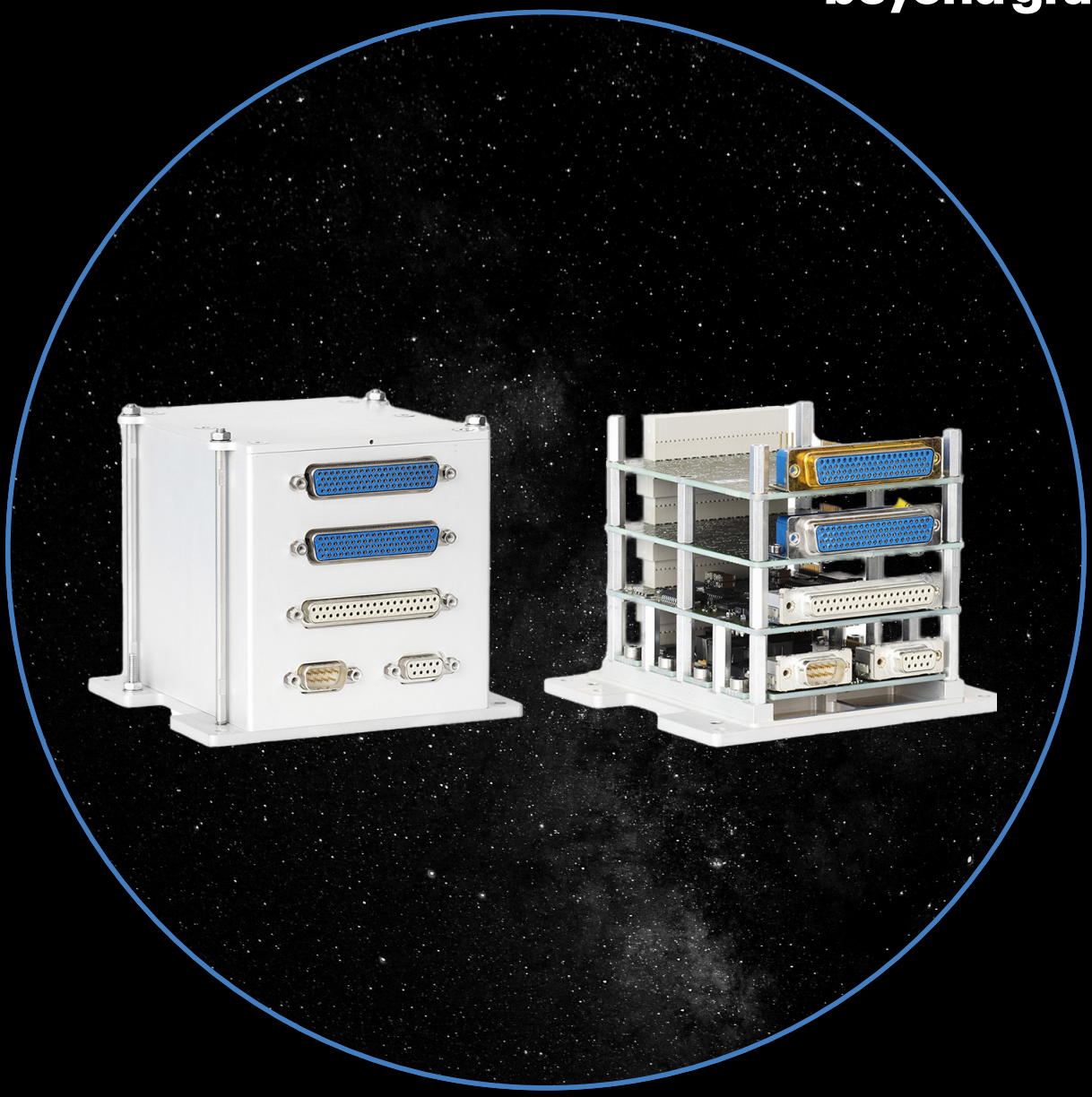
beyond gravity



Constellation Interface Unit

The Constellation Interface Unit is one of the high quality products in the cost effective product line developed for large quantities, in lightweight and compact form factor. The Constellation Interface Unit is On Board Computer peripheral, connected via industry standard CAN bus interface. The unit is providing acquisition interface for spacecraft discrete telemetry signals, as well as stepper motor drive electronics.

- The Constellation Interface Unit architecture is modular and flexible, allowing quick customization according to customer needs. Possible customization options:
- Increase/decrease number of discrete signal acquisition inputs
- Modify acquisition input type
- Add discrete telecommand line output module
- Add power distribution module

Key features

- Industry standard CAN bus interface
- Acquisition function for digital and analog telemetry signals
- Motor control electronics for driving up to four stepper motors
- Motor position sensor and motor end stop inputs

Interfaces

- 28V input power bus
- Industry standard CAN Bus Interface
- 64 discrete telemetry acquisition inputs
- ECSS-E-ST-14C Standard compliant inputs
- Acquisition input type is configurable.
- 4 stepper motor drive interfaces

Environment

Temperature	-20 to +60°C
Random Vibration	25 grms in plane
	30 grms out of plane
Shock Level	2000g
Sustain total dose	up to 10 years in LEO
Reliability	<600 FIT (FIDES)

