Thermitrack – wiring and installation guide Issue 1.10 3 Mar 2009
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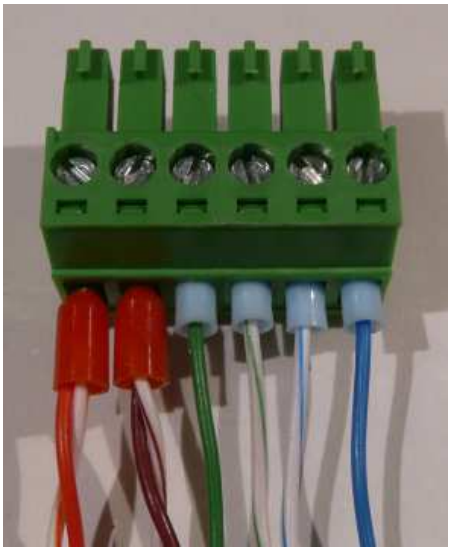
Warnings

Avoid touching the lens – the lens is an expensive part is made of germanium with a special coating, and can easily be scratched. Avoid exposure to direct sunlight, as this may damage the sensor.

All wiring and installation must comply with any local regulations governing electrical and fire safety. Some installations may require the use of low smoke/zero halogen (LSZH) type cables – consult the local site manager for guidance.

Wiring



A single CAT5/CAT6 type cable is normally used for power and data to the camera. Connection is via a 6 way 3.5mm plug-in terminal block (supplied).
The power pins use two cores each to minimise voltage drop.
The reccommended wiring colour scheme is shown. The same wiring scheme is used at the camera and the RS232/USB interface ends.
Plug wiring, viewed from left to right with plug oriented as shown on right.

Pin	Colour(s)	Function
1	Orange and Orange-White	Power +9..15VDC
2	Brown and Brown-white	Power and signal ground
3	Green	RX+
4	Green-White	RX-
5	Blue-White	TX-
6	Blue	TX+

It is strongly reccommended that bootlace ferrules are used to prevent the wires snapping due to repeated movement during installation, and reduce the risk of stray strands shorting. This is particularly important when using solid-core cable. Recommended ferrule sizes are 0.25mm for the single cores, and 0.5mm for the double ones. These ferrules may be crimped using pliers if the correct tool is not available.

If a pluggable connection is required part-way along the cable run, a convenient method is to use a ready-made Cat5 cable, cut in two with the cut ends wired into the terminal block plugs, and the RJ45 plugs connected using an inline RJ45 coupler. Other standard RJ45 network connector hardware may also be used, however any RJ45 connectors should be clearly marked as not being network connectors, to avoid accidental connection to ethernet hardware, which may be damaged by the power supply carried on the camera cabling.

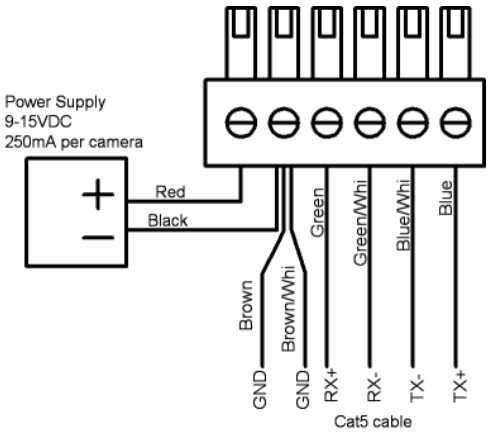
Part Sources	Rapid www.rapidonline.com	Farnell uk.farnell.com	RS rswww.com
0.25mm ferrule	33-1360 (pk100)	997-2196	157-1200
0.5mm ferrule	33-1364 (pk100)	120-9669	458-746
Spare 6 way Plug	21-1916	-	-
RJ45 coupler	19-8136	127-9669	340-9624

Cable runs up to around 50 metres should be able to use Cat5 cabling for power. When using the USB interface with long cables, it may be necessary to use its external power option, as the supply voltage from the USB power converter has less headroom to accommodate voltage drop.

Longer cable runs may need either separate power cabling, or a power supply local to the camera.

