

Declaration of Design and Performance

DDP No.: 120-00001

Issue No.: 2.2

Approving authority: n/a

DDP Change Control Ref: JIRA No. HW-2580

Note: Before specifying equipment, check with Flightcell International that this declaration is the currently valid version

MANUFACTURER

Flightcell International Ltd

Address: 98 Vickerman St, Nelson, New Zealand 7010

DECLARATION OF DESIGN AND PERFORMANCE

System Name: Flightcell DZMx

Part No.: DZP_04-XXX-XXXX (-XXX-XXXX represents the dash number which defines the specific configuration of the unit, the detailed breakdown of the dash number is contained in 113-00001 Rev 5.0 DZP_04 Flightcell DZMx Dash Number Definition Table)

Description: A compact and lightweight all-in-one Iridium and cellular solution for global voice, data, and GPS tracking.

The design reduces the size of the product while integrating internal Iridium and/or cellular transceivers.

Data interfaces include Ethernet, USB, Wi-Fi, Bluetooth and ARINC 429, Software Defined Receiver, Cellular and Satellite Modems, General-Purpose Inputs and General-Purpose Outputs. The product is designed for standard 5.25" DZUS rack mounting or with a 6.25" GA faceplate.

Rev No.: 7.0

Weight & Overall Dimensions: Representative configurations range from 660g to 780g maximum. For specific information refer to 100-00004 Rev 7.0 DZP_04 Master Data List.

System Wiring Diagrams	
Diagram No.	Description
114-00003	DZMx Civilian Interconnect Drawings
114-00004	DZMx Military Interconnect Drawings

Overall Dimensions		
for more specific data, refer to the assembly diagrams and definition specification below		
Part Description	DZUS mounted	Panel mounted
Faceplate width	146.0mm	158.0mm
Extrusion width	125.7mm	125.7mm
Faceplate height	57.2mm	60.0mm
Extrusion height	54.0mm	54.0mm
Depth (from front face to rear face)	110.4mm	110.6mm

Manufacturer's Specification Design: 117-00013 DZMx Design Specification

Performance:

The Flightcell DZMx meets all the specifications and requirements as outlined in this document. The main performance specifications are listed below.

Item		Detail
Display		160 x 80 Mono Graphics LCD
Backlighting		LED NVIS-B (standard) LED NVIS-A (option)
Keypad		16 keys (4x4 matrix)
Interface		10/100 Ethernet, USB 2.0, RS-485, RS-232 Analog audio (2), GPI (5), GPO (2), GPIO (7), Wi-Fi, Bluetooth
DC Power Source		+12V - +32VDC (28V nominal) Max current: ~1A @ 28VDC
Connectors	GA	Main connector: DB-25 Plug, mating connector: M24308/2-3F Secondary connector: DB-25 Socket, mating connector: M24308/4-3F
	Mil	D38999/24WE-35PN, mating connector: D38999/26WE-35SN

The DZMx variants with Cellular modems fitted support the following bands:

Part number	Description	Region	3G (UMTS) bands	4G (LTE) bands
DZP_04-7xx-BEx / DZP_04-8xx-BEx / DZP_04-9xx-Ex	Flightcell DZMx Variants with Europe Cell	Europe/Middle East/Asia	1, 8	1, 3, 7, 8, 20,28
DZP_04-7xx-BPx / DZP_04-8xx-BPx / DZP_04-9xx-Px	Flightcell DZMx Variants with Asia/Pacific Cell	Pacific/Australia/ New Zealand/South America	1, 5, 8	1, 3, 5, 7, 8, 28

DZP_04-7xx-BFx/ DZP_04-8xx-BFx / DZP_04-9xx-Fx	Flightcell DZMx Variants with North America Cell	North America (including Band 14)	3G networks retired	2, 4, 5, 12, 13, 14, 17, 66
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Wi-Fi / Bluetooth Transceiver transmit power (if installed)		
Modem	Description	RF Performance
Wi-Fi	Tx power (dBm)	16.0
	Antenna gain (dBi)	2.0
	Total power (dBm)	18.0
	Total power (mW)	63.1
Bluetooth	Tx power (dBm)	10.0
	Antenna gain (dBi)	2.0
	Total power (dBm)	12.0
	Total power (mW)	15.9

