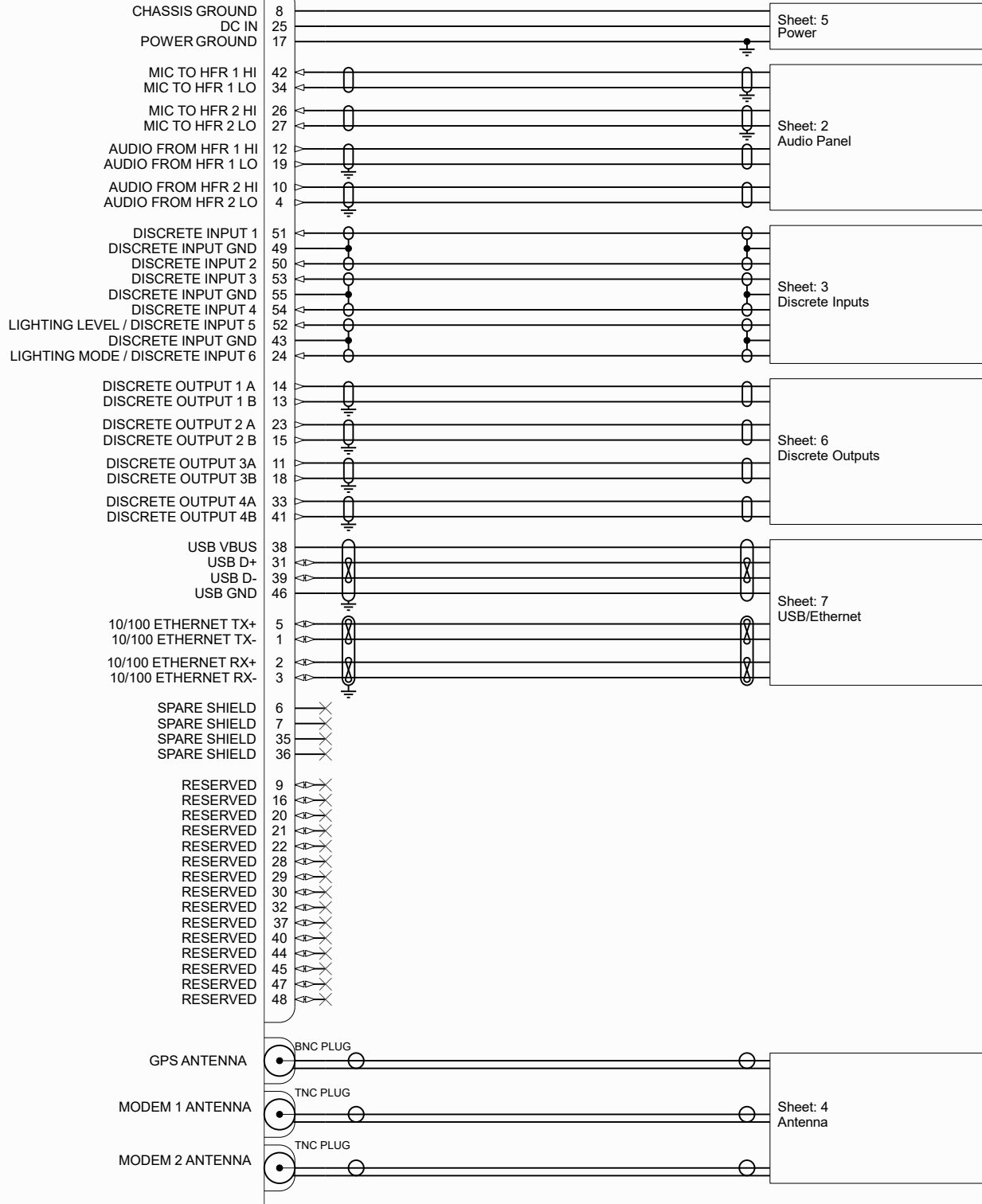


HFR Interconnect Drawings

Sheet 1 - HFR

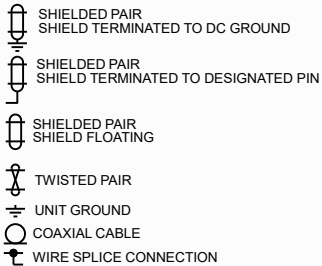
FLIGHTCELL HFR

D388999/26WE-35SN



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



APPROVALS		DATE
DESIGN	JG	27/08/20
CHK'D	RB	07/09/20
APP'D	JG	08/09/20

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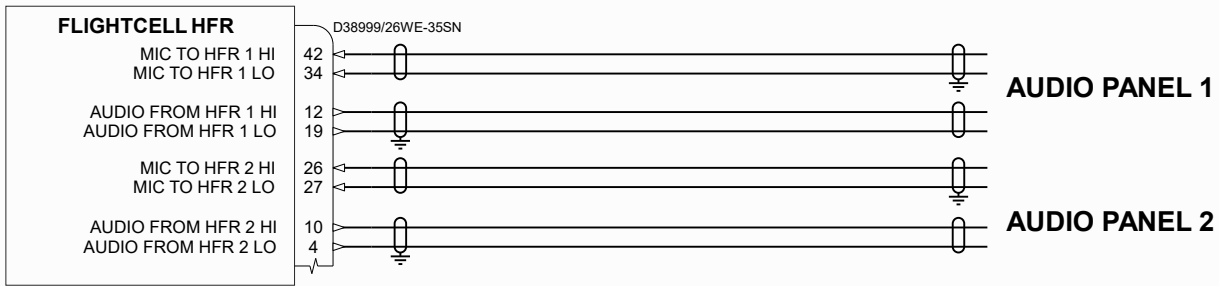
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PO Box 1481, Nelson, New Zealand
Ph:+64 3 545 8652 www.flightcell.com

Product:	Flightcell HFR	1 of 7
Sheet:	Top Level	
Issue:	1.0	
Drawn By:	James Glasgow	
Filename:	WRL_HF1_002 Top Level.SchDoc	
Date:	8/09/2020	Drawing No: WRL_HF1_002

REV	DESCRIPTION	DATE
1.0	Initial release #HW-1128.	27/08/20

HFR Interconnect Drawings

Sheet 2 - Audio Panel Interconnections



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. IT IS RECOMMENDED THAT THE POWER GROUND CONNECTIONS BE RUN SEPARATELY TO A SINGLE EARTHING POINT, SO AS TO MINIMISE GROUND LOOPS
3. SYMBOL DESIGNATIONS

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

Notes on connection to Aircraft Audio System:

The preferred method of connection is where the Aircraft Audio System provides a Cellphone port or similar. In this case the audio input should be configured as unbiased.

Alternatively, connection may be made to an unused radio port. For some systems it may be necessary to use the biased voltage on the HFR input (if the system expects mic bias from the radio); otherwise the input should be configured as unbiased.

The HFR may otherwise be connected to a headset port - in this case the input bias voltage should be enabled.

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DESIGN	JG	27/08/20
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APP'D	JG	08/09/20

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Product:	Flightcell HFR		
Sheet:	Audio Panel	2	of 7
Issue:	1.0		
Drawn By:	James Glasgow		
1.0	Initial release #HW-1128.	27/08/20	Filename: WRL_HF1_002 ICS_SchDoc
REV	DESCRIPTION	DATE	Date: 8/09/2020 Drawing No: WRL_HF1_002

HFR Interconnect Drawings

Sheet 3 - Discrete Inputs

Lighting input:
 If there is a requirement to dim the HFR display backlight along with other cockpit lighting, a reference signal voltage may be fed into this input. Aircraft typically use either a 0-28VDC range. The HFR lighting input can be calibrated to suit the particular input requirements of the installation.

