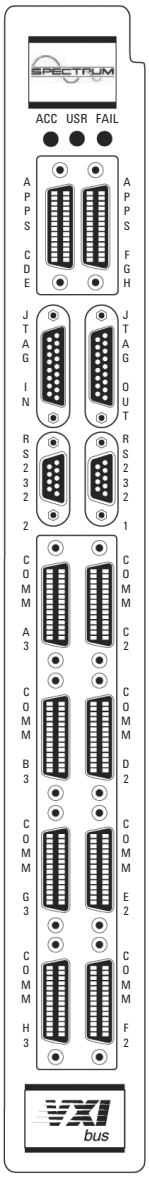
Agilent SCMVX008

TI based VXI DSP Module Distributed Product

Technical Specifications



- **Two 60 MHz TI TMS320C40 DSPs**
- **Six TIM-40 mezzanine card slots**
- **Eight C40 comm ports on front panel**
- **Local bus support**
- **VXI shared memory**
- **Two application specific connectors**
- **JTAG connection**
- **Standard C40 software development**
- **Single-slot, C-size, VXI module**

Concentrated computing power with high performance I/O

The Agilent SCMVX008 signal processing module is a high-performance data acquisition and signal analysis processor. It combines Texas Instrument's TMS320C40 general purpose 32-bit floating point processors running at 60 MHz with user-written, downloaded software to meet the demands of advanced data acquisition and analysis applications.

Expanded processing power

Increase the computing power in your SCMVX008 by using its six expansion slots to add processors. Each slot holds a TIM-40[1] mezzanine card. Different cards have different combinations of DSP, memory and I/O capabilities. By mixing and matching TIM-40 cards, you can build a parallel processing system suited to the application at hand.

DSP SYSTEMS WORLDWIDE SPECTRUM

[1] The Texas Instrument Module (TIM-40) for the C40 is a widely accepted mezzanine card standard generated by Texas Instruments.

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DSP to DSP communication

The TMS320C40 DSP is noted for the DSP-to-DSP communication flexibility provided by its six high speed communication ports. The layout of the SCMVX008 uses that flexibility to move data efficiently among multiple DSPs. Each C40 and TIM-40 node in the module is connected to its five nearest neighbors and to one of the eight buffered C40 comm port connectors on the module front panel.

High performance I/O

Processing power is wasted without fast and flexible data I/O. The SCMVX008 module has a selection of data ports to assure fast input of raw data and efficient output of processed data.

Special I/O

The SCMVX008 also has special purpose I/O. Two application specific connectors on the front panel provide direct access to the TIM-40 nodes.

VXI shared memory

VXI shared memory facilitates data transfer to the host or other VXI modules. Order as much as your processing needs demand. Select as little as 4 MB, or as much as 64 MB.

Software

Develop software for the SCMVX008 using standard C40 software tools. TI offers a highly proven, mature set of development tools for their TMS320 DSP family. This first class combination of software and support is utilized by a broad range of third parties. TI's C4x Assembler/Linker and ANSI C compiler are available for PCs enabling users to develop DSP applications in standard ANSI C.

Options and accessories

The SCMVX008 has several options and accessories to enhance its functionality.

TMS320C40 TIM-40 card
(Option SCMVX008-011)

Use this option to increase the number of C40s in your SCMVX008 module. Each Option SCMVX008-011 TIM-40 card adds a single 60 MHz, TMS320C40 DSP with 1.5 MBytes of 0 ws SRAM.

Dual TMS320C44 TIM-40 card
(Option SCMVX008-012)

Use this card to add two DSPs in your SCMVX008 with one TIM-40 card. Each Option SCMVX008-012 holds two 60 MHz TMS320C44 DSPs. The C44 has the same functionality as the C40 but is enough smaller that two can fit on one TIM-40 card. Each C44 has 1 MB of 0 ws SRAM.

Four-channel tuner with DACs
(Option SCMVX008-040)

This card provides four independent channels of digital quadrature mixing with digital LOs followed by decimation filtering for use in digital radio applications.

