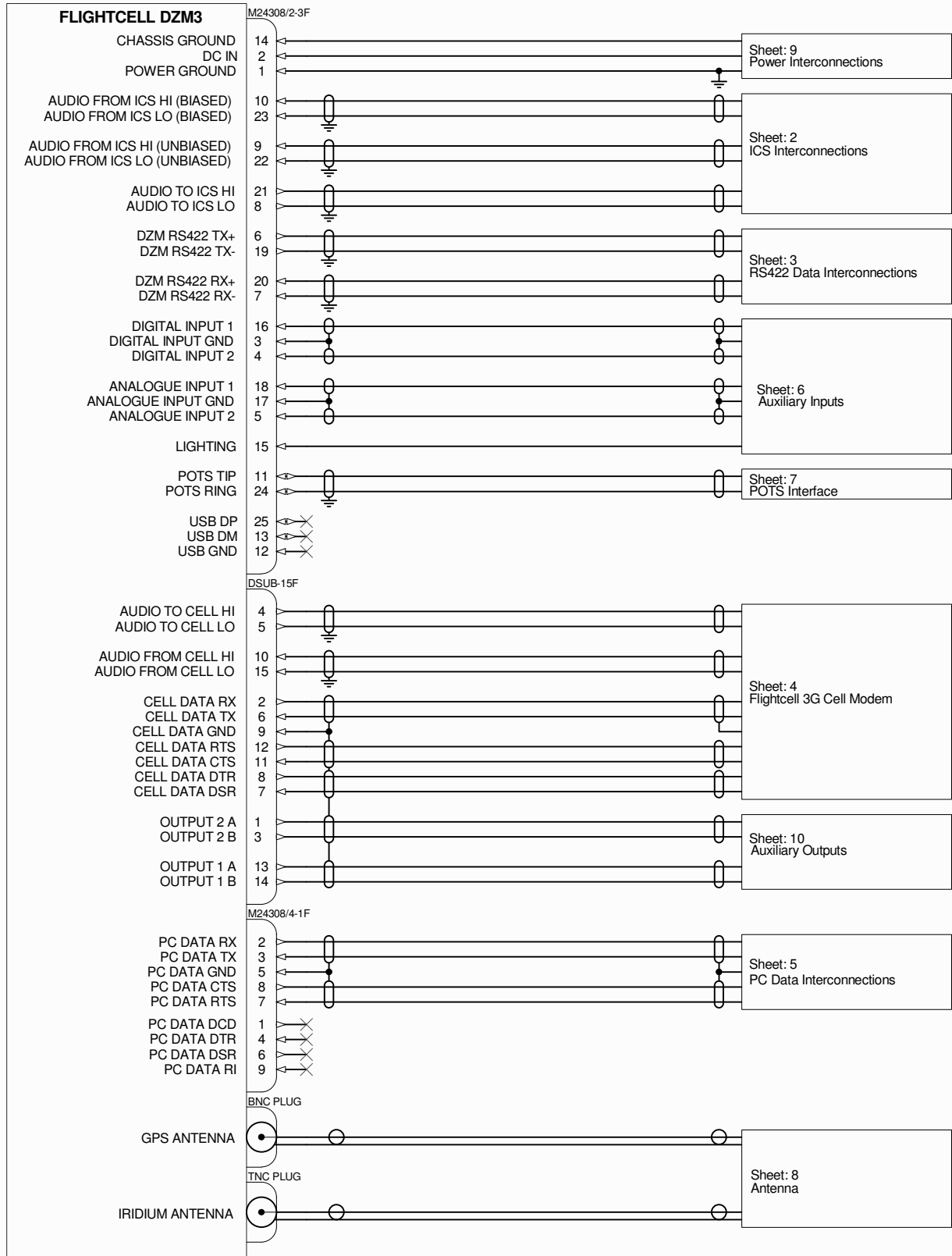


DZM3 Interconnect Wiring Diagrams

Sheet 1 - DZM



NOTES:

- ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.
- UNIT GROUND IS INTERNALLY CONNECTED TO UNIT CHASSIS
- SYMBOL DESIGNATIONS

