StratoSpace-Rideshare Interface Control Document

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1 Purpose of this Document

The purpose of the ICD is to define the design of the interface ensuring compatibility among involved interface ends by documenting form, fit, and function. This document servers as a guideline for the 3rd party payload developers to design and build the mechanical and electrical interfaces ensure the proper connection between the payload and the Rideshare Gondola.

2 Introduction

The Rideshare Gondola provides unified mechanical and electrical connections for the payload. While application of the mechanical interfaces are mandatory, using the electrical interface is only optional.

The mechanical interface provides a reliable mechanical connection between the payload and the Rideshare Gondola. The mechanical interface prevents the payload to separate from the balloon platform during flight.

The electrical interface provides connection to the platform peripherals including power, storage, TCTM. Using the electrical interface is optional and its necessity shall be decided by the 3rd party development team.

3 Mechanical Interface

3.1 Payload side

Payload dimensions are defined in the StratoSpace – Rideshare Payload Requirements document [AD 1]:

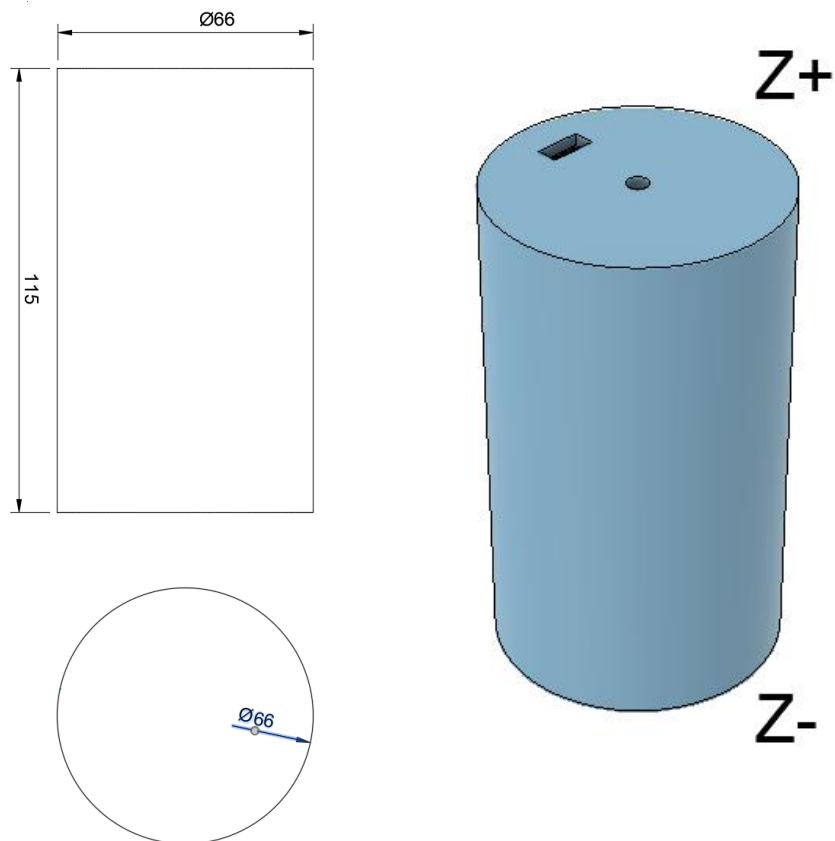| STR.RDSHR-1.1	
Diameter	66 mm
Height	115 mm

Table 3.1

Figure 3.1

On the payload side the mechanical interface is an M5 threaded hole with at least 5mm depth. This fixture shall be placed on Z+ side. (Figure 3.2)
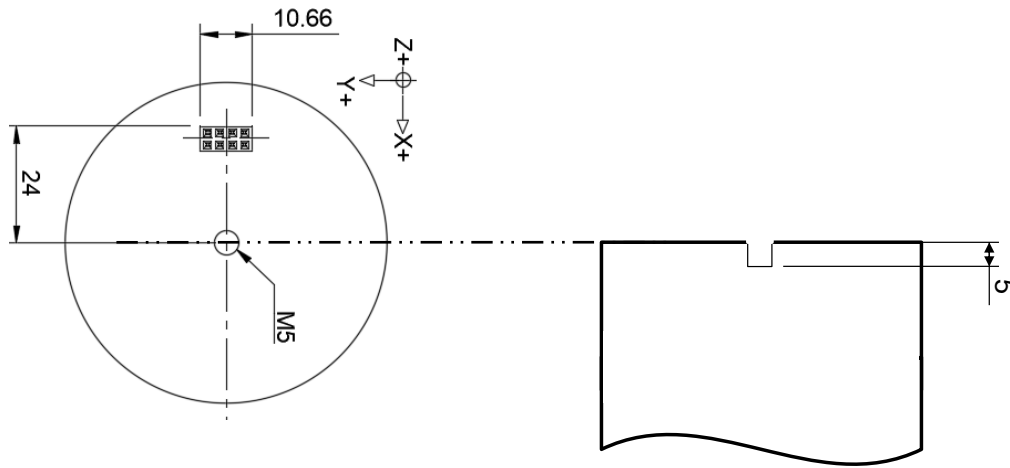