Demodulation software
(Option SCMVX008-140)

Use this software with the Option SCMVX008-040 four channel tuner and DACs TIM-40 card. Option SCMVX008-140 provides programmatic control of the LOs, filters, and DACs on the card, and provides AM, FM, and SSB routines to demodulate the signals selected by the tuners.

Specifications

Specifications describe warranted performance for the system configuration listed. Supplemental characteristics identified as “typical” or “characteristic,” provide useful information by giving non-warranted performance.

Signal Processor

Type:	TI TMS320C40 (32 bit, floating point)
Clock rate:	60 MHz
Memory per DSP:	1 MB SRAM (0.5 MB local, 0.5 MB global each DSP)
Number:	2
MFLOPS:	60/DSP

Data Transfer Rates

Agilent Local Bus to Local Bus Interface Io:	100 MB/sec
Local Bus Interface Io to input FIFO:	60 MB/sec
Local Bus input FIFO to embedded C40 SRAM (read):	80 MB/sec
Local Bus input FIFO to TIM-40 SRAM (read):	60 MB/sec
C4X to Local Bus output FIFO (write):	40 MB/sec
Output FIFO to Local Bus Interface Io: **Local Bus Interface Io to Agilent Local Bus:**	60 MB/sec 100 MB/sec
C4X SRAM to reading C4X:	40 MB/sec
C4X writing to any other C4X SRAM:	40 MB/sec
VXI Interface to C4X SRAM: (read & write, to all C4X’s SRAM)	24 MB/sec (D32 transfers)
VXI interface to VXI Shared DRAM: (read & write)	17 MB/sec
C4X SRAM to VXI Shared DRAM (write):	20 MB/sec
VXI Shared DRAM to C4X SRAM (read):	24 MB/sec
COMM ports to front panel: (read & write)	15 MB/sec (sustained)

VXI power and cooling

Module Current (No TIM-40 cards installed)	**Power supply**	**I_{PM} (A)**	**I_{DM} (A)**
	+5 V:	3.44	0.620
	+12 V:	0	0
	-12 V:	0	0
	+24 V:	0	0
	-24 V:	0	0
	-5.2 V:	0.737	0.024
	-2 V:	0.165	0.007
	Cooling/Slot		
	Watts/slot:	21.36 W	
	Air Flow:	1.78 liters/sec	
	ΔP mm H_2O:	0.07 mm H_20	

Option SCMVX008-011: C40 TIM card (Add for each SCMVX008-011 installed)	**Power supply**	**I_{PM} (A)**	**I_{DM} (A)**
	+5 V:	0.593	0
	+12 V:	0	0
	-12 V:	0	0
	+24 V:	0	0
	-24 V:	0	0
	-5.2 V:	0	0
	-2 V:	0.002	0
	Cooling/Slot		
	Watts/slot:	2.97 W	
	Air Flow:	0.25 liters/sec	
	ΔP mm H_2O:	0.033 mm H_20	

Option SCMVX008-012: Dual C44 TIM card (Add for each SCMVX008-012 installed)	**Power supply**	**I_{PM} (A)**	**I_{DM} (A)**
	+5 V:	1.0	0
	+12 V:	0	0
	-12 V:	0	0
	+24 V:	0	0
	-24 V:	0	0
	-5.2 V:	0	0
	-2 V:	0	0
	Cooling/Slot		
	Watts/slot:	5.00 W	
	Air Flow:	0.42 liters/sec	
	ΔP mm H_2O:	0.033 mmH_20	

Option SCMVX008-040: Four-channel tuner TIM-40 card (Add for each SCMVX008-040 installed)	**Power supply**	**I_{PM} (A)**	**I_{DM} (A)**
	+5 V:	0.340	0.235
	+12 V:	0.094	0.030
	-12 V:	0	0
	+24 V:	0	0
	-24 V:	0	0
	-5.2 V:	0	0
	-2 V:	0.080	0.021
	Cooling/Slot		
	Watts/slot:	2.99 W	
	Air Flow:	0.26 liters/sec	
	ΔP mm H_2O:	0.033 mm H_20	