Connections when using external /local power supply

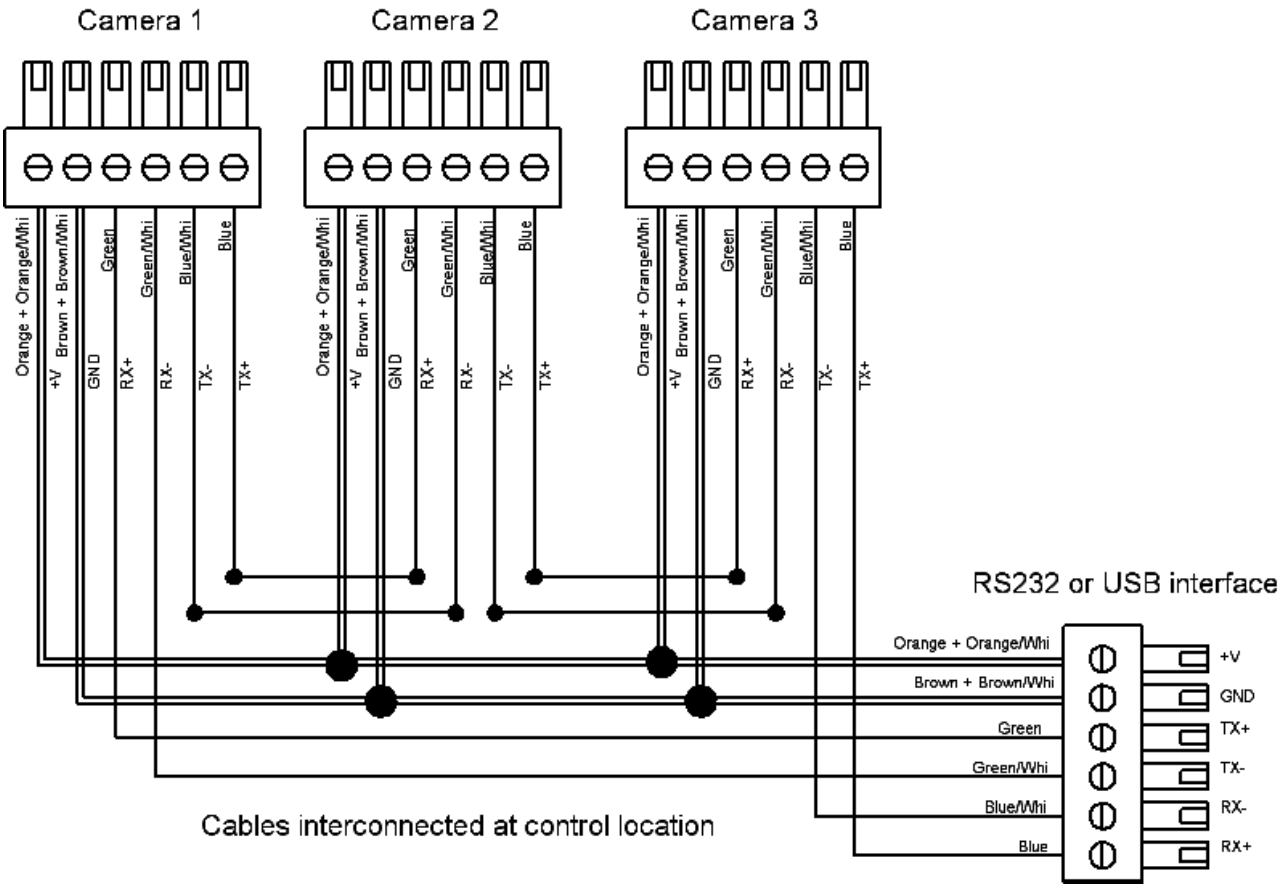
External power supplies should be regulated types, nominally 12V, and capable of supplying a minimum of 250mA per camera. A minimum rating of 1A is suggested to minimise heating and maximise reliabilty.
If the power supply used is capable of supplying more than 1 amp, it is reccomended that a fuse be fitted to the output to protect the wiring and avoid a possible fire hazard. Multi-camera installations should have a separate fuse for each camera.



