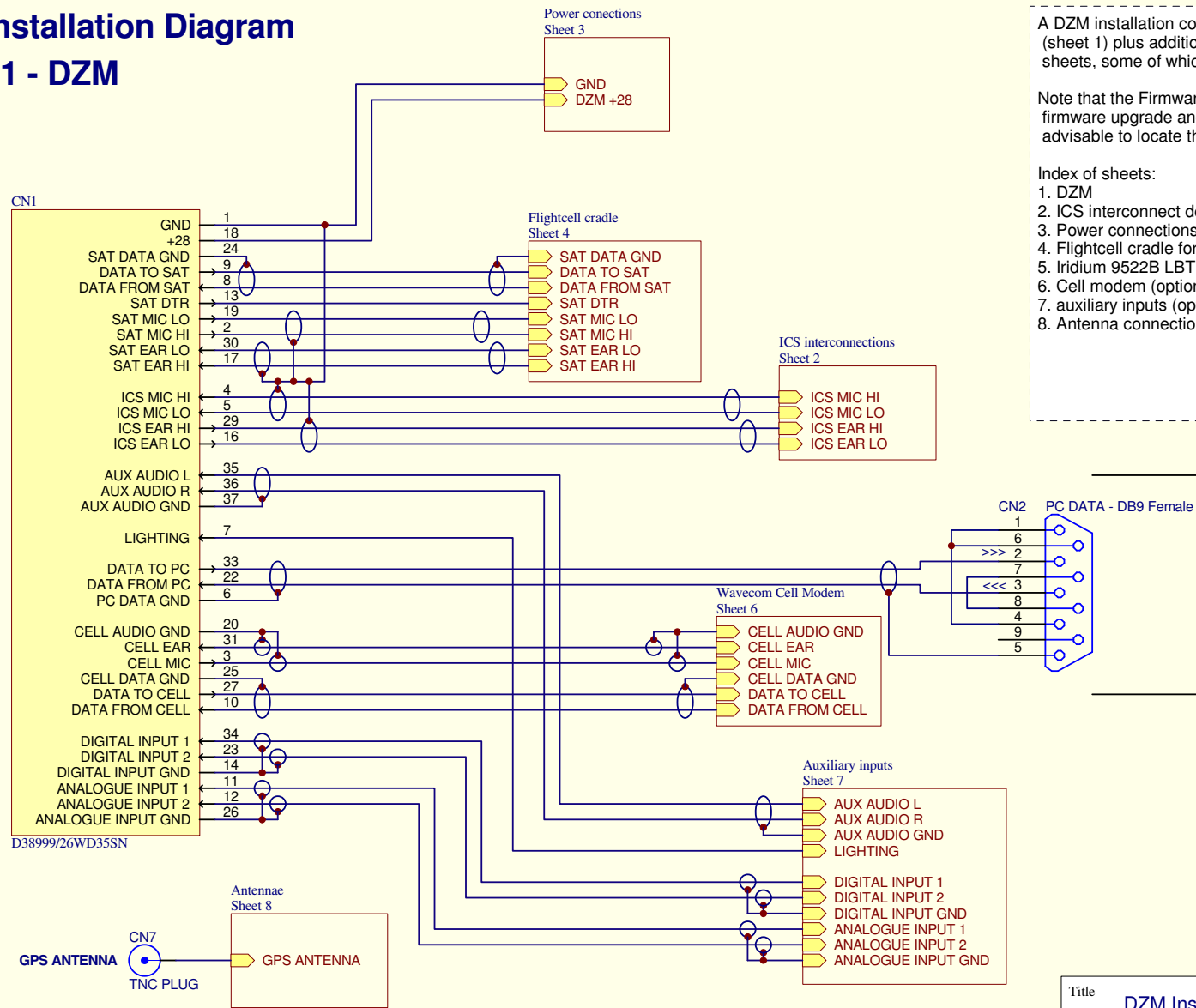


DZM Installation Diagram

Sheet 1 - DZM

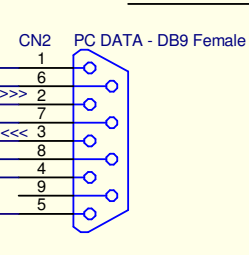


A DZM installation consists of the equipment shown on this sheet (sheet 1) plus additional equipment/wiring shown on the other sheets, some of which is optional and some mandatory.

Note that the Firmware/diagnostic port is required for in-situ firmware upgrade and maintenance purposes. It is highly advisable to locate this connector such that it is readily accessible.

