fireray®

Fireray 3000 & 3000 Exd
Technical notes

System Controller notes:

There has only been one version of the F3000 System Controller.

There are two common issues on the System Controller. The first are missing segments on the LCD display (this is most likely due to a poorly fitted 'Zebra Strip' which joins the LCD to the main PCB. The second issue is E-01 on one of the two channels. This is usually caused by the installer connecting +24V to either channel 1 or 2 instead of the power supply connector. If this happens, that channel cannot be used, but the other channel should still work. A working channel should measure roughly 7.5V.

If an F3000 is being installed to replace an existing (but earlier type of End to End Beam), then all the existing cables, power supplies and connections to the Fire Panel can be used. The only thing that will be different is that the older End to End Beams had extra connections for the RX. Any unused cables on the F3000 RX should be 'doubled up' and not left unconnected.

Transmitter (TX) notes:

Transmitter:

The Transmitter has a +24V supply and in 99% of all installations is not connected to the System Controller although there is a supply connector fitted for it the System Controller. It can be identified by its Clear Lens.

The only real issue there is with the Transmitter is the 'Power Pot'. This is used to increase or decrease the Infra-Red signal to enable the Transmitter.

This is very important, there is only ¾ of a full turn on the Power Pot. If the engineer over adjusts the Power Pot (usually in the in the +ve direction) and enters the ¼ of the pot where there is no resistance, then the Transmitter will not send out an Infra-Red signal. This means the F3000 will not align and appear to be faulty.

If the Power Pot is over-adjusted, the pot will not be broken, but you will not know where the Maximum and Minimum position is. The solution is as follows:

1. Power the Transmitter with a +12V battery and hold the Transmitter next the Receiver (I appreciate this can be difficult, but it's the only way to do it).

2. Adjust the Power Pot to give 180 on the Alignment Value display on the Controller. Adjust the Power Pot +ve until the Alignment Value drops to 0, then back the Power Pot off to give 180. Doing this ensures that the Infra-Red signal will be at its maximum strength.

Note: There has not been an issue with the Power Pot being set to minimum, but the process would be the same as above, just turn the pot -ve until you get 0 Alignment Value, then turn the pot +ve until you get 180 then stop.

If the engineer has a lot of F3000s to install at long range (80M-120M), I would advise to 'pre-commission' at low level. You can do this by connecting the RX and TX to the Controller with short cables and then Align using the process described above.

Receiver (RX) notes:

There aren't any issues with the Receiver other than targeting the Transmitter with the Laser (note the TX doesn't have a laser). This is done by moving the thumb wheels on the RX. If there is excessive background light, then it may be difficult to achieve this. There isn't a solution to not being able to see the laser as there is not a 'manual alignment function' on the F3000 unlike the F5000. If the engineer cannot find the laser, they will just have to persevere.

Error Codes Explained:

1. E-00: (Code Green)

AIM not recognised. There is a comms failure between the AIM (Analogue Interface Module, Daughter Board PCB) and the Main PCB. If this occurs, there is nothing the engineer can do other than power down and back up again. If the fault re-occurs, a new System Controller will be required.

2. E-01: (Code Amber)

There is a comms failure to the Receiver (RX). Check wiring is working. You should be getting a voltage of approx. 7.5V at the RX Channel you are testing, and this should be at the RX at high level too.
If the engineer has connected the +24VDC supply voltage to the Channel by mistake, this is will destroy that channel, but the second one should still work, and this can be used instead until the Controller can be replaced.

If there is 7.5V at the Controller on the Channel you are testing and at the RX at high level, then the RX is faulty. (This is very rare).

3. E-02: (Code Green)

This should only occur at the Commissioning stage and means that there is comms between the Controller and RX, but the 'Find' function has not been run.

4. E-03: (Code Amber)

This means that the AGC (Automatic Gain Control) has been reached. The F3000 can still respond to a Fire condition but may also drift into a 'Fire' condition if the problem is not rectified.The AGC limit is +/- 50. The AGC circuit always tries to keep the Beams signal strength at 100%. If the signal goes up or down, the AGC increases or decreases the signal accordingly.

A +ve AGC value should be more common as this means the Beams signal has dropped either due to building movement/poor installation, dirt building up on the lens or something slightly blocking the Beam.

A -ve AGC value can be due to poor initial alignment of the Beam (and the Beam as moved into a better position due to some form of movement), interference from another Beam or a reflective surface 'bouncing' IR into the RX can cause the signal to go up.

Note: Check for any potential reasons for the E-03 error and then re-align the Beam.