Wiring for Networked configurations

Where possible, it is reccommended that a separate cable be run from the control location to each camera, as this allows more flexibility, e.g. to connect to individual cameras to monitor image data while setting up. It is strongly reccommended that you arrange suitable connectors etc. to allow individual cameras to be connected to either the host or a PC, as although it is in principle possible to set up & recover bad configurations (especially baudrates) via the camera chain, in practice this can be complicated and confusing, and it will make life a lot easier if you can check/configure cameras individually.

The wiring for a threee camera setup is shown below. The principle is the same for other configurations.



Mounting considerations

It is absolutely essential that the Thermitrack camera has a solid, stable mounting, as any movement or vibration of the camera will severely degrade the tracking performance.

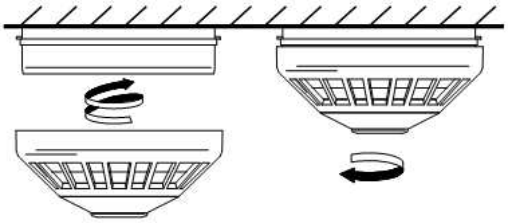
Although Thermitrack is 'blind' to all visible light sources, any moving objects in the direct field of view are likely to be seen, as their temperature will usually be different from the surroundings. This may cause false targets to be reported. Avoid pointing at things like doors, moving-head lights, curtains, fans etc. Static hot objects like incandescent lights are generally OK, even if flashing, as the rate of temperature change will usually be slow enough to not be 'seen'.

Although static or slowly-changing heat sources in the background will generally not be visible, any background features which are above body temperature may cause disruptions in tracking people moving in front of them, as the camera will see the 'warm' target suddenly turn 'cold' as it passes a background object above its temperature.

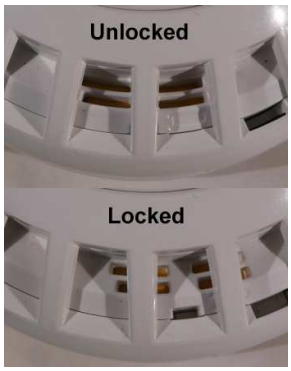
For tracking applications, an overhead mounting location is highly desirable. Offset or angled positions may be viable but this is very dependent on tracking requirements and will need to be tested. Angled or side-viewing locations will tend to pick up things like moving arms, hands and legs, generating additional targets.

For imaging applications, any mounting position is possible, although upward-facing positions run the risk of contamination/scratching of the (expensive) lens due to falling dust etc.

The indoor version has a removable base to simplify installation. To remove from the base, hold the base and twist the outer ring. The camera should then lift off the base. To re-attatch, line up the eight long pins on the camera with the holes in the base, press home, and twist to lock.