Index of sheets:

1. DZM
2. ICS interconnect details
3. Power connections
4. Flightcell cradle for 9505A or 9555 satphone (optional)
5. Iridium 9522B LBT (optional)
6. Cell modem (optional)
7. auxiliary inputs (optional)
8. Antenna connections

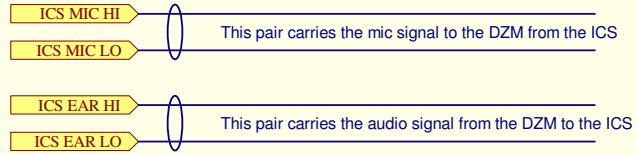


FIRMWARE/DIAGNOSTIC PORT

Title DZM Installation Diagram		
Size: A4	Number	Revision 1.2
Date 28th June 2010	Sheet 1 of 8	
File		

DZM Installation Diagram

Sheet 2 - ICS



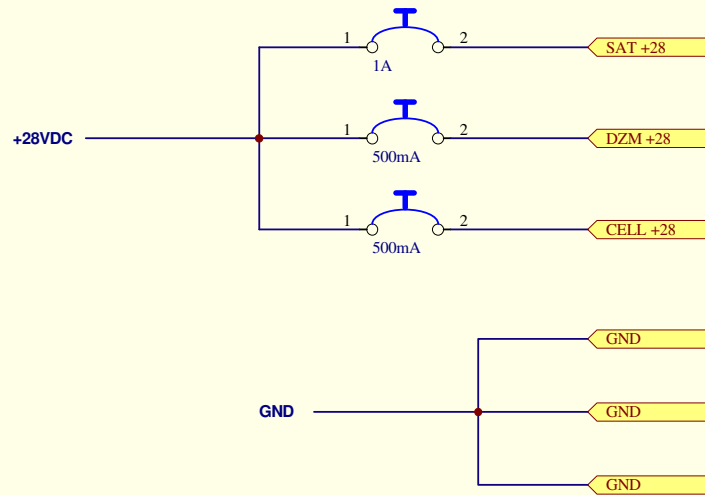
Typical installation for GMA347
23 Tel Mic Audio Hi
62 Tel Mic Audio Lo
42 Tel Audio Hi
43 Tel Audio Lo

Notes:
In order to minimise ground loops it is recommended that the cable screens are grounded at the DZM only.
The DZM does not provide a bias voltage for high-impedance microphones. In many cases this is provided by the ICS/audio panel; otherwise an alternative source of bias voltage will be required (e.g. the Flightcell Versatile Audio Module).

Title			DZM Installation Diagram		
Size:	Number		Revision		1.2
Date	28th June 2010		Sheet 2 of 8		
File					

DZM Installation Diagram

Sheet 3 - Power Connections



NOTES:

Power connections should be made using 22AWG wire.

It is acceptable to use a single (2A) fuse for the DZM, satphone and cell modem (if fitted), although this would cause loss of power to all equipment if the fuse were to fail.