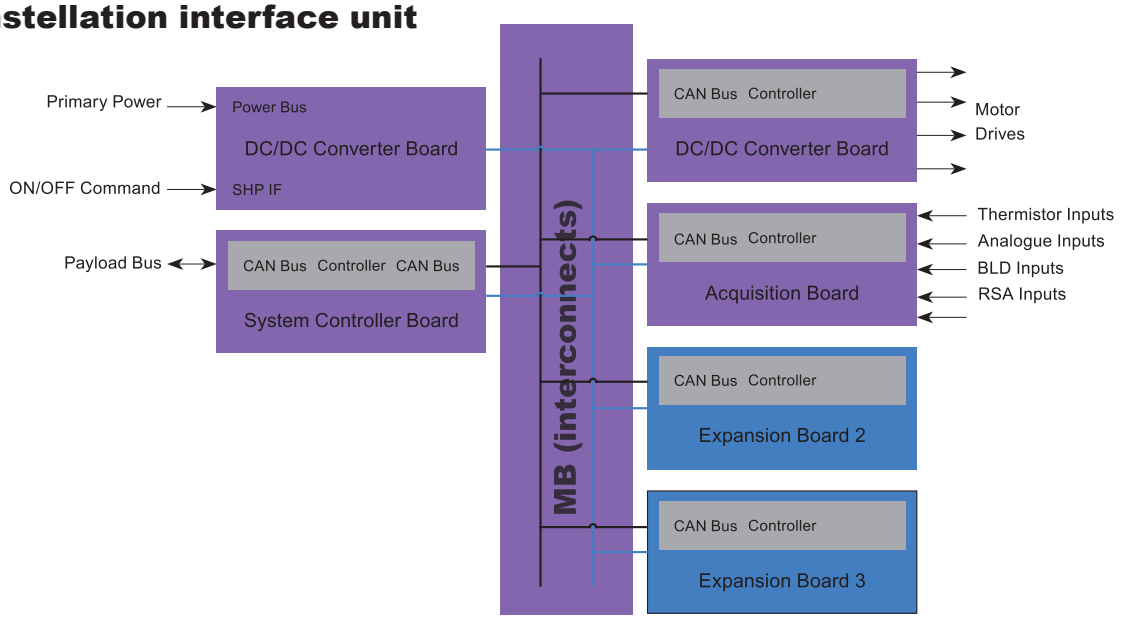
Budgets

Size (W x D x H)	120 X 130 X 114m³
Mass	1.3 kg
Power Dissipation:	<8W
Control	<1W
Acquisition	<1W

Heritage

- Beyond Gravity Remote Interface Unit Legacy
- Automotive COTS component process heritage

Constellation interface unit



Interface specifications

cIU has totally 48 pcs single ended inputs. Each single ended input can be independently configured either analog, digital or thermistor acquisition input.

cIU has totally 16 pcs of differential inputs. Each differential inputs can be independently configured either analog or digital inputs.

Interface	Specifications	Notes
Primary Power Input	Nominal primary voltage: +28 V Range: +22V...+38 V Over current protection Over/under voltage protection Soft start limiting inrush current	Isolation between primary and secondary sides. +5V and +28V secondary voltages.
cIU Power On/off Control	High Voltage Pulse Command inputs DC-coupled, isolated from secondary **Active input** level: +21V...+29V Min pulse length: 1 ms SW configurable to "Auto Power On"	ECSS-E-ST-50-14C, HV-HPC receiver
cIU Power On/Off Status (power good signal)	Bi-level status output DC-coupled Open collector output Max output current: 10 mA	ECSS-E-ST-50-14C, BSM
TM/TC Bus	Industry standard CAN bus CANopen based TM/TC protocol	
Analogue Acquisition Inputs	Single ended inputs[1] Differential inputs[2] Resolution: 12 bits Accuracy: ±0.5% Conversion time: 2.2µs / channel DC-coupled Input voltage range: 0V...+5V Common mode range: -1V...+1V Bandwidth: ≤ 160 Hz	ECSS-E-ST-50-14C, ASM
Thermistor Inputs	Thermistor inputs[1] DC-coupled TC and PTC types supported	ECSS-E-ST-50-14C, TSM1 / TSM2
Bi-level Digital Inputs	Single ended inputs[1] Differential inputs[2] DC-coupled Low level: 0V...+0.9V High level: +2.0V...+5.5V	ECSS-E-ST-50-14C, BDM / BSM
Motor Control	4 x Two phase stepper motor drives Full and half stepping Microstepping: from 16 up to 64 steps Step counter Current controlled Drive current: 0.75 A/motor 8 x End stop switch status inputs (BSM)	Operation from +28V secondary supply. Drive current up to 1.5A/motor depending on ambient temperature and cooling.
Position Sensor Inputs (for motor control)	4 x single ended potentiometer inputs[3]	ECSS-E-ST-50-14C, TSM1
Optional Serial Interface	UART, RS-485	HW support on board

1) cIU has totally 48 single ended inputs. Each single ended input is software configurable between analogue, digital inputs or thermistor input.
2) cIU has 16 differential inputs. Each differential input software configurable between analogue and digital inputs.
3) Potentiometer inputs can be configured also as digital status or thermistor inputs.

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