5. E-04: (Code Amber)

The TX and RX have become out of sync with each other (when the TX transmits a signal, the RX should receive it). This can be due to a fault at either the TX or RX, the TX may not be transmitting correctly, or the RX may not be receiving the Infra-Red signal correctly.

Assuming the power supply to the TX is working correctly, adjusting the Power Pot on the TX has cured the problem in the past. If the voltage to the RX from the Controller is 'low' (it should be approx. 7.5V), this is likely to be the problem.

Note: If the Controller has a spare RX Channel, the engineer can swap the RX from one channel to the other (The TX is independent from the RX and doesn't need to be moved) to see if the problem moves with the RX. If it does, the RX is faulty, if it stays in position, then the Controller is faulty. It's always better to change the Controller because it's usually at low level.

6. E-05: (Code Green)

An E-05 simply means that the Beam is not aligned. If it is a 2 Beam F3000, make sure you align the correct Beam.

7. E-06: (Code Amber)

This is a 'Rapid Obscuration Fault', what it means is that the 100% signal of the aligned Beam has dropped to virtually 0% in less than 2 seconds. Realistically, this would have been caused by something blocking the Beams path or either the TX/RX being knocked out of alignment.

Note: The vast majority of our Beams are put in warehouses/distribution centres where there is a good change of a pallet being placed in the Beams path, causing the E-06 error.

8. E-07: (Code Amber)

This error is due to the Beams Signal being too high. This means that the signal is over 120% (125% being the highest value that can be displayed.

The usual cause for this is either interference from another Beam or the fact that the Beam was initially poorly aligned and the by luck (due to building movement) got a better alignment signal.

Note: As with the F5000, Beacons and strobe lights can potentially cause E-07 errors on the F3000.

9. E-15: (Code Green)

This error is due to the Signal being too low at the end of an alignment. The error is rare, if you have got an alignment value between 2 and 178, it is most likely due to the engineer not correctly accepting the alignment value (pressing the tick button whilst the alignment value is still changing is the most common reason).

10. E-16: (Code Green)

This error is due to the Signal being too high at the end of an alignment. As with E-15, this error is rare and occurs at the end of an alignment. The cause is due to the Alignment Value (which should be between 2 and 178) still fluctuating when the 'tick' button was pressed. When you have the highest Alignment Value you get, let the signal stabilise before pressing 'tick'.

11. E-18: (Code Amber)

This means there is a Short Circuit on the cable between the Controller and the RX (or on the Controller or the RX). Disconnect the cable between the Controller and RX. Measure the resistance on the Controller; is there a short circuit, yes or no. If yes, the Controller is faulty, if no, the RX or the cable is faulty.

Note: This can be caused by connecting +24VDC to the RX channel by mistake.

12. E-19: (Code Red)

I've not had this fault. Sun, lighting (Beacons, strobe lights) and other Beams would be the potential cause of this fault.

13. E-20: (Code Red)

This is due to a very strong Infra-Red source (most likely the sun) shining directly onto the RX. This error will clear as soon as the sun passed the RX.

Note: The TX is not affected by any light source as it only sends out signal.

14. E-21: (Code Amber)

This means that the +24VDC supply has dropped below +12VDC. However, this rarely happens in the field. What is the usual cause of this fault is a 'Brown Out'. This is caused by the power going off and coming back on straight away.

If you have E-21 on the screen, but the supply voltage is OK, power the Controller down for 2 minutes, then power back up. This should clear the E-21 fault.

