



# OBC Option Sheet

## How to use this Option Sheet:

1. Please fill-in this Option Sheet carefully. In case you have questions, we advise contacting ISISPACE prior to sending the Option Sheet at: [sales@isispace.nl](mailto:sales@isispace.nl). Note that you are responsible to make sure the inputs you make are correct, since ISISPACE will produce the product accordingly, and shall not be responsible to verify your inputs or liable to provide refunds, make alterations or send a new product in case your input does not reflect your needs correctly.
2. Fill in the form digitally. You will need to have Adobe Acrobat reader installed (free download available at <http://get.adobe.com/reader/>)
3. Press the check button at the end to verify if your Option Sheet is complete.
4. Once you are ready, press the Enable Read Only button to prevent accidental changes, save the changes and send the digitally filled-in Option Sheet by email to your Sales Representative.

## Customer Contact Information

Contact Name:	
Email Address:	
Phone Nr:	
Organization / Company / Institution	
Address:	
Address (Cont'd):	
Country:	

## Additional Information (Optional)

Intended use (EM/FM/QM)	
Mission name	

## For ISISPACE Use – Leave Blank –

Order Confirmation:	
Allocated WO:	
Sales responsible:	
Project/Ref.:	



## General Configuration

### Intended Use

#### Flight Model (FM) (Default)

#### Engineering Model (EM)

In the case of an engineering model configuration, one red LED indicating that the CPU is powered on is placed. This LED is useful for debugging, since it shows a watchdog reset. The LED is removed in the flight model configuration in order to save power.

### Motherboard Configuration

#### Master (Default)

The Master configuration is used as the primary computer of the satellite. The CPU is always powered on and acts as a master on the I2C bus. The Supervisor is directly connected to the CPU and does not appear on the I2C bus.

#### Slave

The Slave configuration is used as a general purpose processing unit in the satellite; for example as a payload data processing and storage unit. The Supervisor is accessible on the I2C bus and controls the CPU power on/off based on I2C commands.

### Daughterboard Selection

More than one option can be selected below:

(Qty)

#### EM Daughterboard

Simple daughterboard to fan-out all the I/O with standard connectors.  
For development purposes only, not suitable for flight.  
The height of the ISIS-OBC together with the daughterboard assembly is not optimized.

#### FM Daughterboard

Simple daughterboard to fan-out all the I/O with connectors.  
Suitable for flight.  
Height of the ISIS-OBC together with the daughterboard assembly is optimized.

#### Customized Daughterboard (by ISISPACE)

The motherboard is delivered with the connectors required to host a daughterboard.  
Please contact your sales representative for further information regarding custom daughterboard designs.

#### None (daughterboard designed and manufactured by customer)

The motherboard is delivered with the connector required to host a daughterboard.  
The customer can then build their own daughterboard design according to their specification.  
The interfaces are detailed in the ISIS-OBC datasheet.

Please note that Daughterboards are sold separately and might incur on additional cost. Contact your sales representative for further information regarding pricing.



## Electrical Configuration

### UART Configuration (UART0 – RX0, TX0)

LVC MOS 3.3V (default)

Full duplex. Standard 3.3V levels, no buffer, no inverter.

RS-232

Full duplex.

### I2C Protocol and Interface Configuration

#### Address Mode

7-bit (default)

10-bit

#### On-board 3.3kΩ pull-up resistors

Yes (Default for Master configuration)

No (Default for Slave configuration)

#### Supervisor Address (for slave configuration only)

The I<sup>2</sup>C addresses are defined in the code that is flashed in the microcontrollers. They cannot be changed without having the system.

The users can specify any other address if the default is not compatible with their system. The address can be any 7-bit number with the exception of reserved addresses, specified in the I<sup>2</sup>C bus specification ([http://www.nxp.com/documents/user\\_manual/UM10204.pdf](http://www.nxp.com/documents/user_manual/UM10204.pdf)) and listed below.

Slave address (binary)	Slave address (hex)
0000 000	0x00
0000 001	0x01
0000 010	0x02
0000 011	0x03
0000 1XX	0x04 – 0x07
1111 XXX	0x78 – 0x7F

Note that the CPU address is always selected by the user in software for Master and Slave configurations.

Default (0x14)

Alternative

Alternative Supervisor I2C address (0x##)



## CSKB Pin-out Configuration

### *I2C Pin-out*

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I2C Clock (SCL) / I2C Data (SDA)

H1-43 / H1-41 (Default)

H1-21 / H1-23 (Alternative)

### *Main 3.3V power input*

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H2-27 + H2-28 (Default)

Note that pin H2-27 and H2-28 are always electrically connected.

H1-48 (Alternative (GOMSPACE EPS 3.3V switched line 1))

H1-50 (Alternative (GOMSPACE EPS 3.3V switched line 2))

### *Debug UART*

The debug UART is available on the programming connector and on breakout wire connections for all cases.

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DTXD            H2-21 (Default)

DRXD            H2-22 (Default)

### *CSKB general purpose I/O*

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GPIO22        H1-45 (Default)

GPIO23        H1-46 (Default)

GPIO24        H2-50

GPIO25        H2-51 (Default)

GPIO26        H2-52

Important note: The list above does not detail all the CSKB pins used by the OBC. Additionally, some CSKB pins have a breakout wire connection on the OBC although these pins are not used by the OBC directly.

Please refer to the ISIS-OBC datasheet for more details.

### Mounting holes grounding

The board is mechanically mounted in a CubeSat stack by means of four mounting holes which are connected to ground by default. If so required, these mounting holes can be disconnected from the board electrical ground.

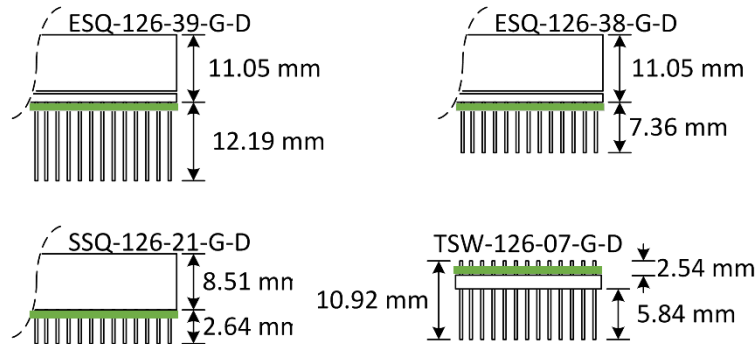
Holes Grounded (default).

Holes NOT Grounded.

Note: By default, the mounting holes are grounded by means of a 00hm resistor. For alternative grounding schemes, please leave a comment on the Additional Comment section. ISISPACE will review your request and contact you as soon as possible.

## Connector type and placement

### CSKB Connector



Note: The board location with respect to the connector is marked by the green line in the drawing above (the line represents the PCB). The iOBC board is 1.7mm thick.

#### Standard Stack Through

Other CSKB components possible on top and bottom

Samtec ESQ-126-39-G-D (Default)

Samtec ESQ-126-38-G-D

#### Stack Termination Bottom

No other CSKB components possible below the ISIS-OBC

Samtec SSQ-126-21-G-D

#### Stack Termination Top

No other CSKB components possible above the ISIS-OBC

Samtec TSW-126-07-G-D

#### Alternative

Write full SAMTEC code below:

This option must be approved by ISISPACE before order confirmation and may have an additional cost and / or lead time.

## Additional Comments