



Overview:

The **VRM-CS5-X** is a CompactPCI® based Dual Ultra160 SCSI hostadapter; suitable for attachment of LVD/SE 16-bit peripherals such as Raid-systems, high performance hard disks and streamer tape drives. Provided with two independent ports, both channels can be dedicated to LVD devices, or alternatively one channel can be used to support mixed performance SE devices. The **VRM-CS5-X** provides up to 320MBps aggregate SCSI throughput. Optimum performance therefore is achieved when the **VRM-CS5-X** is operated in a 64-bit CPCI backplane, but 32-bit legacy systems also profit from the power of this high-end SCSI controller. By double transition clocking, Ultra160 speeds up the data transfer rate of Ultra2 from 80MBps to 160MBps per channel. Other Ultra160 features are Domain Validation and Cyclic Redundancy Check. Compatibility is maintained to all previous SCSI standards. The **VRM-CS5-X** is provided with two external VHDCI receptacles and one internal HDSUB connector, so external and internal devices can be connected simultaneously. The **VRM-CS5-X** allows for connecting of up to 2 x 15 peripherals with 16-bit (Wide) interface. All SCSI connectors can be used together at the same time. The dual VHDCI receptacle SCSI_X is mounted to the front panel of the **VRM-CS5-X** for attachment of external devices to the SCSI channels A and/or B. The HDSUB connector SCSI_I is provided for internal use (channel A only). Peripherals attached to any of the SCSI connectors, are sensed by a logic circuitry. If the logic detects the **VRM-CS5-X** to be either end of the SCSI bus, the local SCSI terminators are activated. 8-bit (Narrow) SCSI peripherals need an adapter (connector or cable) in order to reduce from 68 – 50 leads. The jumperless board is built around the LSI Logic (Symbios) SYM53C1010 SCSI processor. Being also compatible to the SYM22915 hostadapter board, the **VRM-CS5-X** can be used with all LSI Logic software. Therefore, existing SYM22915 drivers for operating systems as Windows or Linux are valid also. The **VRM-CS5-X** provides a Flash Extended BIOS, thus enabling operating system boot from any SCSI drive. The Flash-EEPROM can be field upgraded at any time by means of a utility program. The **VRM-CS5-X** is additionally equipped with two serial EEPROMS, saving configuration parameters of each of the two SCSI channels.



In order to ease system integration, several LED's show interesting board status information. The **VRM-CS5-X** sources the voltages for the on-board and external SCSI terminators (TERMPower), fused by Polyswitches (reversible fuse). SCSI Bus data and control signal integrity will be improved by the SCSI controller chip using the Symbios Tolerant™ filtering technology, thus minimizing the influence of a critical SCSI cabling (poor cables, mixed cable types, noisy environment). The **VRM-CS5-X** is provided with a 64-bit CPCI interface, giving a nominal bandwidth of 532MBps @ 66MHz in a suitable system (P1/P2 backplane). This is by far enough to handle the theoretical aggregate maximum 320MBps SCSI data stream. However, a 64-bit @ 33MHz CPCI System (266MBps) seems to be slightly imbalanced. Actually, the SCSI busses operate with considerable lower data transfer rates. Usual configurations dedicate one of the SCSI channels to mixed performance SE devices, while the other channel is reserved for the LVD devices only. The SE organized SCSI bus however operates with a maximum of 40MBps (20MBps if 8-bit narrow devices). Most peripherals do not reach the maximum data transfer rates when accessed outside their local caches due to latency periods. Therefore, the **VRM-CS5-X** is also a good choice for 32-bit CPCI systems with a nominal bandwidth of 133MBps. SureLINK™ domain validation technology detects the configuration of the SCSI busses and automatically tests and adjusts the SCSI transfer rate to optimize interoperability. The **VRM-CS5-X** exceeds Ultra160 by providing not only Basic (Level1) and Enhanced (Level 2) domain validation, but adds Margined (Level 3) domain validation. This enhancement margins LVD drive strength and clock signal-timing characteristics to identify marginal Ultra3 systems. CRC improves the reliability of SCSI data transmission through enhanced detection of communication errors. The CRC has apx. 2-32 rate of undetected error patterns. CRC is the best way to ensure data protection during hot plugging. To provide complete end-to-end protection of the SCSI I/O, AIP protects all non-data-phases, augmenting the CRC feature of Ultra160. With the **VRM-CS5-X**, any CompactPCI® system can profit from dual Ultra160 SCSI performance. The **VRM-CS5-X** is an affordable, highly reliable industrial grade product that is easily installed.



Features:

- 3U Eurocard (100x160mm), front panel width 20.2mm (4HP), mechanics constructed with respect to EMC requirements, ejector lever
- 2x ANSI SCSI Parallel Interface-3 (SPI-3) 16-bit (8-bit by adapter). LVD max. 2x15 devices; SE max. 2x15 devices (16-bit), 2x7 devices (8-bit)
- Ultra160 160MBps: each channel Ultra2 80MBps, Wide Ultra 40MBps (16-bit), Narrow Ultra 20MBps (8-bit), Wide Fast 20MBps (16-bit), Narrow Fast 10MBps (8-bit)
- External connectors (front panel): dual VHDCI (0.8mm pitch) 68-lead receptacle, shielded, screw lock mechanism, each connector rotated 180° against the other (matching plugs with suitable asymmetric hood profile required if both connectors are engaged).
- Internal connector: 68-lead high-density sockets HDSUB (1.27mm pitch), screw lock mechanism 2-56 UNC, SCSI channel A only.
- Low Voltage differential mode: Ultra2/Ultra 160 SCSI 12m/ SE mode: Fast SCSI 3m, Ultra SCSI 3m (4 devices), 1.5m (8 devices)
- Active termination, automatically enabled when board is sensed to be either end of the SCSI bus, LVD/SE self configured termination power fused by self resetting Polyswitches 1.25A trip
- SCSI multi-function controller SYM53C1010. Maximum aggregated throughput 320MBps, PCI busmaster 64/32-bit (block transfer max. 532MBps), on-chip LVD/SE transceiver 2kV ESD protected, SCAM level 1 functionality, target disconnect/reconnect (interrupt), Symbios Tolerant™ SCSI signal filtering, SureLINK™ domain validation, AIP Asynchronous Information Protection
- CompactPCI® Connector J2: 64-bit, 33 MHz (532MBps), Connector J1: 64-bit, 33MHz (266MBps), 32-bit, 33MHz (133MBps), PCI Burst Mode, 3.3V/5V interface
- Front panel (each channel): termination power, activity, LVD mode (permanent red light) or SE mode (flashing whenever SCSI Bus Busy active)
- On board: local terminators active, SE mode, LVD mode, serial EEPROM data line access, GPIO4 (channel A: Flash BIOS programming)
- Connector J1: +5V \pm 5% 3A max. (Including ext. termination power), +3.3V \pm 0.3V 0.6A max. +12V \pm 5% 0.05A max.
- Operating temperature: 0-70°C. Humidity: 5-90% non condensing

Ordering Options:

VRM-CS5-1: 3HE CompactPCI Dual Ultra160 SCSI Hostadapter 33MHz CPCI I/F

VRM-CS5-2: 3HE CompactPCI Dual Ultra160 SCSI Hostadapter 66MHz CPCI I/F

VRM-8993102: External SCSI cable assembly, VHDCI to HD-DSUB, 68-position, 1m length, asymmetric VHDCI Connector.

VRM-CR9-ADP: Mechanical kit, expands 3U front panel to fit in 6U systems