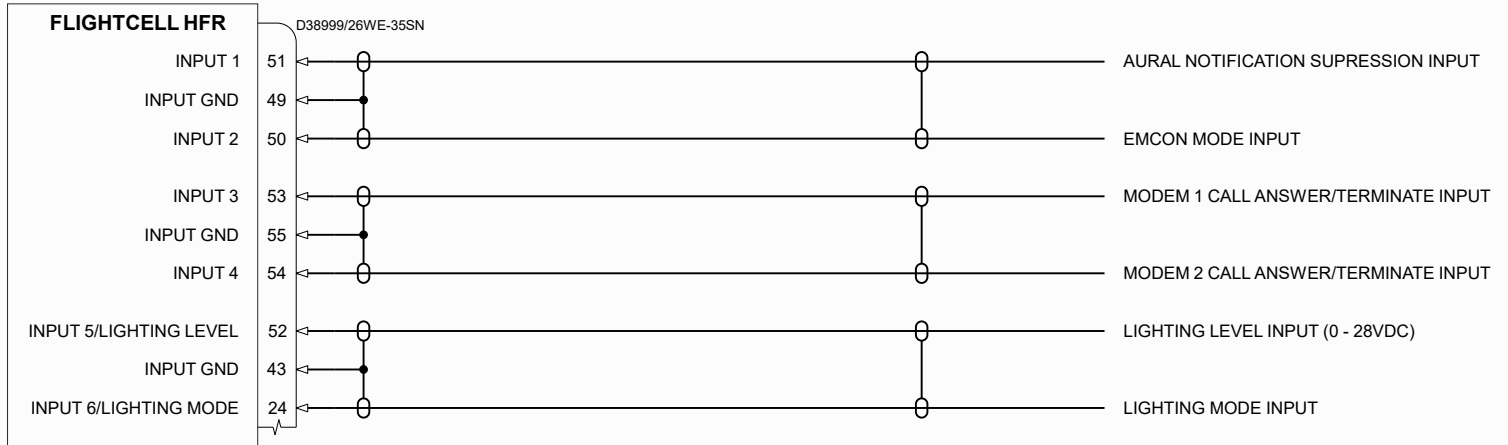
Inputs:
 The input's are all configurable as either variable or switched with adjustable thresholds.

The inputs nominal operating range is 0-28VDC, but they will tolerate an input range of -32 to +32VDC.

If these inputs are used, they need to be enabled on the HFR.

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

All inputs are referenced to a common ground which is connected internally to the HFR to Chassis ground. Therefore the aircraft chassis ground can be used for the input return signal if required.



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.
- SYMBOL DESIGNATIONS

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

APPROVALS		DATE
DESIGN	JG	27/08/20
CHK'D	RB	07/09/20
APP'D	JG	08/09/20

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Product:	Flightcell HFR		
Sheet:	Discrete Inputs	3	of 7
Issue:	1.0		
Drawn By:	James Glasgow		
1.0	Initial release #HW-1128.	27/08/20	Filename: WRL_HF1_002 Inputs.SchDoc
REV	DESCRIPTION	DATE	Date: 8/09/2020 Drawing No: WRL_HF1_002

HFR Interconnect Drawings

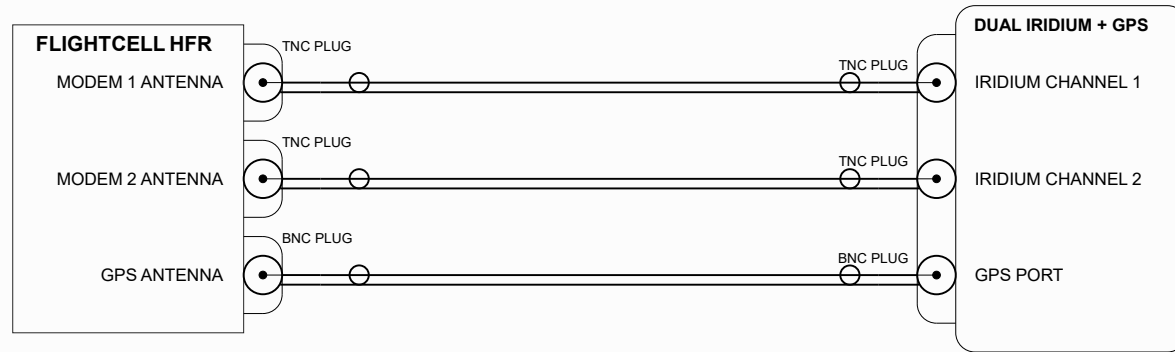
Sheet 4 - Antennas

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. See the Installation and Configuration manual for cable recommendations.