Figure 3.2

Do not place any sensors, actuators, openings or external insulation on the circumference of the payload in a 3mm strip measured from both Z+ and Z- (Figure 3.3)
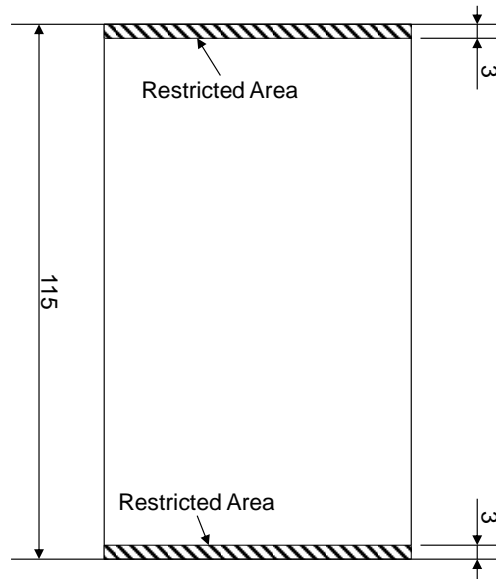

Figure 3.3

It is recommended have reinforced threads to withstand the recommended 50N tensile force. In case of soft materials, press-fit metal thread inserts or helical thread inserts ('helicoil') should be applied.

On the Z+ side the physical space for the electrical interface connector shall be reserved as a pocket of 10mm depth or 2.54mm (.100) pitch female pinhead connector (Figure 3.4)
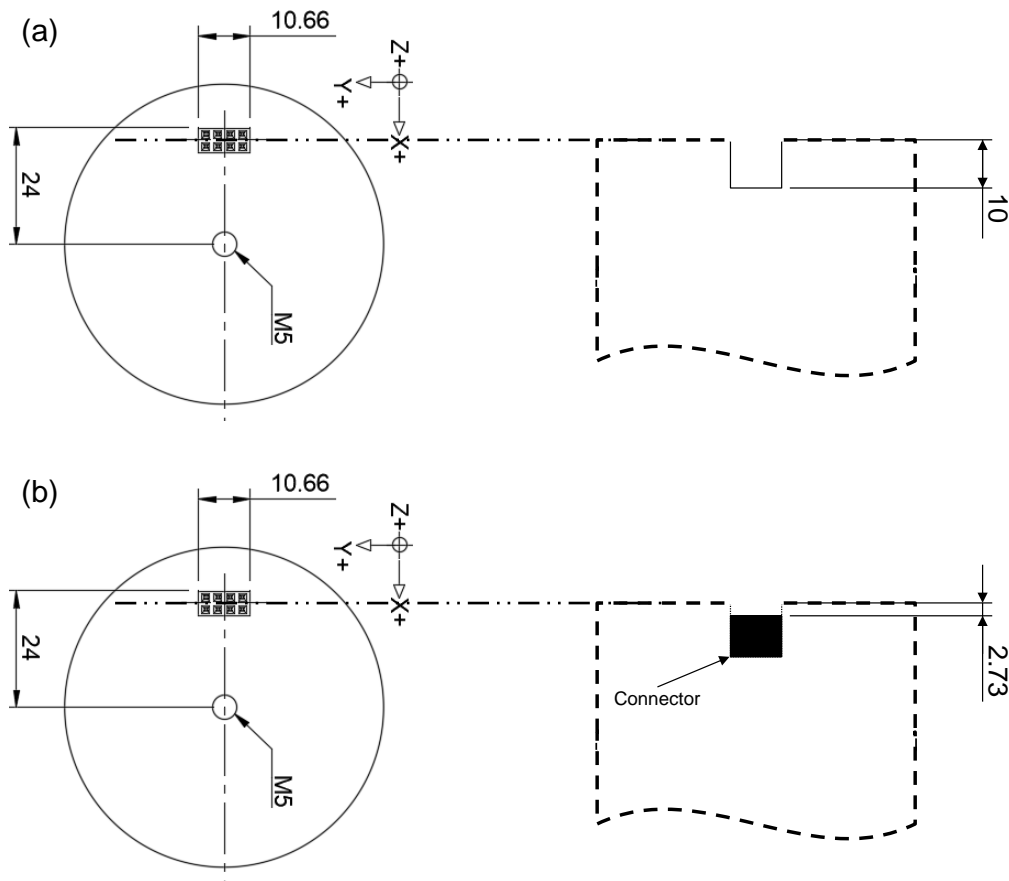
Figure 3.4