Instrument Drivers

Command Module Firmware:	None
Command Module Firmware Rev:	None
I-SCPI Win 3.1:	No
I-SCPI Series 700:	No
C-SCPI LynxOS:	No
C-SCPI Series 700:	No
Agilent VEE Drivers:	No
VXI*plug&play* Windows® Framework:	No
VXI*plug&play* MS Windows 95/NT 2000® Framework:	Yes
VXI*plug&play* HP-UX Framework:	Yes

VXI Characteristics

VXI device type:	Register-based
Data Transfer Bus:	A16, A32 - D32, D16, D08
Roles:	Master, Slave
Connectors:	P1, P2
Shared Memory:	4, 8, 32, 64 MB
VXI Busses:	VXIbus
	Local Bus
	TTL Trigger Bus
	ECL Trigger Bus

TMS320C40 TIM-40 Module
(Option SCMVX008-011)

Type:	TI TMS320C40 (32 bit, floating point)
DSP number:	1
Clock rate:	60 MHz
Memory:	1.5 MB SRAM total (1.0 MB local, 0.5 MB global)
Data ports:	Six C40 comm ports, global bus

Dual TMS320C44 TIM-40 Module
(Option SCMVX008-012)

Module type:	TIM-40
DSP type:	TI TMS320C44 (32 bit, floating point)
DSP number:	2
Clock rate:	60 MHz
Memory:	2 MB SRAM total (0.5 MB local, 0.5 MB global) each DSP
Data Ports:	Four C40 comm ports, global bus

Four Channel Tuner with DACs
(Option SCMVX008-040)

Module type:	TIM-40
DSP type:	Harris Semiconductor HSP50016 (real time digital filtering, decimation and quadrature mixing)
DSP number:	4
Max input rate:	40.96 MB/s (20.48 MSa/s)
Filter widths:	176 kHz - 86 Hz (20.48 MB/s input data rate)
Decimation factor:	64 - 131,072 (steps of 4)
Tuning range:	0 - 8 MHz, < 1 Hz resolution (20.48 MSa/s input data rate)
Data ports:	Three C40 comm ports (0, 4, 5 jumper selectable), global bus
DAC outputs:	4
Output level:	2.5 V p-p (typical)

Ordering Information

SCMVX008	TI-based DSP Module
SCMVX008-011	TMS320C40 TIM-40 Card
SCMVX008-012	Dual TMS320C44 TIM-40 Card
SCMVX008-040	Four-Channel Tuner with DACs
SCMVX008-140	AM, FM, SSB Demodulation Software
SCMVX008-082	4 MB DRAM VXI Shared Memory
SCMVX008-083	8 MB DRAM VXI Shared Memory
SCMVX008-085	32 MB DRAM VXI Shared Memory
SCMVX008-086	64 MB DRAM VXI Shared Memory
SCMVX008-OB1	Additional Manual
SCM04008	I/O Library
SCM01545	Debug Kit
SCM00010	C4X Comm Port Cable Kit
SCM00012	JTAG Chain Cable
A2636-61601	RS232 Cable (30 inch)

Warranty

This product is distributed, warranted, and supported by Agilent Technologies. It is manufactured by Spectrum Signal Processing, Inc.

The Agilent SCMVX008 comes with a 1-year warranty. During that period, the unit will either be replaced or repaired, at Agilent's option, and returned to the customer without charge.

Related Agilent Literature

E3238 Signals Development System Configuration Guide
literature number 5988-0562EN

E3238 Signals Development System Product Overview
literature number 5968-2075E

E3238 Signals Development System Technical Specifications
literature number 5963-6609E

Test Systems and VXI Products Catalog
literature number 5980-0307E

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(fax) 800 820 2816

Europe:
(tel) (31 20) 547 2323
(fax) (31 20) 547 2390

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Korea:
(tel) (82 2) 2004 5004
(fax) (82 2) 2004 5115

Latin America:
(tel) 305 269 7500
(fax) 305 269 7599

Taiwan:
(tel) 0800 047 866
(fax) 0800 286 331

Other Asia Pacific Countries:
(tel) (65) 6375 8100
(fax) (65) 6836 0252
Email: tm_asia@agilent.com

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