase differently alleviates this problem. Use the **right** and **left** keys to give each beam a different phase pattern (length between output beam sample times) you can choose between 0 (default setting) and 6. Press **enter** to return to 'Mode Change' or **down** to go to 'Hysteresis'.

Hysteresis - Changing the hysteresis will change the delay in returning from a fire state back to a normal state. For example, the beam is factory set at 15% so if the beam falls into fire at 65% (35% threshold) it has to recover 15% to 80% before it returns to normal. This action prevents small fluctuations in returned signal causing the beam to fall in and out of a fire state. This can be adjusted between 1% and 40% by using the **right** and **left** keys. Press **enter** to return to 'Mode Change' or **down** to go to 'Comp Fire – Fault'.

Press **enter** to return to 'Mode Change'.

© 2011 Hochiki Europe (UK) Ltd.



3.3.4 Beam Maintenance

Press **enter** to go into the 'Beam Maintenance' menu and access the sub menus.

Dirt Comp - This screen shows how much the beam has compensated for dust build-up on the beam head and reflectors, ALWAYS take a note of this value as part of your routine maintenance to see any build-up pattern. If you see figures above +50% you should clean both the lens face and the reflectors (once cleaned you should instigate an auto alignment to re-calibrate the beams settings). It is possible that you may see a negative number here, this can happen when the ESP FIREbeam has been commissioned in a 'dirty' atmosphere such as builders dust which, once cleared, the beam then compensates for. To reset, perform an auto alignment to re-calibrate the beam. Press **enter** to return to 'Beam Maintenance' or **down** to go to 'Alarm & Fault Event Counts'.

Alarm & Fault Event Counts - Here we can see how many times the beam has gone into fire or fault since the beam was commissioned or since the event log was last cleared.

Press **enter** to clear events.

Press **left / back** to return to 'Beam Maintenance' or **down** to go to 'Self Test'.

Self Test

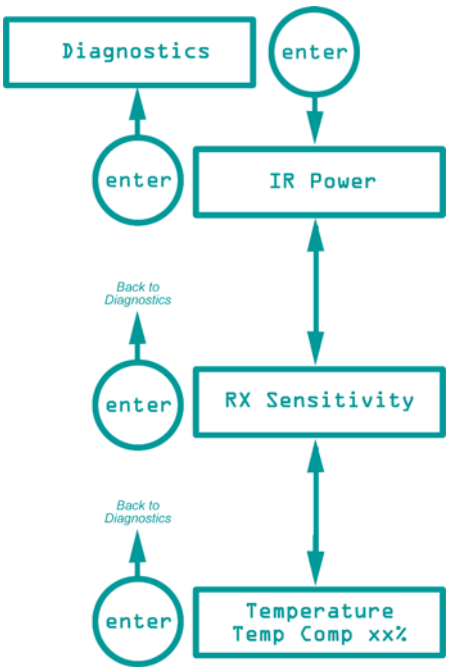
Press **enter** to perform a fire test, this works by running a test algorithm to lower the output power, the receiver sees this as obscuration. When the received signal drops below the threshold point the beam will trip the fire relay – this relay will not trip until the time to fire has passed which could be anything between 2 and 30 seconds.

Press **left / back** to end test, the fire test should show on the panel. Press **left / back** to return to beam maintenance or **down** to go to 'On/Off'.

On/Off

If something needs to be maintained in the beam path use the **right** and **left** keys to turn the system on and off. This will show as a fault on the panel. Press **enter** to return to 'Beam Maintenance'.

© 2011 Hochiki Europe (UK) Ltd.



3.3.5 Diagnostics

Press **enter** the 'Diagnostics' menu and access the sub menus.

IR Power

This screen shows the amount of output power that is being transmitted. It can be increased or decreased by using the **right** and **left** keys. Press **enter** to return to 'Diagnostics' or **down** to go to 'RX Sensitivity'.

RX Sensitivity

This screen shows the receiver sensitivity and can be changed by using the **right** and **left** keys. Press **enter** to return to diagnostics or **down** to go to 'Temperature'.

Temperature

Here you can see the temperature at the beam head and the amount of compensation being made for temperature (no adjustments can be made here).

Press **enter** to return to diagnostics.

© 2011 Hochiki Europe (UK) Ltd.

4 Technical Specifications

Electrical Specifications		
Supply Voltage		17 to 41 Vd.c.
Supply Current		3.5mA (constant current) in all operational states
Constant Current		17mA (constant current) in fast commissioning
Environmental Specifications		
Temperature		-10°C to +55°C
Humidity		10 to 95% RH Non-condensing
Ingress 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 0.55g
40KIT80 Mid-Range Reflector		293mmH x293mmW x 5mmD, Weight 0.8Kg
80KIT100 Long Range Reflector		394mmH x 394mmW x 5mmD, Weight 1.8Kg
Adapter (mounts the Beam Head onto unistrut)		270mmH x 250mmW x 5mmD, Weight 0.6g
Optical Specifications		
Optical Wavelength		870nm
Maximum Angular Alignment		±5°
Maximum Angular Misalignment		Beam Head ±0.3°, Reflector ±2° (static not auto-aligning)
Operational Specifications		
Protection Range	ESP 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, Head Red Flashing LED, 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. 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 1 Second, Head Yellow Flashing LED 1 Second, 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, Programmable on/off, Head Green Flashing LED Programmable on/off
Auto-align/Beam Contamination Compensation		Auto-align during normal operation if obscuration drops below 90% for the duration of the align time set (doesn't effect normal operating mode) Beam Contamination Compensation 4 hour monitoring. Compensation data available at the controller

© 2011 Hochiki Europe (UK) Ltd.