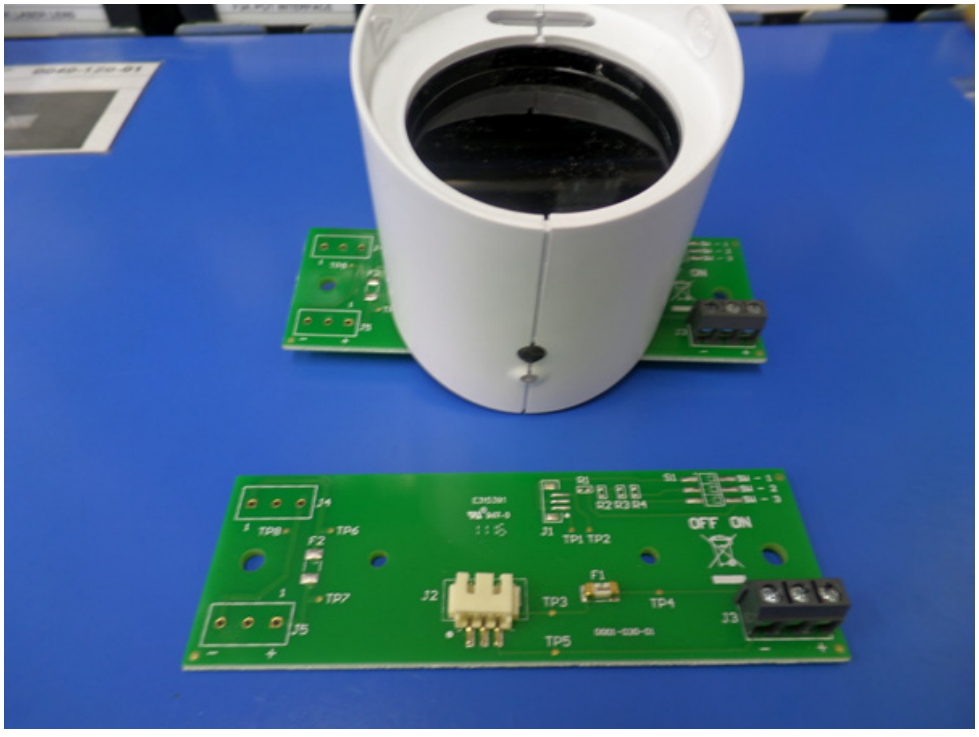
F3000 ExD Notes:

The F3000 ExD is that same Detector as the standard F3000 but with the TX and RX put into an ExD housing. This means that the TX and RX can be placed in a Zone 1 or Zone 2 application.

The error codes and their resolution are the same as the standard F3000.

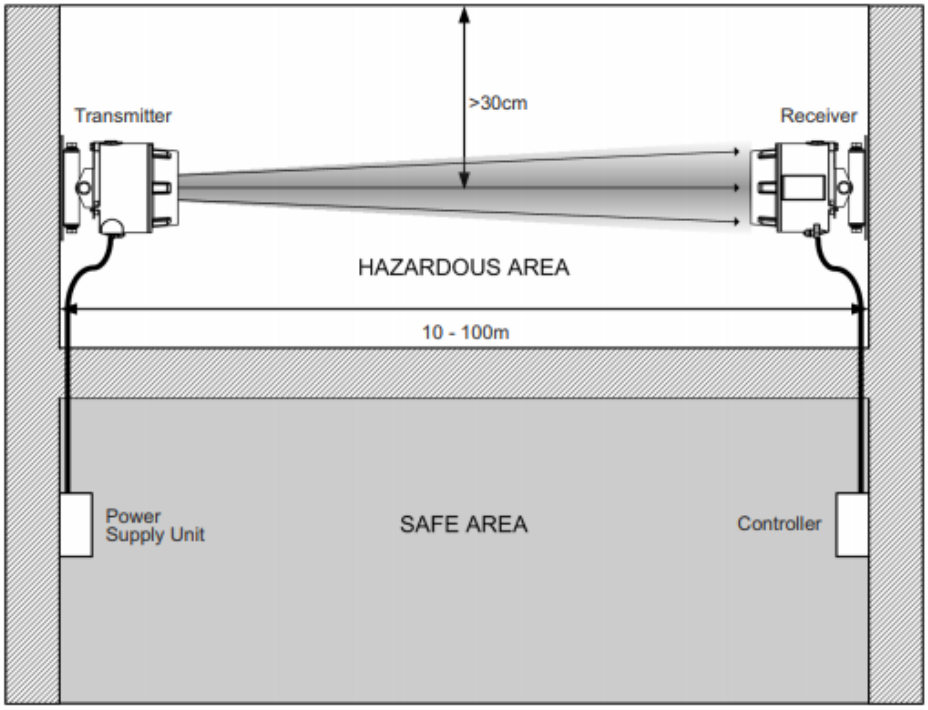
If there is no comms between the RX and the Controller, this is most likely due to F1 having blown. If this happens, there is nothing we can do other than replace the RX. The most likely reason for F1 blowing is the engineer connecting +24VDC to the RX channel.

Note: The range is between 10M and 100M.



Wiring:

The System Controller and the Power Supplies must be placed in the 'Safe Area' as per the diagram.



Only the ExD TX and ExD RX can be placed in the Hazardous Area.

Transmitter (TX):

You select the range using the switches shown below. For ease of alignment, it is best to use the 75M to 100M setting to help find the RX during the alignment.

TRANSMITTER:

IMPORTANT: select correct DIL switch setting for distance

SWITCH			Distance in Metres
SW - 1	SW - 2	SW - 3	
OFF	OFF	OFF	75 - 100
OFF	OFF	ON	50 - 75
OFF	ON	ON	25 - 50
ON	ON	ON	10 - 25