DIGITAL SIGNAL PROCESSING MODULE DSP-3U-SH4
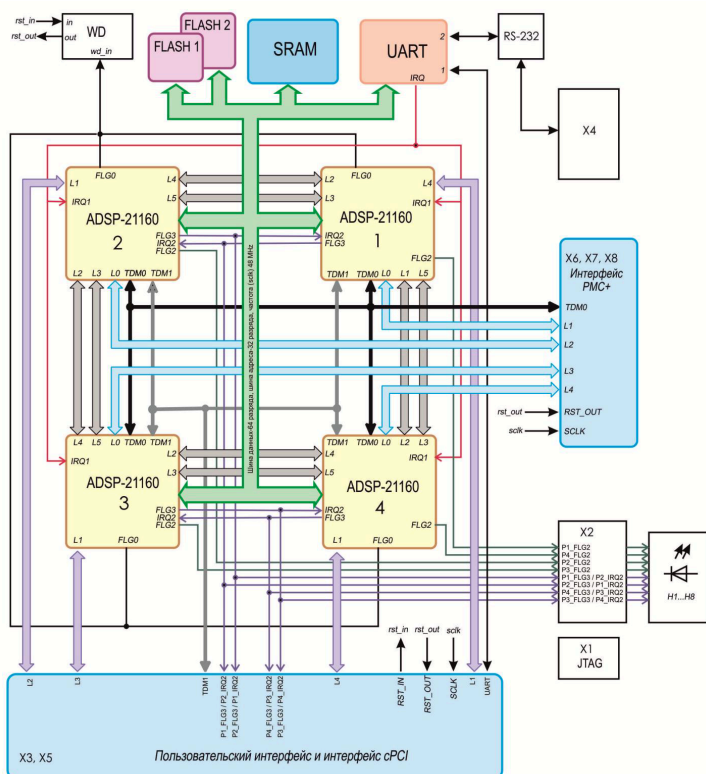
(brief technical description)

Year of manufacture: 2015
Part number: DSP-3U-SH4
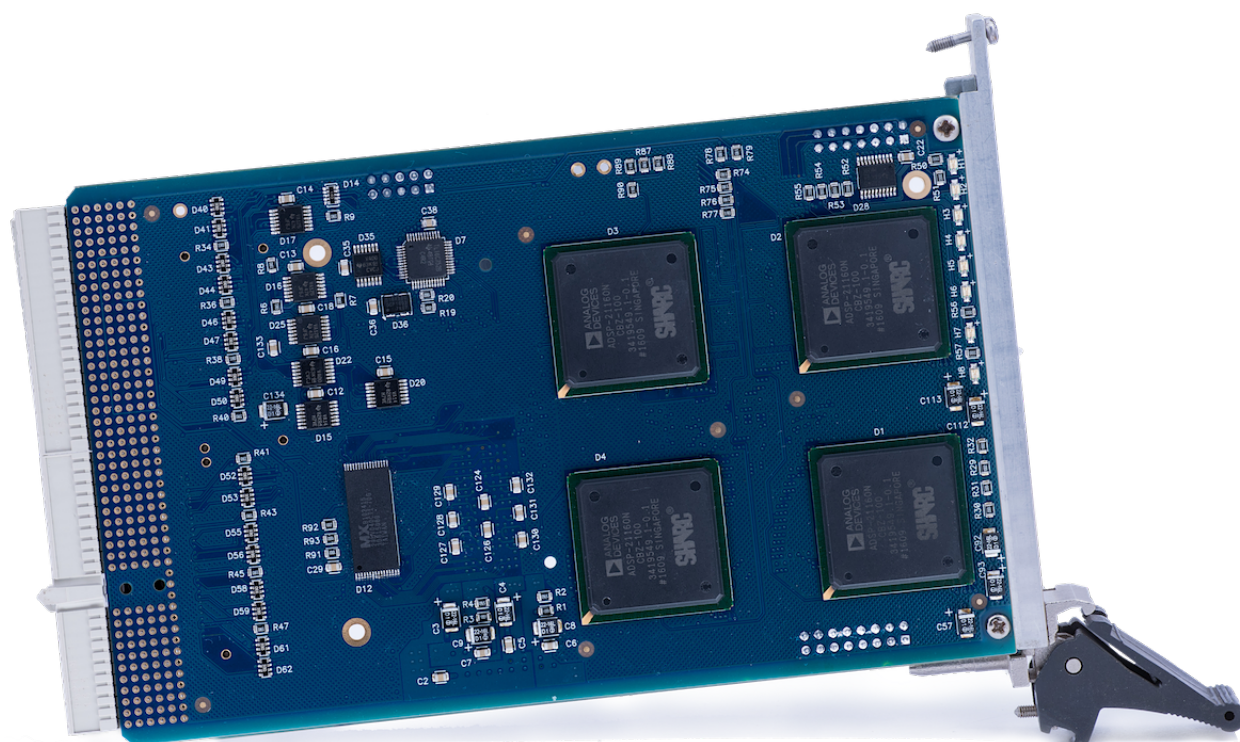
powered by Analog Devices SHARC®