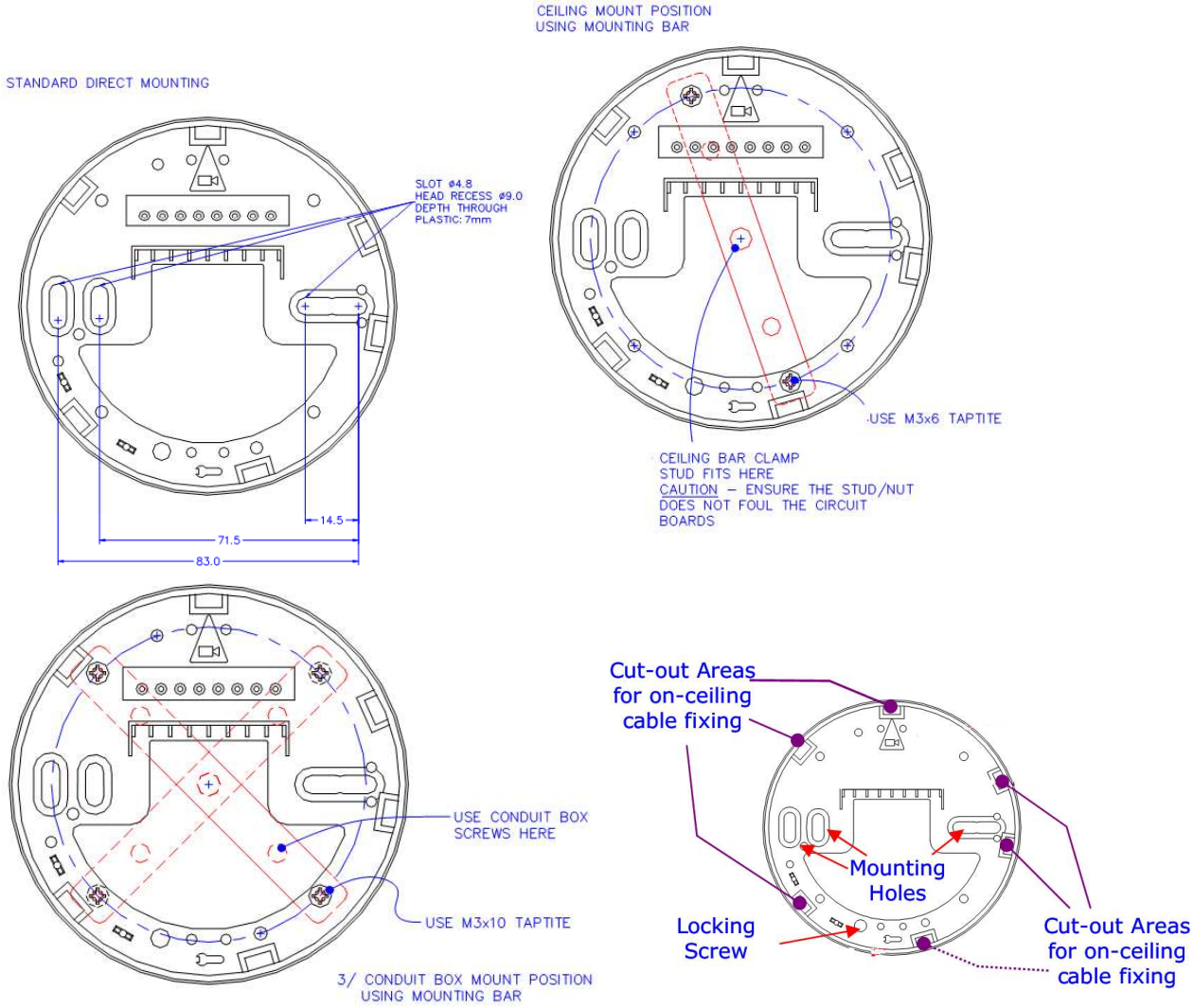


If you have difficulty locating onto the base, it could be that the ring has been moved to the locked position while away from the base.



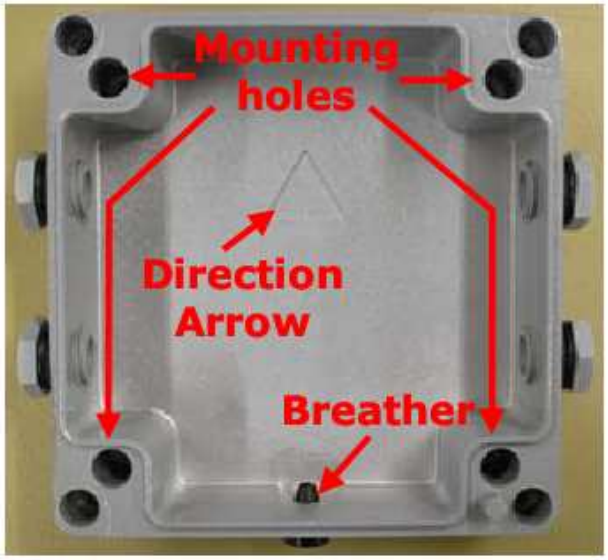
View into rear with base removed. Ensure that cabling does not press against the internal boards when installed on the base.

Mounting details – Indoor version



Mounting details – outdoor version.

Mounting holes are on a 98x98mm pitch,and are M6 threaded for rear-entry bolt mounting. Selftapping or woodscrews may also be used from the front side. The breather vent prevents condensation build-up and should not be removed or blocked. The cable entries are threaded to take M16 cable glands.



Internal view, showing connector location.