Openings for sensors can be placed on the Z- side with a 10mm wide restriction zone for the gondola support. (Figure 3.5)
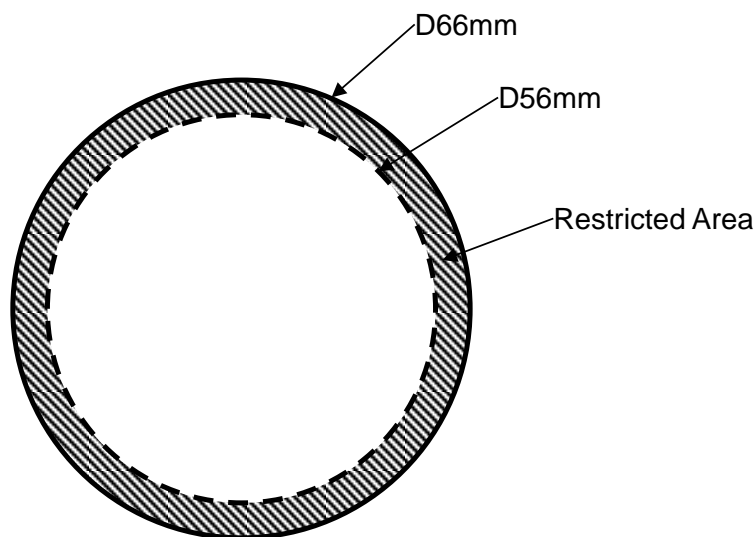

Figure 3.5

3.2 Gondola side

3.2.1 Rideshare Gondola

The Rideshare Gondola is designed to reliably hold three payloads securely. The gondola has a top and bottom part, both with nests to hold the payload. The Rideshare Gondola also carries the payload controller which can provide on-board services for the payload if needed.
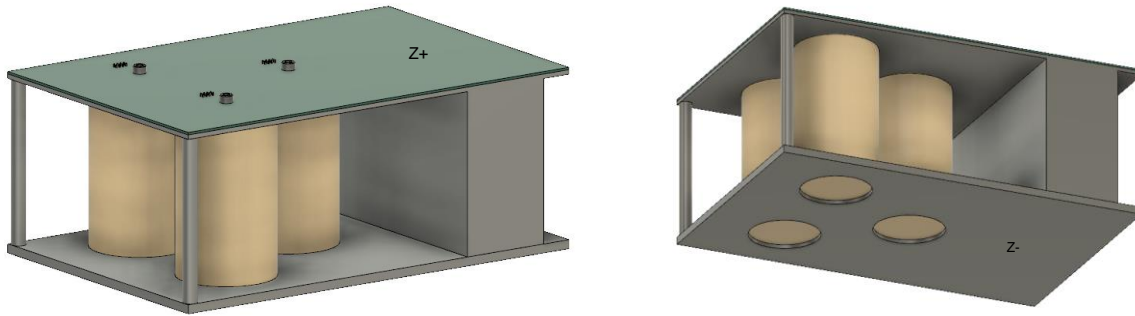