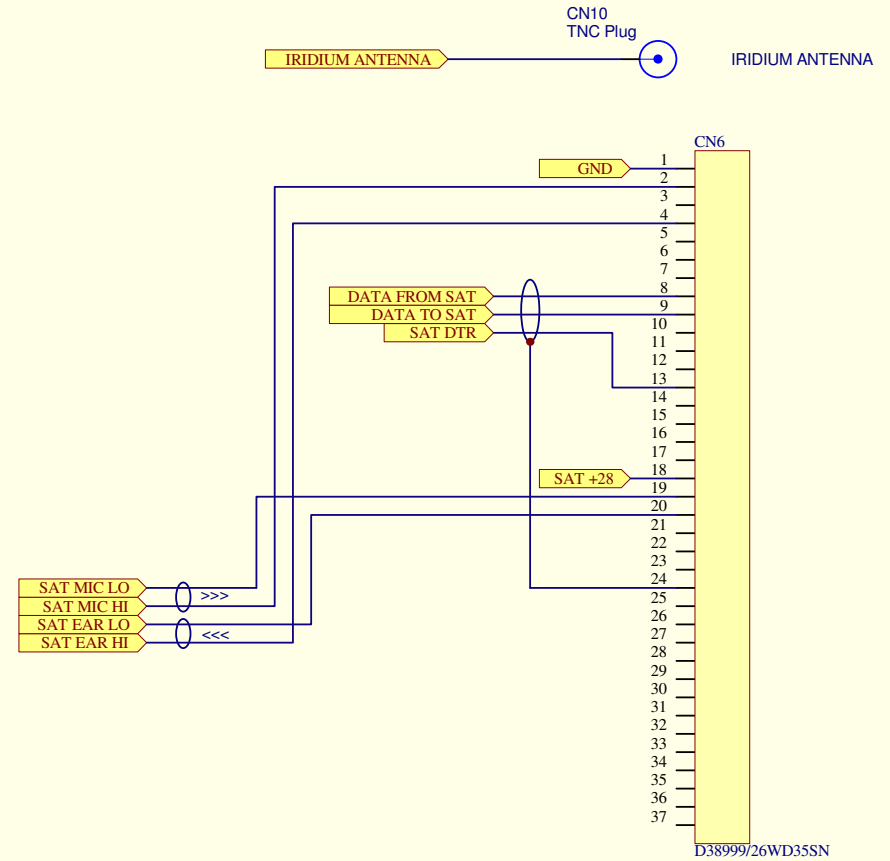
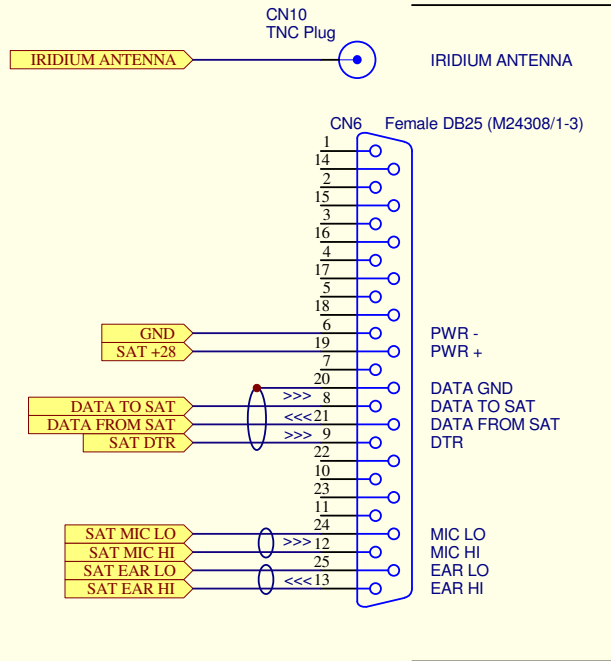
In order to minimise ground loops, it is recommended that the ground connections from the DZM, satphone and cell modem are run separately to a single grounding point, ideally the same point as used by the ICS.

It is recommended that DC power be taken from the essential systems bus, particularly if engine stop/start events need to be captured.

Title DZM Installation Diagram		
Size: A4	Number	Revision 1.2
Date 28th June 2010	Sheet 3 of 8	
File		