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

The setup shown is an installation with two Iridium modems and one GPS receiver.



APPROVALS		DATE
DESIGN	JG	27/08/20
CHK'D	RB	07/09/20
APP'D	JG	08/09/20

- 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.
 - SYMBOL DESIGNATIONS

○ COAXIAL CABLE

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Product:	Flightcell HFR	Sheet:	Antennas	4 of 7
Issue:	1.0	Drawn By:	James Glasgow	
1.0	Initial release #HW-1128.	27/08/20	Filename:	WRL_HF1_002 Antenna.SchDoc
REV	DESCRIPTION	DATE	Date:	8/09/2020 Drawing No: WRL_HF1_001

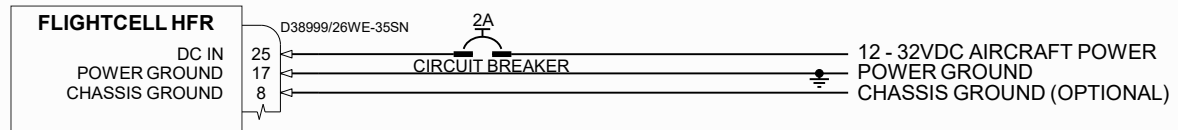
HFR Interconnect Drawings

Sheet 5 - Power Interconnections

NOTES:

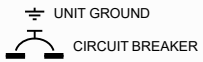
In order to minimise ground loops, it is recommended that the ground connections from the HFR, are run separately to a single grounding point, ideally the same point as used by the ICS.

It is recommended that DC power be taken from the emergency (primary) power 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



APPROVALS		DATE
DESIGN	JG	27/08/20
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APP'D	JG	08/09/20

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Product:	Flightcell HFR	Sheet:	Power	5 of 7
Issue:	1.0	Drawn By:	James Glasgow	
1.0	Initial release #HW-1128.	27/08/20	Filename:	WRL_HF1_002 Power.SchDoc
REV	DESCRIPTION	DATE	Date:	8/09/2020 Drawing No: WRL_HF1_002

HFR Interconnect Drawings

Sheet 6 - Discrete Outputs

NOTES:

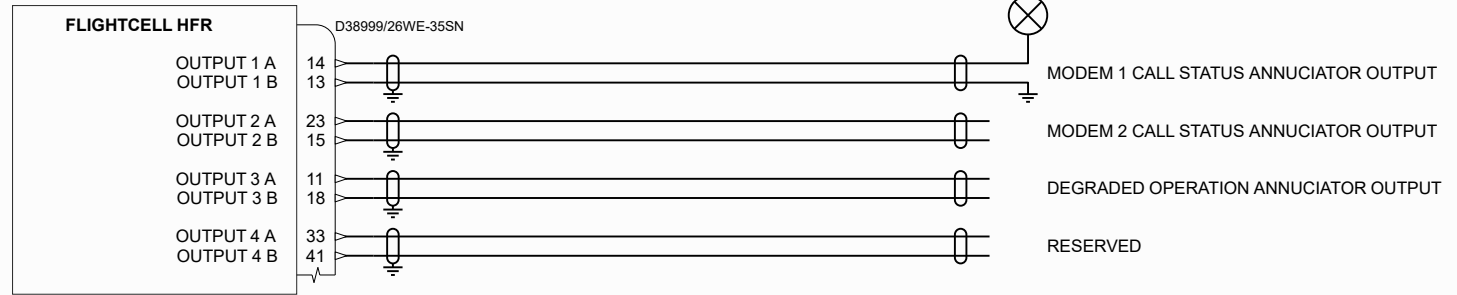
The auxiliary outputs can be used to switch external loads, e.g. annunciator panel indicator.