Figure 3.6

3.2.2 Gondola mechanical interface

The mechanical interface of the Rideshare Gondola is called the payload nest or nest has a diameter of 66.2 + 0.2mm. The Z+ side has a hole with 5.4mm diameter to match with the M5 threaded hole on the payload and secure it with an M5 machine screw (Figure 3.7).
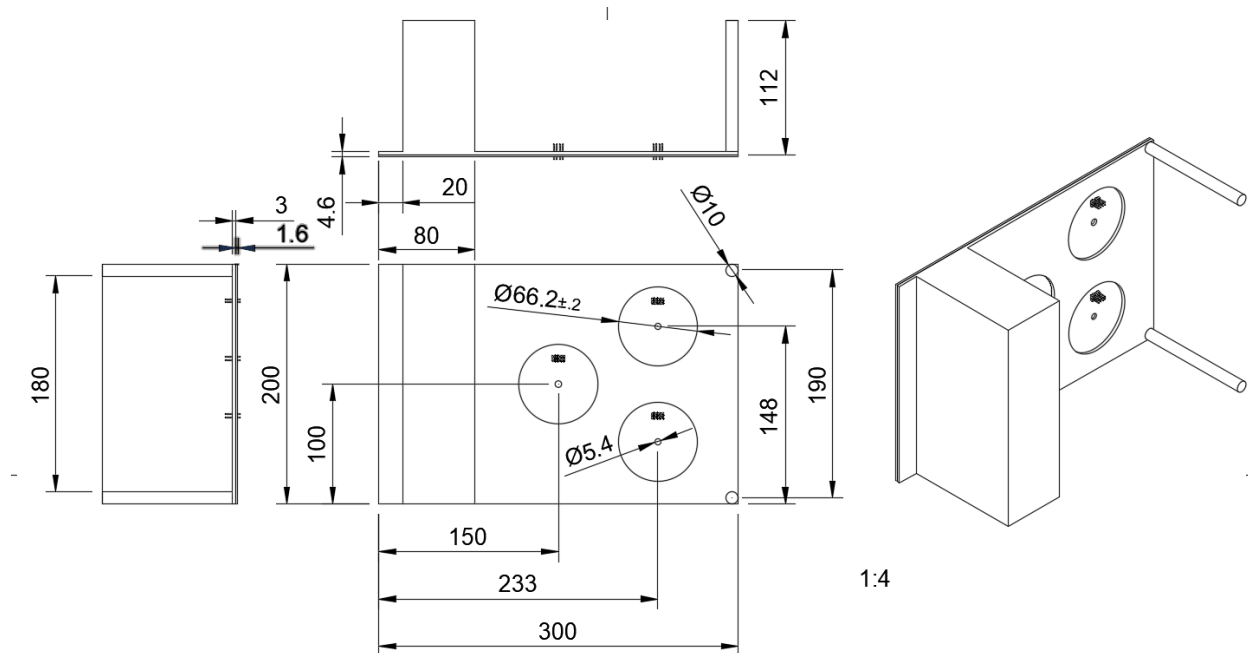

Figure 3.7

The Z+ side has the electrical interface connector which is a standard 2.54mm (.100) pitch 2x4 pin male pinheader (Figure 3.8).
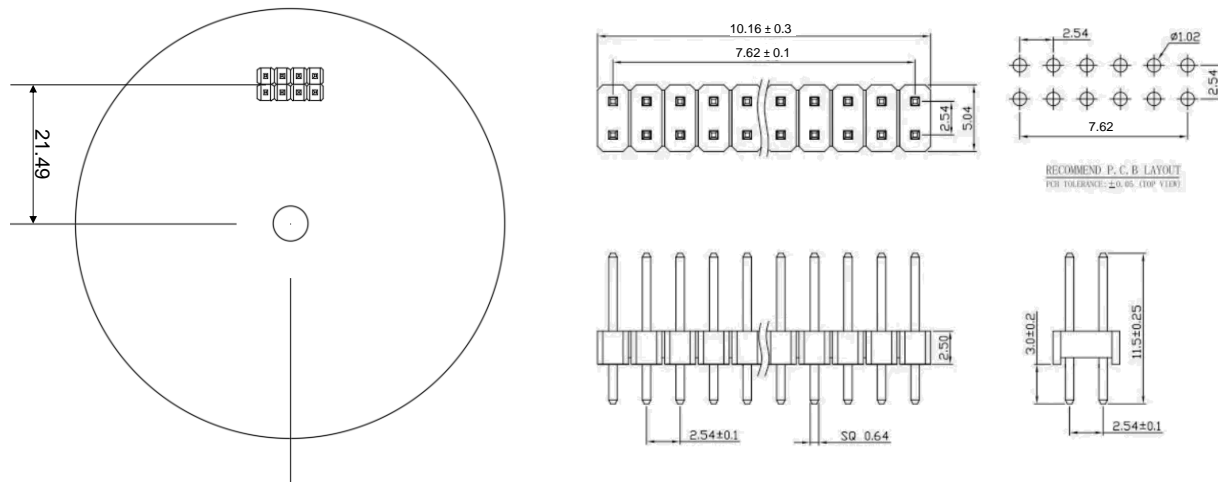
Figure 3.8