DZM Installation Diagram

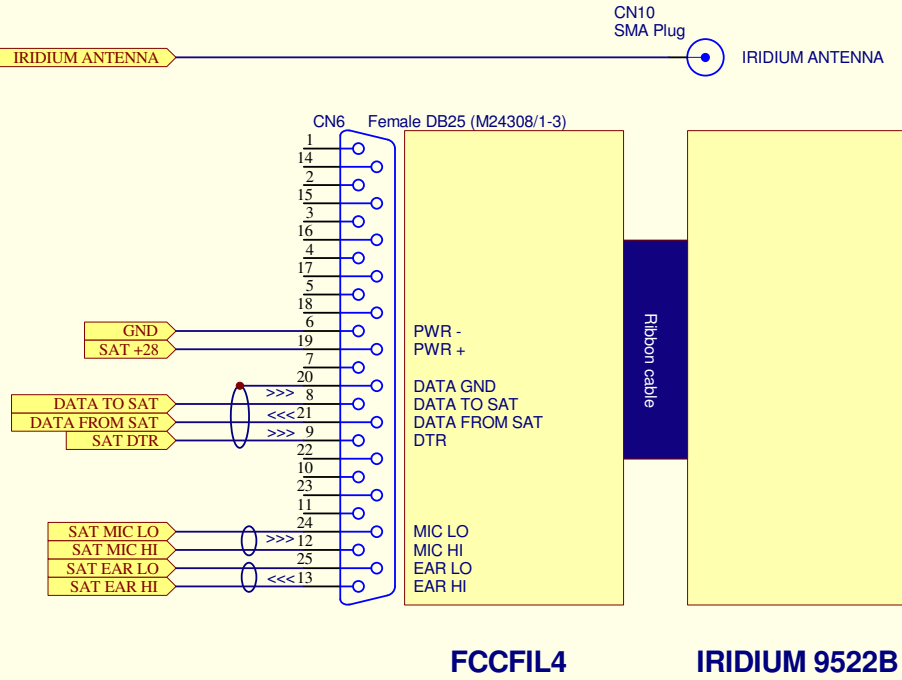
Sheet 4 - Satphone



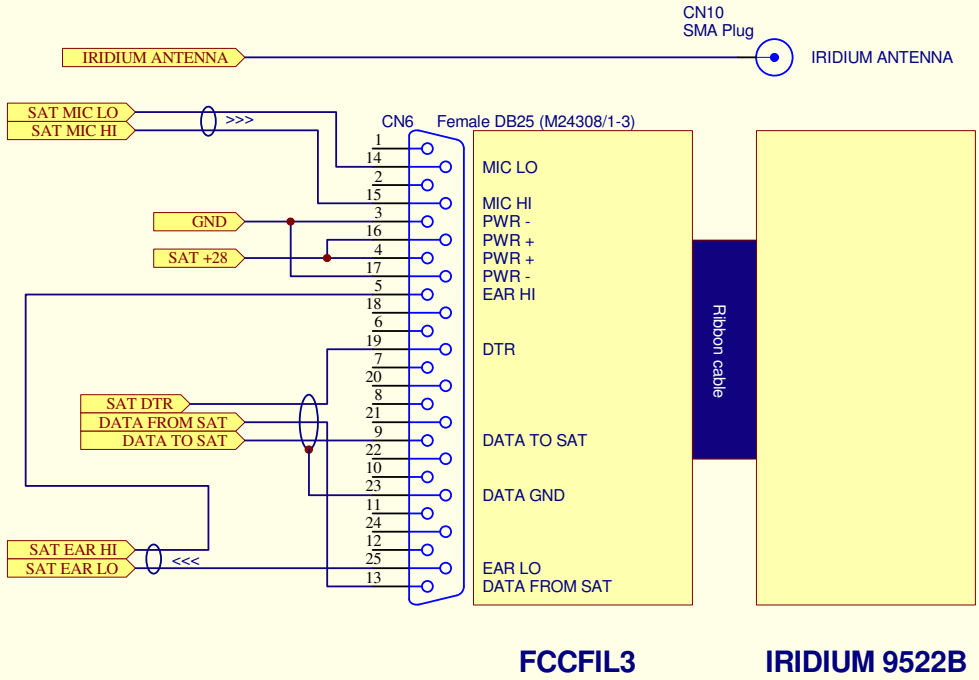
Title DZM Installation Diagram		
Size: A4	Number	Revision 1.2
Date 28th June 2010	Sheet 4 of 8	
File		

DZM Installation Diagram

Sheet 5 - LBT



Option A, using cradle pinout



Option B, using 9522A pinout

NOTES:
 The 9522B LBT does not isolate the DC supply from the audio signals; this has been found to be a major cause of noise on the audio lines and so we have developed a filter module to minimise supply noise and provide isolation. This also converts the LBT's IDC ribbon-cable connector into a D25 connector that is suitable for aviation cable.