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 HFR internal circuitry.




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

The outputs can be configured for a variety of purposes e.g. a call annunciator.



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.
- SYMBOL DESIGNATIONS

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

APPROVALS		DATE
DESIGN	JG	27/08/20
CHK'D	RB	07/09/20
APP'D	JG	08/09/20

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Product:	Flightcell HFR		
Sheet:	Discrete Outputs	6	of 7
Issue:	1.0		
Drawn By:	James Glasgow		
1.0	Initial release #HW-1128.	27/08/20	Filename: WRL_HF1_002 Outputs.SchDoc
REV	DESCRIPTION	DATE	Date: 8/09/2020 Drawing No: WRL_HF1_002

HFR Interconnect Drawings

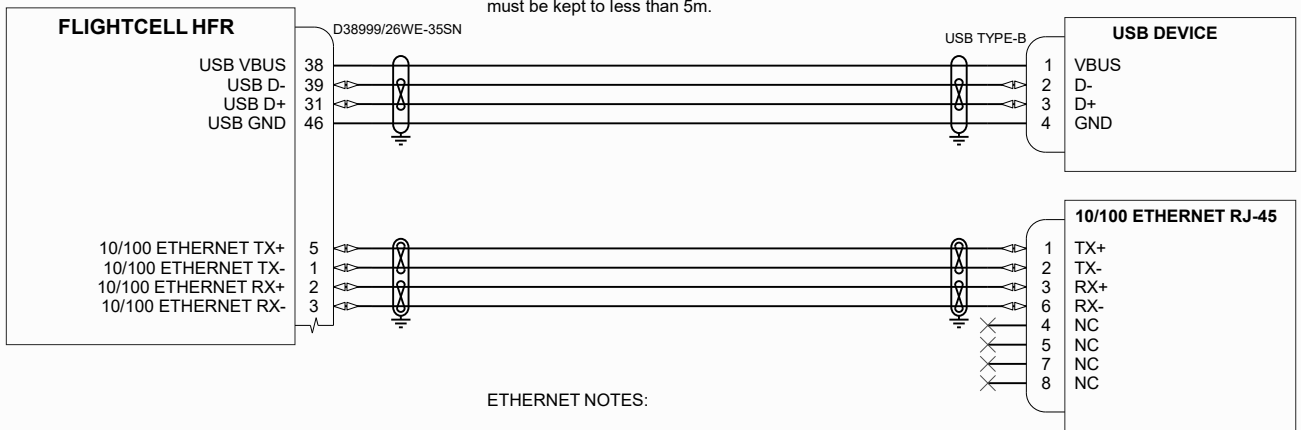
Sheet 7 - Ethernet / USB

USB NOTES:

THE USB port is for use on the bench for firmware upgrades only.

The USB port should not be used in the aircraft.

USB 2.0 compliant cable must be used and cable run length must be kept to less than 5m.



ETHERNET NOTES:

TX+/- and RX+/- should be run as twisted pairs using CAT-5e or equivalent.

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.
- SYMBOL DESIGNATIONS

SHIELDED PAIR
 SHIELD TERMINATED TO DC GROUND

SHIELDED PAIR
 SHIELD FLOATING

UNIT GROUND

WIRE SPLICE CONNECTION

APPROVALS		DATE
DESIGN	JG	27/08/20
CHK'D	RB	07/09/20
APP'D	JG	08/09/20

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Product:	Flightcell HFR	
Sheet:	Ethernet / USB	7 of 7
Issue:	1.0	
Drawn By:	James Glasgow	
Filename:	WRL_HFR_002_EthernetUsb.SchDoc	
Date:	8/09/2020	Drawing No: WRL_HF1_002

REV	DESCRIPTION	DATE
1.0	Initial release #HW-1128.	27/08/20