- SHIELDED PAIR
SHIELD TERMINATED TO DC GROUND
- SHIELDED PAIR
SHIELD TERMINATED TO DESIGNATED PIN
- SHIELDED PAIR
SHIELD FLOATING
- UNIT GROUND
- COAXIAL CABLE
- WIRE SPLICE CONNECTION

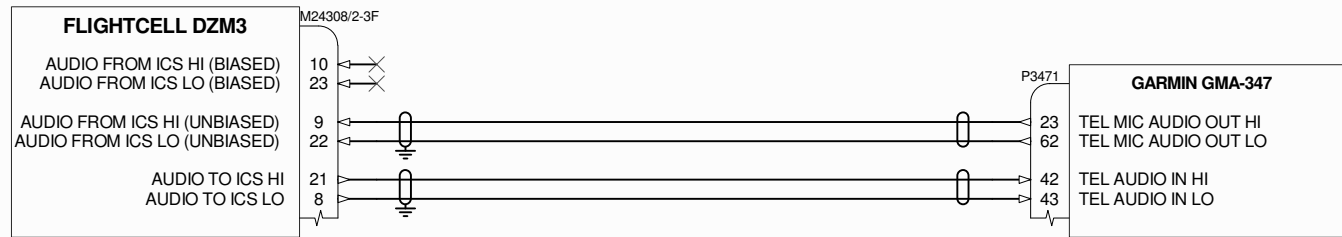


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REV	DESCRIPTION	DATE	APPD	Date:	Product:	Sheet:	Issue:	Drawn By:	Filename:	Drawing No:
1.3	C/N FCN0405 - Added Remote Head.	25/09/12	JG	25/09/2012	Flightcell DZM3	Interconnect Wiring Diagram	1 of 10	James Glasgow	Top Level_SchDoc	WRL_DZ3_001
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG				1.3			
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG							
1.0	Document created (C/N FCN0182).	15/04/11	JG							

DZM3 Interconnect Wiring Diagrams

Sheet 2 - ICS Interconnections with GMA-347



Notes on connection to Aircraft Audio System:

The preferred method of connection is where the Aircraft Audio System provides a Cellphone port or similar (as shown in this diagram with the Garmin GMA-347). In this case the unbiased input should be used.

Alternatively, connection may be made to an unused radio port. For high-impedance systems it may be necessary to use the biased DZM input (where the system expects mic bias from the radio); otherwise the unbiased input should be used.

The DZM may otherwise be connected to a headset port - in this case the biased input should be used for high-impedance systems and the unbiased input for low-impedance systems. In either case it is advisable to set the headset port to be "hot mic".

NOTES:

- ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.
- IT IS RECOMMENDED THAT THE POWER GROUND CONNECTIONS BE RUN
- SYMBOL DESIGNATIONS

SHIELDED PAIR
SHIELD TERMINATED TO DC GROUND

SHIELDED PAIR
SHIELD FLOATING

UNIT GROUND

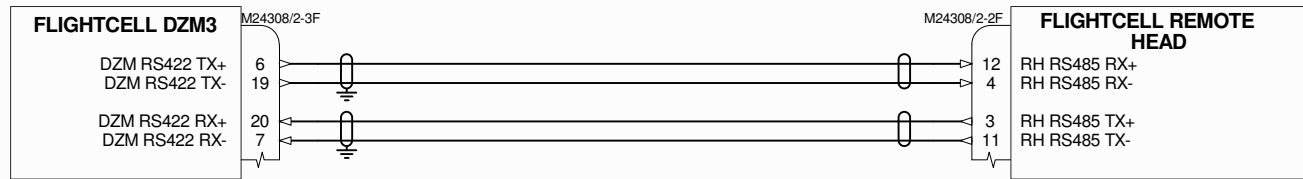


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REV	DESCRIPTION	DATE	APPD	Date:	25/09/2012	Drawing No:	WRL DZ3 001
1.3	C/N FCN0405 - Added Remote Head.	25/09/12	JG	Product:	Flightcell DZM3	Sheet:	ICS Interconnections 2 of 10
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG	Issue:	1.3	Drawn By:	James Glasgow
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG	Filename:	ICS Interconnections.SchDoc		
1.0	Document created (C/N FCN0182).	15/04/11	JG				

DZM3 Interconnect Wiring Diagrams

Sheet 3 - RS422 Data Interconnections



Note: Example RS422 data device shown is a DZM Remote Head. For complete information on wiring up a DZM3 + Remote Head system also see document WRL_DZ5_002 Remote Head DZM3 ICD.

