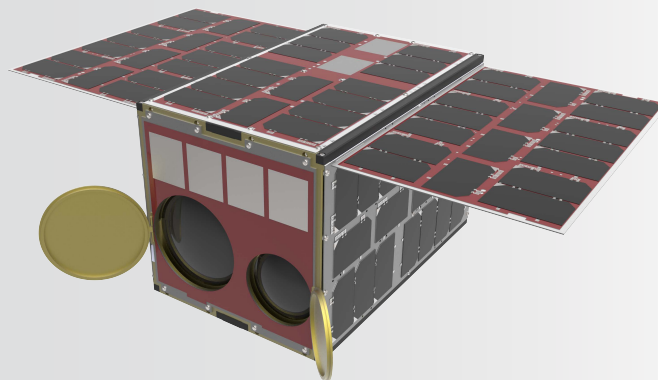


## 12U PLATFORM

### MAIN FEATURES\*

- In-house developed structure and subsystems based on ECSS standards
- 5-year design lifetime in LEO
- Population by ESA-qualified hand soldering operators
- Double redundancy and soft degradation in all subsystems
- Single-point failure tolerant design
- 32% higher payload power availability\*
- Integration time reduced by 55%\*
- Redundant CAN and MLVDS buses (OBC)
- Maximized payload volume due to flexible positioning



\*Platform developed under the framework of RADCUBE mission founded by ESA  
\*\* Than market average

### SUMMARY

C3S's main strength in the small satellite industry is that our engineering team devoted great attention to thermal design during the development of our platform. Therefore, the structure is optimized for high dissipation density and thermo-elasticity, both payload and platform wise. Along unprecedentedly high payload power availability our bus offers great flexibility regarding the shape and positioning of the payload. Our devoted team will be at your service from mission planning throughout the operation of the entire mission, until deorbiting.

### SERVICES

- Launch management
- Testing
- Remote testing facility using flatsat
- Mission planning
- Payload design & MAIT from TRL 4
- Mission Operation Center based data collection for one month or longer upon request /extension available

### USE CASES

- Earth observation
- IOD
- IoT
- Space weather monitoring

### TESTS PERFORMED\*

- ✓ SEE radiation test (in anechoic chamber)
- ✓ TID test
- ✓ Vibration test
- ✓ TVAC test (thermal cycling & thermal balance tests, performed in thermal-vacuum chamber)
- ✓ Burn-in test
- ✓ Functional test
- ✓ RF test
- ✓ Autocompatibility test
- ✓ Mechanical properties inspection

\* Test plan and test reports approved by ESA

## SPECIFICATION

### PLATFORM

| Property                           | Value/Options                                      | Notes   |
|------------------------------------|--|---|
| Mass                               | 18 kg  | Payload excluded                                |
| Dimensions                         | 226.3 x 226.3 x 366 mm                             | 12U size  |
| Subsystem mechanical interfaces    | Card Guide, Box-in-a-box                           |   |
| Subsystem interconnection          | Rigid backplane with nano-D and micro-D connectors | Micro-D: MIL-DTL-83513<br>Nano-D: MIL-DTL-32139 |
| Redundancy                         | Subsystem level cold redundancy                    |   |
| Lifetime                           | 5-year design lifetime in LEO                      |   |
| Operating temperature range        | -40 °C ... +80 °C                                  | Except battery pack (0°C...+50 °C)              |
| Platform average power consumption | 7.9 W  | Mission dependent                               |
| Platform peak power consumption    | 25 W   | Mission dependent                               |
| Maximum incoming solar power       | 65 W   | 8 independent MPPT channels                     |
| Battery capacity                   | 115 Wh (3P4S) / 155 Wh (4P4S) / 190 Wh (5P4S)      | Depending on battery pack                       |
| Power Buses                        | 13.2 V – 16.8 V                                    |   |
| Command bus, Data bus              | 2 x CAN bus  | Cold-redundant pair                             |
|                                    | 2 x M-LVDS   | Cold-redundant pair to COM                      |
|                                    | 2 x M-LVDS   | Cold-redundant pair to PAY                      |
| On-Board computer CPU Core         | 32bit ARM Cortex-M7                                |   |
| On-Board clock frequency           | Up to 300 MHz                                      |   |
| Mass storage capacity              | 16 GByte eMMC                                      |   |
|                                    | 16 MByte MRAM                                      | Radiation resistant                             |
| TX/RX Frequency Band               | 399-401 MHz  | Professional Band                               |
| Maximum transmit power             | 30 dBm   | 1 W   |
| Symbol rate uplink                 | 1.25-150 kbps                                      |   |
| Symbol rate downlink               | 5-150 kbps   |   |

Continues on page 3/3



TITLE  
COMPANY  
ADDRESS  
CONTACT

C3S PLATFORM DATA SHEET, v03 - 02/02/2022 C3S  
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## 12U Platform/Specification

|                    |              |  |
|--------------------|--------------|--|
| Modulation         | OOK/FSK/GFSK |  |
| Knowledge accuracy | 0.2          |  |
| Pointing accuracy  | 2°           |  |

## PAYLOAD ALLOWANCE

| Property                                  | Value/Options  | Notes  |
|---|--|--|
| Volume                                    | 12.3 - 13.1 U (Units = Litres)                       | Depending on payload positioning   |
| Dimensions within Z-frame                 | 216.2 x 216.2 x 235 mm<br>+<br>112.8 x 216.2 x 94 mm | Can be extended with up to 800,000 mm <sup>3</sup>                                 |
| Average power<br>(average during 1 orbit) | Up to 40 W   | Power available for the payload,<br>depending on solar panel type<br>and mission * |
| Peak Power                                | Up to 165 W **                                       | Power available for the payload,<br>depending on battery pack                      |
| Communication interface                   | CAN 2.0B, M-LVDS                                     |  |

\* The presented value is calculated for:  
Orbit: 600 km, SSO, 9h LTAN  
Orientation: Z+ axis points to Nadir, Wing is  
perpendicular to sun vector

\*\* It can be exceeded as an impulse, for a  
short period of time (<<1 sec)

The platform's attributes are mission dependent, the datasheet calculates with the basic configuration.