Cellular / Satellite Transceiver transmit power (if installed)	
Cell (WP76XX Series/MPL200)	TX Power
LTE (4G) As per 3GPP TS 36.521-1 Power Class 3	+23dBm +/-2dB
UMTS/HSDPA/HSUPA (3G) As per 3GPP TS 34.121-1 Power Class 3	+24dBm +1/-3dB
GSM/GPRS (2G) As per 3GPP TS 51.010-1	
GMSK Power Class 4 for GSM/E-GSM bands	+33dBm +/-2.5dB
GMSK Power Class 1 for DCS/PCS bands	+30dBm +/-2.5dBm
EDGE (2G) As per 3GPP TS 51.010-1	
8-PSK Power Class E2 for GSM/E-GSM bands	+27dBm +/-3dB
8-PSK Power Class E2 for DCS/PCS bands	+26dBm +3/-4dBm
Iridium 9523N	TX Power
Average power during a transmit slot (max)	7W
Average Power during a frame (typical)	0.6W
Iridium 9603N	TX Power
Average power during a transmit slot (max)	1.6W

Software Defined Receiver	
	RX Power
RX Power	-5dBm +/-1dB
RX Power (RX amplifier disabled)	+10dBm +/-1dB
Operating frequency	1 MHz to 2 GHz

Test Report References: TR-075431-01, 43053-0125407A, TR-PR030054-14D, TR-PR021690-13D, 107019-5, M2312032-1

Fault analysis reports: n/a

Installation and Operation References:

Manual No.	Description
117-00008	DZMx Installation Manual
117-00009	DZMx / DZMx Plus Operator Manual

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Declarations:

The limits of declared performance and those implied by the declarations below are not intended to be absolute, but are intended to indicate performance which has been shown by tests.

Cooling Requirements

The unit is passively cooled. No special cooling required.

Ingress of fluids, sand and dust

The unit is designed to be protected against fluids, sand and dust to a rating of IP54, however no external testing has been completed.

A rating of IP54 means that the unit is protected against ingress of dust in sufficient quantities to interfere with satisfactory operation of the unit and against harmful ingress of water when subjected to water splashing against the enclosure from any direction).

Storage

The unit should be stored at a temperature of not less than -55°C and not more than +85°C.

Operating temperature

The ambient operating temperature range for the unit is -40°C to +55°C.

Storage Life

The shelf storage life is not less than 5 years under controlled storage conditions.

CERTIFICATION

The declaration in this document is made under the authority of Flightcell International Ltd.

Flightcell International Ltd cannot accept responsibility for equipment used outside the limiting conditions stated above without their agreement.

Signed: _____

Authorised Signature: John Wyllie
Position: Accountable Manager
Effective Date: 07 March 2024

REMARKS

Nameplate Marking: DO-160G Env. Cat. [(A1)(B1)(F1)]XAB[UG]HXXXXXZZAZ[AC][SS]MXXXXXXXAX

CONDITIONS	DO-160G Section#	Description of Tests
Temperature & Altitude	4.0	Equipment tested to categories A1, B1, F1
Low Temperature	4.5.1	
High Temperature	4.5.2 & 4.5.3	
In-Flight Loss of Cooling	4.5.4	No Forced cooling required
Altitude	4.6.1	
Decompression	4.6.2	Equipment identified as category X, no test performed.
Overpressure	4.6.3	
Temperature Variation	5.0	Equipment identified as category X, no test performed.
Humidity	6.0	Equipment tested to category A.
Operational Shocks	7.2	Equipment tested to category A, aircraft type 5, test type 5.
Crash Safety	7.3	Equipment tested to category B, aircraft type 5, test type 5.
Vibration	8.0	Equipment tested to category U, Aircraft zone 2, Test curve G.
Explosive Atmosphere	9.0	Equipment tested to category H.
Waterproofness	10.0	Equipment identified as category X, no test performed.
Fluids Susceptibility	11.0	Equipment identified as category X, no test performed.
Sand and Dust	12.0	Equipment identified as category X, no test performed.
Fungus	13.0	Equipment identified as category X, no test performed.
Salt Fog	14.0	Equipment identified as category X, no test performed.
Magnetic Effect	15.0	Equipment tested to category Z.
Power Input	16.0	Equipment tested to category B/Z.
Voltage Spike	17.0	Equipment tested to category A.
Audio Frequency Susceptibility	18.0	Equipment tested to category Z.
Induced Signal Susceptibility	19.0	Equipment tested to category AC.
Radio Frequency Susceptibility	20.0	Equipment tested to category S.
Radio Frequency Emissions	21.0	Equipment tested to category M.
Lightning Induced Transient Effects	22.0	Equipment identified as category X, no test performed.
Lightning Direct Effects	23.0	Equipment identified as category X, no test performed.
Icing	24.0	Equipment identified as category X, no test performed.
Electrostatic Discharge	25.0	Equipment tested to category A.
Fire, Flammability	26.0	Equipment identified as category X, no test performed.
Other Tests		

Refer to 109-00001 for information on testing.

Although not tested or certified to any flammability standards Flightcell International Ltd is highly confident that due to the materials used in the design, the DZMx would meet the requirements of DO-160G, section 26 (Fire, Flammability), Category C – Flammability. Refer to 118-000024

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