NOTES:

1. ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.
3. SYMBOL DESIGNATIONS

SHIELDED PAIR
SHIELD TERMINATED TO DC GROUND

SHIELDED PAIR
SHIELD FLOATING

UNIT GROUND

WIRE SPLICE CONNECTION

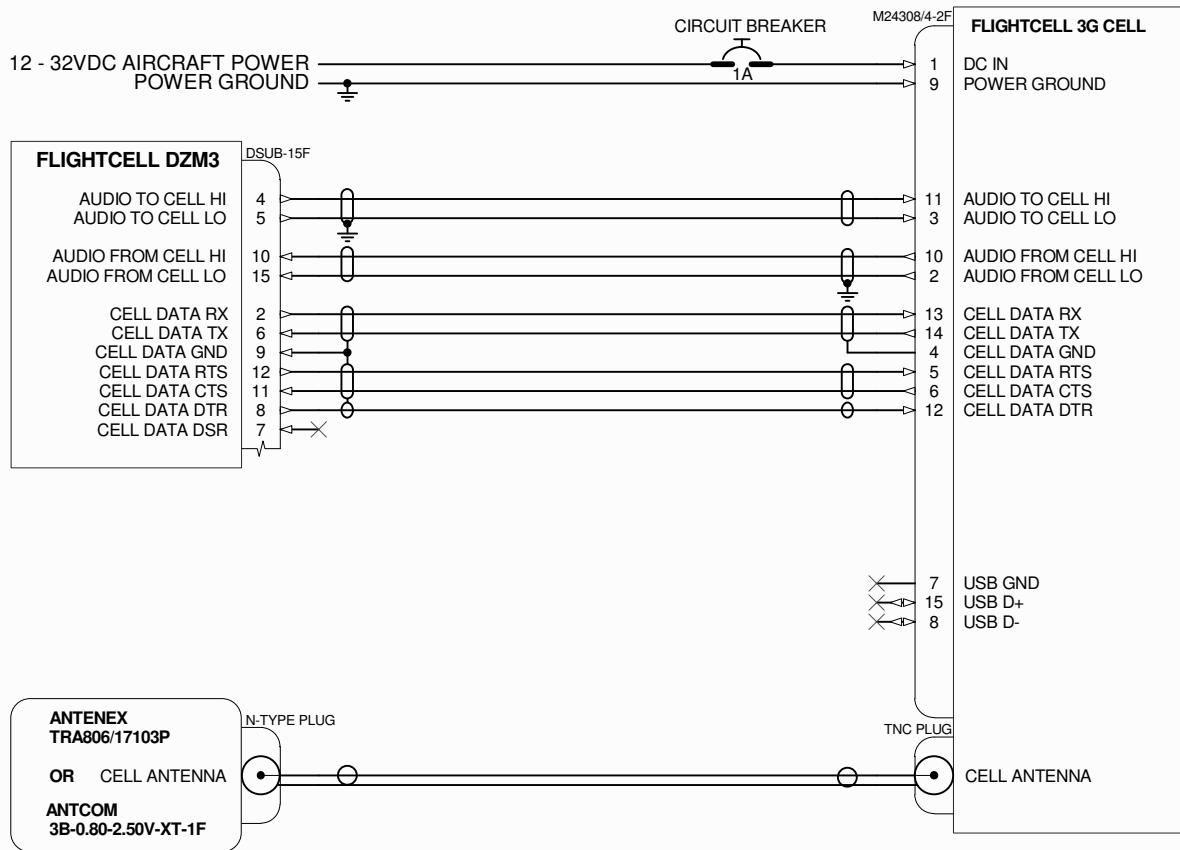


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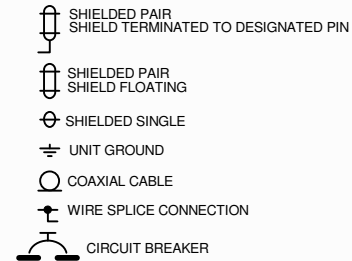
1.3	C/N FCN0405 - Added Remote Head.	25/09/12	JG	Product: Flightcell DZM3
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG	Sheet: RS422 Data Interconnections 3 of 10
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG	Issue: 1.3
1.0	Document created (C/N FCN0182).	15/04/11	JG	Drawn By: James Glasgow
REV	DESCRIPTION	DATE	APPD	Filename: RS422 Data Interconnections.SchDoc
				Date: 25/09/2012 Drawing No: WRL_DZ3_001

DZM3 Interconnect Wiring Diagrams

Sheet 4 - Flightcell 3G Cell Modem Interconnections



- NOTES:
- ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.
 - IT IS RECOMMENDED THAT THE POWER GROUND CONNECTIONS BE RUN SEPARATELY TO A SINGLE EARTHING POINT, SO AS TO MINIMISE GROUND LOOPS
 - SYMBOL DESIGNATIONS



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Product:	DZM3
Sheet:	Flightcell Cell Modem DZM3 ICD 4 of 10
Issue:	1.3
1.3	C/N FCN0405 - Added Remote Head. 25/09/12 JG Drawn By: James Glasgow
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number. 19/06/12 JG Filename: Flightcell Cell Modem Interconnections.SchDoc