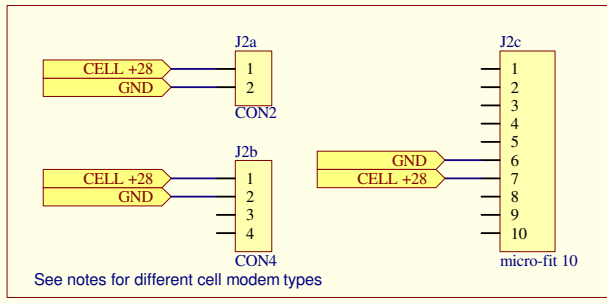
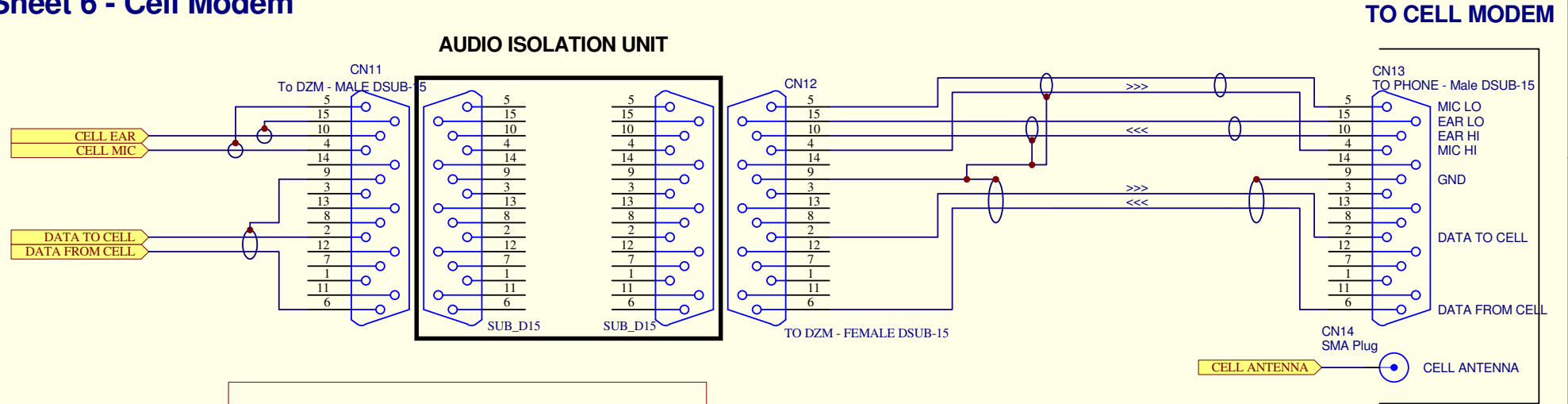
Two pinout options are available: option A as shown above uses the same pinout on the D25 as is used on the Flightcell cradles - this is recommended for most installations. For installations where an older 9522A LBT needs to be upgraded, or where backwards compatibility is required, option B is available. Therefore two variants of the filter module are available: FCCFIL4 has a cradle-compatible pinout and FCCFIL3 has a 9522A-compatible pinout.

It is recommended that 24AWG wire be used for signal connections and 22AWG for DC power.

Title			DZM Installation Diagram		
Size:	Number		Revision		1.2
A4					
Date	28th June 2010		Sheet 5 of 8		
File					

DZM Installation Diagram

Sheet 6 - Cell Modem



The supported cell modems all use the same pinout for the sub-D15 connector, however the DC power connectors are different.

Multitech CDMA modems require a 2.1mm DC power connector (J2a). The centre pin is positive and the sleeve is ground.

Wavecom Supreme GSM modems use a 4-pin micro-fit connector (J2b), which is supplied with the modem. Pin 1 is positive and pin 2 ground. The other two pins should be left unconnected.

Wavecom Xtend 3G modems use a 10-pin micro-fit connector (J2c), which is supplied with the modem. Pin 7 is positive and pin 6 is ground. All other pins should be left unconnected.



Title DZM Installation Diagram		
Size: A4	Number	Revision 1.2
Date 28th June 2010	Sheet 6 of 8	
File		

DZM Installation Diagram

Sheet 7 - Auxiliary Inputs

Auxiliary audio:

An audio source such as a CD or MP3 player can be connected. The stereo input is mixed into a monophonic signal and the level can be adjusted in the DZM, allowing it to accept audio from a wide range of equipment.

Lighting input:

If there is a requirement to dim the DZM display backlight along with other cockpit lighting, a reference voltage may be fed into this input. Different aircraft typically use either a 0-28VDC or a 0-5VAC range. The DZM is able to accept either of these depending on firmware configuration.

Collective and Oil Pressure Switches:

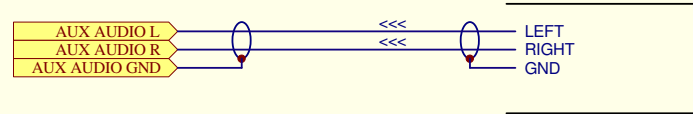
If these are not fitted then ensure that the functions are disabled in firmware, under the tracking setup menu. The digital inputs have a voltage threshold of about 600mV. If this level can not reliably be achieved then the analogue input can be used, which has a threshold of approximately 2.0V. Note, however, that the analogue input does not have an internal pull-up, so an external pull-up is required.

The use of a collective switch is recommended for helicopters, so that the DZM can differentiate between hovering and landing.

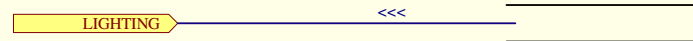
If an accurate record of engine hours is needed, the oil pressure switch (or other suitable sensor) can be used - this generates 'engine start' and 'engine stop' tracking events.

