

# Declaration of Design and Performance

**DDP no.:** TEC\_DZ4\_031

**Issue no.:** 7.0

**JIRA no.:** QS-279

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

**Approving authority:** n/a

**Manufacturer:**

**Name:** Flightcell International Ltd

**Address:** 98 Vickerman St, Nelson, New Zealand 7010

**Declaration of design and performance:** Flightcell DZMx

**Type number:** DZP\_04-XXXX (-XXXX represents the dash number, see TAD\_003\_DashNumberRegister for details)

**Development stage:** Production

**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, 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.

**Configuration Specification Reference:** TEC\_DZ4\_033 - DZMx Configuration Specification

**Mass:** Representative configurations range from 660g to 780g maximum. For specific information refer to the Configuration Specification.

**System wiring diagram:** -       WRL\_DZ4\_001 -       Civilian Interconnect Drawings  
  WRL\_DZ4\_002 -       Military Interconnect Drawings

**Manufacturing specification reference:** TEC\_DZ4\_033 - DZMx Configuration Specification

**Installation, operation maintenance, repair and overhaul manual reference:**

                          MAN\_DZ4\_001 -       Installation and Configuration Manual  
                          MAN\_DZ4\_002 -       Operator Manual  
                          MAN\_DZ4\_003 -       Quick Start Guide

**Test report reference:** TEC\_DZ4\_035 - (For specific information refer to the DO-160 test categories report in this document.)

**Fault analysis reports:** n/a (For specific information refer to the Configuration Specification.)

**Representative dimensions:** (for more specific data, refer to the assembly diagrams and Definition specification below.)

	<b>DZUS mounted</b>	<b>Panel mounted</b>
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

**Assembly diagram numbers:**

<b>Hardware Configuration</b>	<b>Drawing Number</b>
DZUS mount – GA rear	DRW_DZ4_002
DZUS mount – Military rear	DRW_DZ4_012
Panel mount – GA rear	DRW_DZ4_010

**Definition specification reference:** TEC\_DZ4\_022 – Design Specification

**Drawing nomenclature reference:** TEC\_002 – Numbering of parts and controlled documents

**Quality control procedure reference:** QUA\_001 – Flightcell quality manual

**Details of approvals obtained for similar equipment:** n/a

**Performance:**

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

<b>Item</b>	<b>Detail</b>
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

**Wi-Fi and Bluetooth transmit power (if installed)**

<b>Wi-Fi</b>	Tx power (dBm)	17.3
	Antenna gain (dBi)	2.6
	Total power (dBm)	19.9
	Total power (mW)	97.7
<b>Bluetooth</b>	Tx power (dBm)	10.0
	Antenna gain (dBi)	2.6
	Total power (dBm)	12.6
	Total power (mW)	18.2

**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.

The following declarations to the relevant sections of the standards stated, relating to environmental and operating conditions on the aircraft apply:

**1. RTCA DO-160G**

The declarations required by the Radio Technical Commission for Aeronautics RTCA DO-160G are summarised in – RTCA DO-160 Test Categories.

Test facilities

National Technical Systems	CKC Laboratories, Inc.
1146 Massachusetts Avenue	22116 23rd Drive S.E.
Boxborough, MA 01719, USA	Bothell, WA 98021, USA

**2. Internal Batteries**

The unit does not contain any internal batteries.

**3. Mounting**

The unit is designed to be mounted either in a DZUS 5.25” rack or 6.25” panel mount.

**4. Cooling Requirements**

The unit is passively cooled. No special cooling required.

**5. Ingress of fluids, sand and dust**

The unit is designed to be protected against fluids, sand and dust to a rating of IP54.

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).

**6. Storage**

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

**7. Operating temperature**

The ambient operating temperature range for the unit is -40°C to +70°C.

### 8. Storage Life

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

#### **Certification:**

I hereby certify that the information contained in this Declaration of Design and Performance is accurate and made under the authority of Flightcell International Ltd.

Flightcell International Ltd. cannot be held responsible for the satisfactory operation of equipment used beyond the above declared-conditions without prior agreement.

Signed:



Position: Hardware Design Engineer

Date: 17 June 2019

### RTCA DO-160 Test Categories

**System Name:** Flightcell DZMx

**Model Number:** DZP\_04-XXX

**Revision & Change number of DO-160:** G

Test reports

Test facility	Test report number	Date issued
National Technical Systems	TR-PR030054-14D	August 22 2014
	TR-PR021690-13D	March 16 2015
CKC Laboratories, Inc.	101055-1	December 14 2018

CONDITIONS	DO-160G Section#	Description of Tests
Temperature & Altitude	4.0	Equipment tested to categories A2, B2, F1
Low Temperature	4.5.1	No Forced cooling required
High Temperature	4.5.2 & 4.5.3	
In-Flight Loss of Cooling	4.5.4	
Altitude	4.6.1	Equipment identified as category X, no test performed.
Decompression	4.6.2	
Overpressure	4.6.3	
Temperature Variation	5.0	Equipment tested to category B.
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 B/Z.
Induced Signal Susceptibility	19.0	Equipment tested to category AC.
Radio Frequency Susceptibility	20.0	Equipment tested for conducted susceptibility to category S and for radiated susceptibility 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.

CONDITIONS	DO-160G Section#	Description of Tests
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 tested to category C.
Other Tests		

**REMARKS:**

Nameplate marking: DO-160G Env.Cat [(A2)(B2)(F1)]BAB[UG]HXXXXZZAZ[AC][SS]MXXXXXXAC