REV	DESCRIPTION DATE APPD Date: 25/09/2012 Drawing No: WRL_DZ3_001

1

2

3

4

1

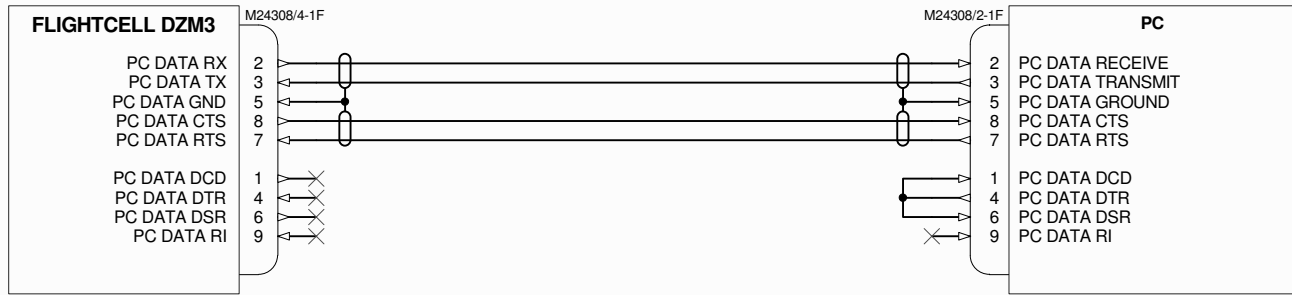
2

3

4

DZM3 Interconnect Wiring Diagrams

Sheet 5 - PC Data Interconnections



Note: 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.

The loopback connections on DCD, DTR and DSR can either be made as shown in the connector, or a standard 9-way straight through cable can be connected directly to the DZM3. In this case the loopback connections are made internally by the DZM3.

NOTES:

1. ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.
3. SYMBOL DESIGNATIONS

- SHIELDED PAIR
SHIELD TERMINATED TO DESIGNATED PIN
- SHIELDED PAIR
SHIELD FLOATING
- WIRE SPLICE CONNECTION



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1.3	C/N FCN0405 - Added Remote Head.	25/09/12	JG	Product: Flightcell DZM3
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG	Sheet: Data Interconnections 5 of 10
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG	Issue: 1.3
1.0	Document created (C/N FCN0182).	15/04/11	JG	Drawn By: James Glasgow
REV	DESCRIPTION	DATE	APPD	Filename: PC Data Interconnections.SchDoc
				Date: 25/09/2012 Drawing No: WRL DZ3 001

DZM3 Interconnect Wiring Diagrams

Sheet 6 - Auxiliary Inputs

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 analog input can be used. The Analog inputs have a high and a low threshold which can be set to provide hysteresis to suit the installation.