If these inputs are used, they need to be enabled in the DZM firmware via the tracking setup menu.

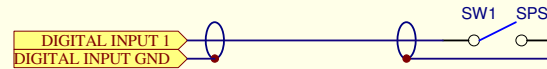
The analogue and digital inputs can be used for other purposes depending on the firmware configuration; contact Flightcell for advice on any specific applications.



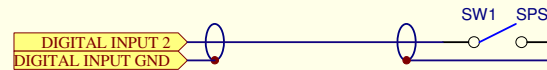
**FROM AUXILIARY AUDIO DEVICE
(OPTIONAL)**



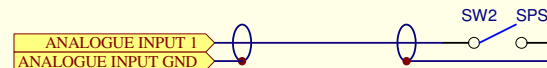
OPTIONAL LIGHTING INPUT (0 - 28VDC or 0 - 5VAC)



Helicopter Collective Switch



Oil pressure switch (digital - see notes)



Oil pressure switch (analogue - see notes)

Title			DZM Installation Diagram		
Size:	Number	Revision		1.2	
Date	28th June 2010	Sheet 7 of 8			
File					

DZM Installation Diagram

Sheet 8 - Antennae

NOTES:

The Iridium/GPS antenna should be placed horizontally on the upper surface of the airframe such that it has an unobstructed view of the sky. The cell antenna should be placed on the underside of the aircraft; orientation is less critical.

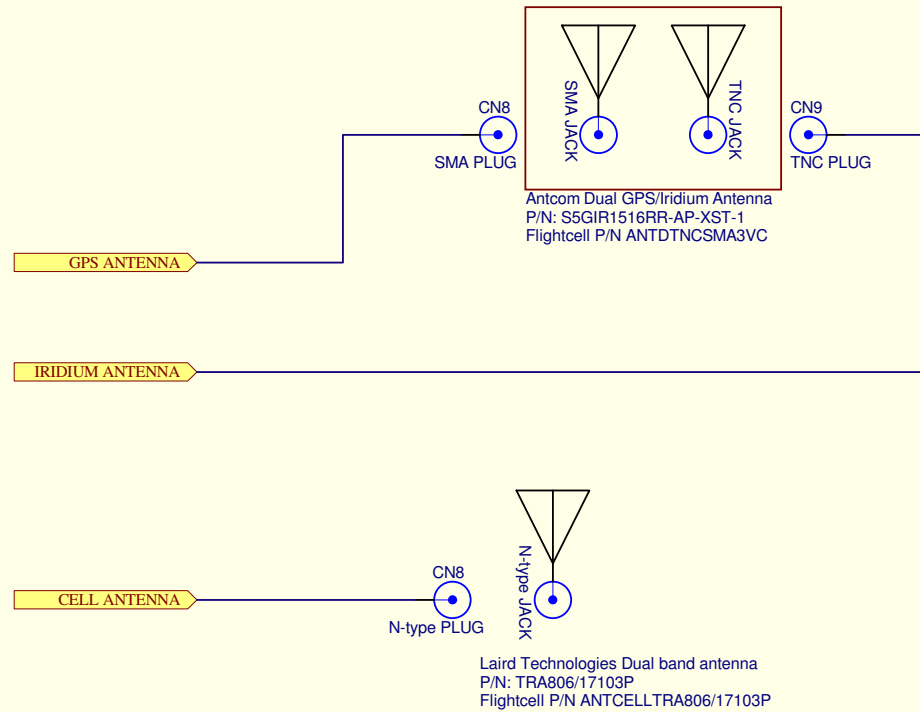
Selection of coax cable depends on the lengths of the cable runs.

Iridium specify that the maximum signal loss in the cable should be 3dB at 1645MHz, so maximum cable lengths are as follows:

- RG174 - 2m
- RG58C/U - 3m
- LMR200 - 6.5m
- RG58-9006 cellfoil - 6.5m
- RG213 - 8m
- LMR400 - 17m
- LMR600 - 26m

The GPS antenna and cell modem are more tolerant of cable losses, so the above lengths will give at least adequate performance.

Where practicable the antennae should be placed well clear (at least 500mm and preferably 1000mm) from any other antennae operating at similar frequencies.



Title			DZM Installation Diagram		
Size:	Number		Revision		1.2
Date	28th June 2010		Sheet 8 of 8		
File					