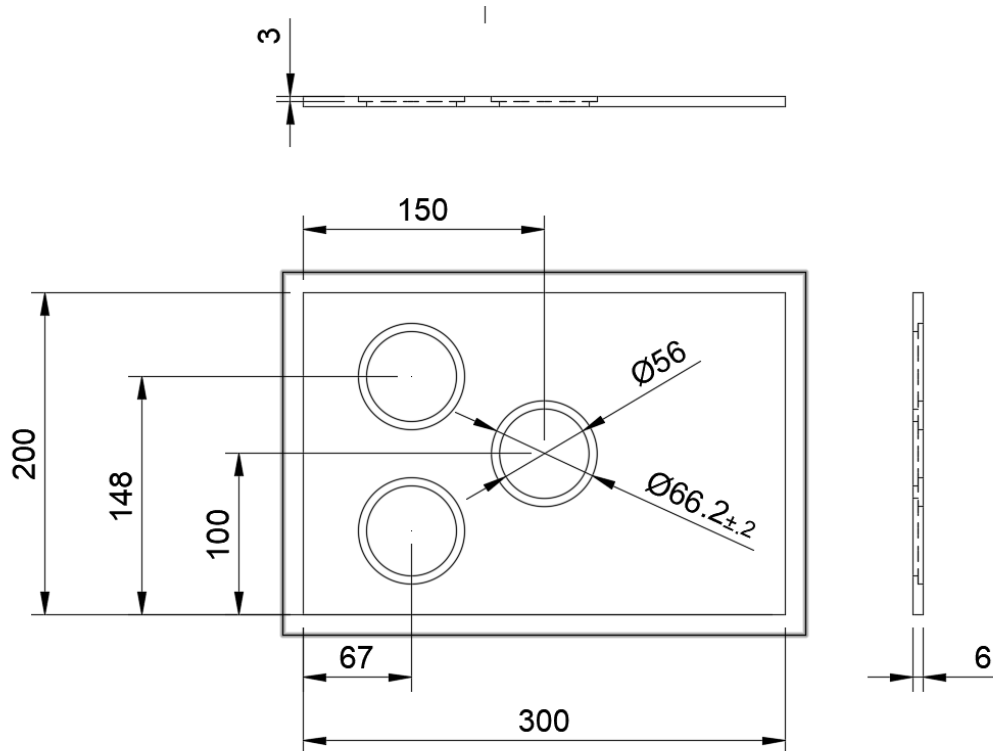The Z- side is open to place sensors and openings except a 10mm ring (Figure 3.9).

Figure 3.9

4 Electrical Interface

The electrical interface provides connection between the payload and the payload controller of the Rideshare Gondola. Through the interface the gondola can provide power and data connection to the payload. The electrical interface makes possible to the payload to use the services provided by the gondola:

4.1 Power Supply

TBD

4.2 Data storage

TBD

4.3 Time sync

TBD

4.4 GNSS data

TBD

4.5 Preprogrammed trigger events

TBD

4.6 TCTM service over RF

TBD

4.7 Connector

4.7.1 Pinout

TBD

4.7.2 Payload side

TBD

4.7.3 Gondola side

TBD

4.8 Communication Protocol

TBD

5 List of Abbreviations

GNSS   Global Navigation Satellite System
ICD   Interface Control Document
RF   Radio Frequency
TBD   To Be Decided
TCTM   Telecommand/Telemetry

List of figures

6 List of tables

7 References

7.1 Applicable and Normative Documents

AD	Title	Reference	Version
[AD 1]	StratoSpace-Rideshare Payload Requirements		i1.0
[AD 2]	StratoSpace Rideshare Gondola Mechanical Drawings		i1.0
[AD 3]			
[AD 4]			
[AD 5]			
[AD 6]			

7.2 Reference Documents

RD	Title	Reference	Version
[RD 1]			
[RD 2]			
[RD 3]			
[RD 4]			
[RD 5]			
[RD 6]			

8   Document change history

Issue	Date	Sections	Description of change	Author
0.0	04/05/2020	All	Template created	Bence Goczan
0.1	25/02/2025	All	Initial version of document created	Bence Goczan
0.2	07/05/2025	3.1	Figures added and sizes updated	Bence Goczan
0.3	08/05/2025	3.1	Payload dimensions and figures added	Bence Goczan
0.3	08/05/2025	3.2	Payload gondola figures added	Bence Goczan
0.3	08/05/2025	4	Formatting added	Bence Goczan
0.3	08/05/2025	6	List of Abbreviations updated	Bence Goczan
0.3	08/05/2025	7	List of applicable documents updated	Bence Goczan
1.0	21/05/2025	All	Issued for i1.0	Bence Goczan