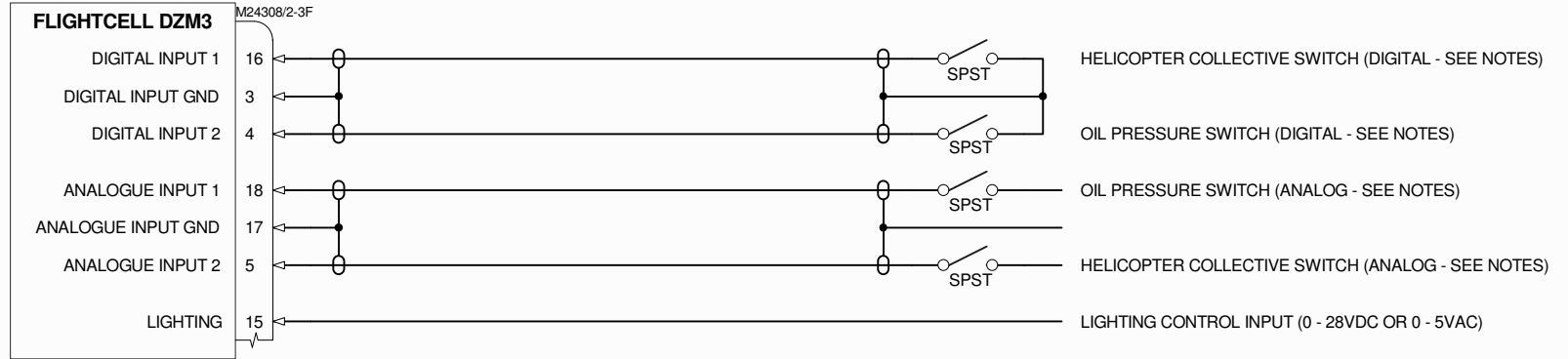
Note, however, that the analogue inputs do not have an internal pull-up, so an external voltage is required.

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.



NOTES:

1. ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
 OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.

2. SYMBOL DESIGNATIONS

- SHIELDED SINGLE CONDUCTOR
- SHIELD TERMINATED TO DESIGNATED PIN
- WIRE SPLICE CONNECTION



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1.3	C/N FCN0405 - Added Remote Head.	25/09/12	JG	Product: Flightcell DZM3	6 of 10
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG	Sheet: Auxiliary Inputs	
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG	Issue: 1.3	
1.0	Document created (C/N FCN0182).	15/04/11	JG	Drawn By: James Glasgow	
REV	DESCRIPTION	DATE	APPD	Date: 25/09/2012	Drawing No: WRL DZ3 001

DZM3 Interconnect Wiring Diagrams

Sheet 7 - POTS Interface

POTS Interface:

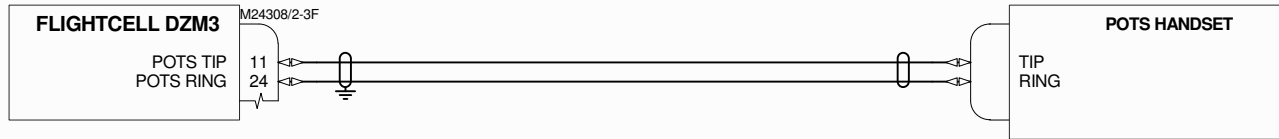
The POTS interface is designed so that a standard 2-wire telephone handset can be wired into the DZM and used to make calls via the Sat phone and Cell phone (if fitted).

It can also be used to communicate with the aircraft's flight crew.

Note:

It is important that the DZM is set to the appropriate 2-wire impedance setting for the phone handset that is connected. The DZM has several different impedance settings, designed to work with the impedance of most countries telephone handsets.

Failure to correctly set the 2-wire impedance can cause echo to be heard by the person at the remote end of the call from the DZM.