Function

The DSP-3U-SH4 is a multiprocessing device that designed with using of four signal processors ADSP-21160N of SHARC® family and is intended for a real-time digital signal processing building.

Key features

Four processors that have summarized computational power 2,3 GFLOPS, are being switched in the parallel 32-bits electrical data bus (48 MHz clock) and four parallels pipelines of LINK-ports (96 MHz clock). The parallel data bus supplies a data access for each DSP to the SRAM memory space (16Mb), to the Flash memory space (4Mb) and to the two-ports UART controller. Each DSP has a connection between cPCI user interface and one of LINK-port, in the same way there is a connection between user cPCI interface and one of Serial port shaped in the TDM mode.

Design

The module is shaped according to 3U CompactPCI standard. The module has two basic interfaces for data input/output organization. To ensure additional protection against environmental influences, all module surfaces are covered with a conformal waterproof coating.

Input/output CompactPCI data interface

The user part of cPCI interface has four LINK-ports, single serial port (SPORT) shaped in the TDM mode, UART interface, flag and interrupt processor pins, WATCHDOG input/output pins, system clock output pin (48 MHz).

Input/output PMC+ data interface

The user part of PMC+ interface has four LINK-ports, single serial port (SPORT) shaped in the TDM mode, UART interface, flag and interrupt processor pins, WATCHDOG input/output pins, system clock output pin (48 MHz).

Developer tools

For the program debugging of user software the module has JTAG interface fully matched to Analog Devices emulators of ICE family and development tools such as Analog Devices VisualDSP++® or Analog Devices CrossCore®.

In order to user loading software building, board failure checking and flash reprogramming there is a ToolKitDSP® utility.

MAIN SETTINGS	
Parameter Name	**Value**
Computational power	2,3 GFLOPS
Numbers of DSP	4
Processors type	SHARC ADSP-21160
Bus clock	48 MHz
DSP clock	96 MHz
DSP internal memory	4 x 4Mb
SRAM memory	16 Mb
FLASH memory	2 x 4 Mb
Number of led indicators	2 x 4 (yellow)
Number of Interrupt inputs	2 x 4
Number of flag inputs/outputs	2 x 4
Data transfer rate, max:	
LINK buses	8 x 96MB/s = 768MB/s
SPORT TDM buses	2x10Mb/s
UART buses	1x921kb/s (RS-422) 1x230kb/s (RS-232)
Supply voltage:	
Nominal	3,3 V
Min	3,13 V
Max	3,47 V
Power consumption	
Nominal	7 W
Max	15 W
Dimension	160 x 100 mm
Outline dimension	4HP 3U PIGM 2.0.
Developer tools	AD VisualDSP++® , AD CrossCore® HPUSB-ICE, HPPCI-ICE, ICE-1000, ICE-2000 ToolKitDSP
Temperature range	- 40℃ …+70℃
Additional environmental protection	Conformal waterproof coating