



MULTIPURPOSE ADAPTER GENERIC INTERFACE CONNECTOR (MA61C)

SMALLSAT version

Description

The Multipurpose Adapter Generic Interface Connector (MA61C) is an innovative command and data handling system that allows connecting different subsystems to the smallsat onboard software (which can be hosted externally or internally) without driver installation or user configuration.

The core of MA61C is the GR712RC LEON3-FT processor, which supports multiple interfaces. MA61C smallsat holds SpaceWire, MIL1553, CAN-bus, I2C, GPIO, RS422, RS485 and SPI interfaces that can be used to command and control subsystems. All interfaces besides SPI and I2C can be used as inputs and outputs. The processor also comes with a built-in timer based on an onboard oscillator.

MA61C holds a database of drivers, enabling plug-and-play functionalities such as device recognition and self-configuration. In addition, it is equipped with an internal memory of SRAM and FLASH for storing onboard software, drivers, and data.

The embedded API is an intelligent system that can scan connections, detect incoming data, route and convert data between the subsystem and the onboard software. In addition, the package includes a Graphical User Interface (GUI) for Windows to monitor and debug the system.

In addition to selling different versions of MA61C, the intelligent data node to serve the design needs of our customers, SPiN provides a service to design satellites in a flexible concept using model-based system engineering methodology. Don't hesitate to get in touch with ma61c@spintech.com for more information.

In 2022, SPiN launched its first CubeSat to demonstrate its technology in orbit and opened three more subsidiaries in Italy, the United Kingdom and Luxembourg.

SPiN is a leading provider of modularity solutions for the space sector. It offers satellite integration solutions to transform satellites into modular systems, empowering satellite manufacturers to spend high-value time and money where it counts: pursuing new ventures.

Founded in 2015, SPiN is a Techstars portfolio company. It was selected for Top 70 Innovative Companies for Pioneers in 2016 and as one of the Top 500 Companies for Hello Tomorrow 2019. In addition, the adapter technology was awarded the best business solution at the Startup Weekend Space in 2015, the INNOSpace Masters in 2016 and NewSpace Europe in 2019.



What does MA61C CubeSat do?

The MA61C SmallSat automatically adapts the communication interface and protocol standards of different suppliers to the unique standard of the onboard software. This simplifies the communication between the onboard software of the smallsat and its subsystems, such as AOCS sensors and actuators, communication, power and payload.



MA61C SmallSat Key Features

Physical properties:

- ✓ Operating Temperature: -40 deg C to +85 deg C
- ✓ Quality: ISO standard
- ✓ Size PCB: 105 mm x 105 mm (without casing)
- ✓ Size with casing: 131 mm x 131 mm x 30 mm (including footing)
- ✓ Weight: 435 grams (approx.)

Processor:

GR712RC dual-core 32-bit LEON3 fault-tolerant SPARC V8 processor 50 MHz clock frequencies

Onboard software:

- ✓ Plug and play
- ✓ Embedded driver database
- ✓ Routing and converting
- ✓ Data Buffering

Power Supply: 5V to 24V

Interfaces on the board:

- ✓ 2 x SpaceWire, micro-d 9 pins female
- ✓ 2 x CAN-bus, dsub9 male
- ✓ 1 x MIL-STD-1553B (RT/BC/MT), dsub9 male
- ✓ 5 x RS422 and 1 x RS485 mdm-25 female
- ✓ 1 x I2C Master, 1 x SPI master, 6 x PWM: mdm-15 male
- ✓ 9 x GPIO, 16 Analogues: mdm-37 male
- ✓ 1 x power and 1x JTAG: dsub-9

Onboard Memory:

- ✓ SRAM - 64 Mbit - 2 x 32 Mbit
- ✓ FLASH - 64 Mbit

Port Speed:

- ✓ SpaceWire - Up to 200 Mbit/s, nominal 10Mbit/s
- ✓ MIL-STD-1553B - 1Mbit/s
- ✓ CAN-bus - 1Mbit/s
- ✓ I2C interface - up to 0.4Mbit/s
- ✓ SPI interface - up to 20Mbit/s
- ✓ RS422/RS485 interfaces - up to 10Mbit/s
- ✓ Debug port - 1 Mbit/s

What is included in the MA61C package?

- ✓ 1 x MA61C (board and casing)
- ✓ 1 x Debug cable
- ✓ 1 x USB flash stick with windows API and GUI Manuals

SPiN companies are located in Europe and US:

Space Products and Innovation GmbH - Germany, Robert-Bosch-Str. 7, 64293, Darmstadt

Space Products and Innovation S.a.r.l - Luxembourg, 9 Av. des Hauts-Fourneaux, L-4362 Esch-sur-Alzette,

Space Products and Innovation - United Kingdom, Electron Building, Fermi Avenue, Harwell Campus, Didcot, Oxfordshire, OX11 0QR

Space Products and Innovation S.R.L - Italy, Vicolo delle Cisternole 24, 00044, Frascati (RM)

Space Products And Innovation Inc - USA, 3225 Central Ave. NE, Albuquerque, NM, 87106