NOTES:

1. ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.
2. SYMBOL DESIGNATIONS

- SHIELDED PAIR
SHIELD TERMINATED TO DC GROUND
- SHIELDED PAIR
SHIELD FLOATING
- UNIT GROUND



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1.3	C/N FCN0405 - Added Remote Head.	25/09/12	JG	Product: Flightcell DZM3
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG	Sheet: POTS Interface 7 of 10
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG	Issue: 1.3
1.0	Document created (C/N FCN0182).	15/04/11	JG	Drawn By: James Glasgow
REV	DESCRIPTION	DATE	APPD	Filename: POTS Interface.SchDoc
				Date: 25/09/2012 Drawing No: WRL DZ3 001

DZM3 Interconnect Wiring Diagrams

Sheet 8 - Antenna

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:

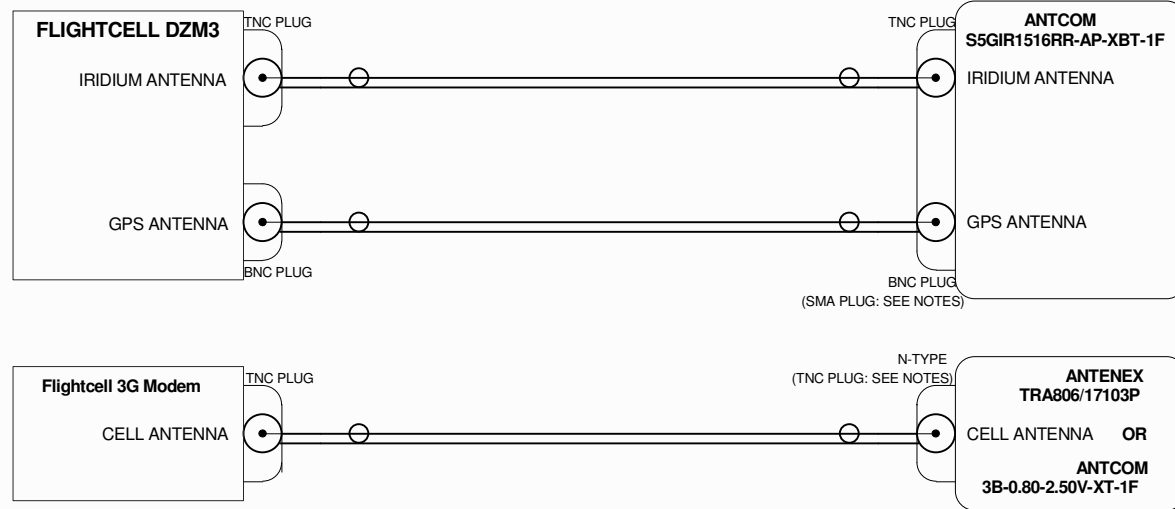
- RG174 - 2m
- RG58C/U - 3m
- LMR200 - 6.5m
- RG58-9006 cellfoil - 6.5m
- RG213 - 8m
- LMR400 - 17m
- LMR600 - 26m

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.

The Antcom S5GIR1516RR-AP-XST-1 can be used in place of the S5GIR1516RR-AP-XBT-1F part shown. It is an equivalent part, with the exception of the GPS port which has an SMA socket rather than a BNC socket.

The Antenex Cell antenna has an N-type plug.
 The Antcom Cell antenna has a TNC Plug.



- NOTES:
1. ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
 OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.
 2. SYMBOL DESIGNATIONS

○ COAXIAL CABLE



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1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG	Sheet: Antenna 8 of 10
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG	Issue: 1.3
1.0	Document created (C/N FCN0182).	15/04/11	JG	Drawn By: James Glasgow
REV	DESCRIPTION	DATE	APPD	Filename: Antenna.SchDoc
				Date: 25/09/2012 Drawing No: WRL DZ3 001

DZM3 Interconnect Wiring Diagrams

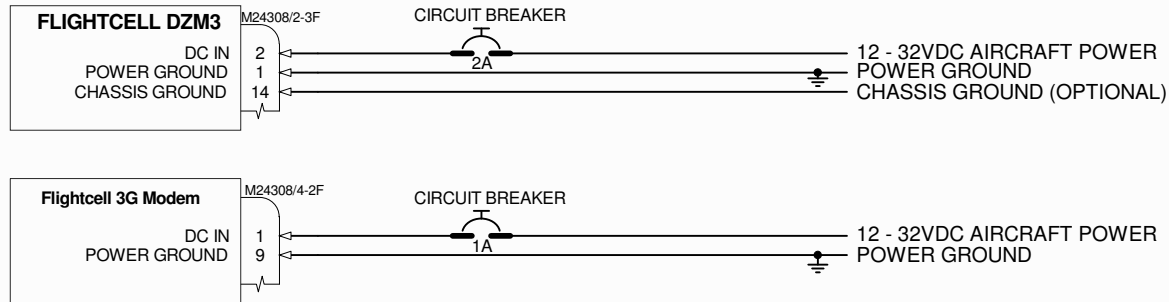
Sheet 9 - Power Interconnections

NOTES:

It is acceptable to use a single (3A) fuse for the DZM and cell modem (if fitted), although this would cause loss of power to all equipment if the fuse were to fail.

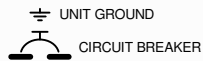
In order to minimise ground loops, it is recommended that the ground connections from the DZM, satphone and cell modem are run separately to a single grounding point, ideally the same point as used by the ICS.

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



NOTES:

1. POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/24SB2T14.
2. SYMBOL DESIGNATIONS



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1.3	C/N FCN0405 - Added Remote Head.	25/09/12	JG	Product: Flightcell DZM3
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG	Sheet: Power Interconnections 9 of 10
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG	Issue: 1.3
1.0	Document created (C/N FCN0182).	15/04/11	JG	Drawn By: James Glasgow
REV	DESCRIPTION	DATE	APPD	Filename: Power Interconnections.SchDoc
				Date: 25/09/2012 Drawing No: WRL DZ3 001

DZM3 Interconnect Wiring Diagrams

Sheet 10 - Auxiliary Outputs

NOTES:

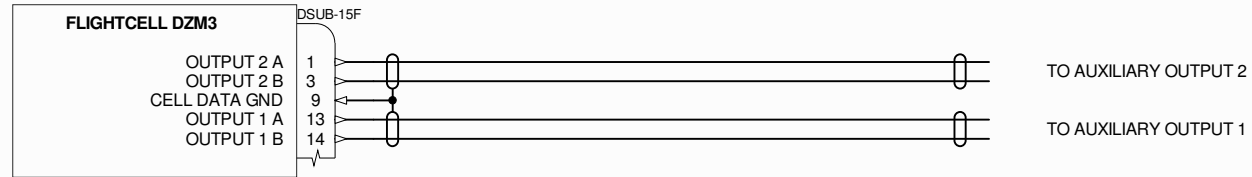
The auxiliary outputs can be used to switch external loads, e.g. annunciator panel indicator.

Each output is capable of switching a 500mA load. The voltage applied to either terminal must not exceed 60VDC.

Each output provides 1500Vrms isolation between the output terminals and the DZM internal circuitry.




When the output is on Terminal A is connected to Terminal B.

Output 1 is configured to be used a call annunciator.



NOTES:

1. ALL POWER CABLES SHOULD BE 22AWG STRANDED UNLESS OTHERWISE NOTED e.g. M22759/34-22-9
OTHER CABLES SHOULD BE 22AWG STRANDED, SCREENED WHERE INDICATED e.g. M27500/-24SB2T14.
2. SYMBOL DESIGNATIONS

-  SHIELDED PAIR
SHIELD TERMINATED TO DESIGNATED PIN
-  UNIT GROUND
-  WIRE SPLICE CONNECTION



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1.3	C/N FCN0405 - Added Remote Head.	25/09/12	JG	Product: Flightcell DZM3
1.2	C/N FCN0361 - Added FC3G Modem and Doc Number.	19/06/12	JG	Sheet: Auxiliary Outputs 10 of 10
1.1	C/N FCN0264 - Analog input wiring corrected.	25/08/11	JG	Issue: 1.3
1.0	Document created (C/N FCN0182).	15/04/11	JG	Drawn By: James Glasgow
REV	DESCRIPTION	DATE	APPD	Filename: Auxiliary Outputs.SchDoc
				Date: 25/09/2012 Drawing No: WRL DZ3 001