

VME-IMC5

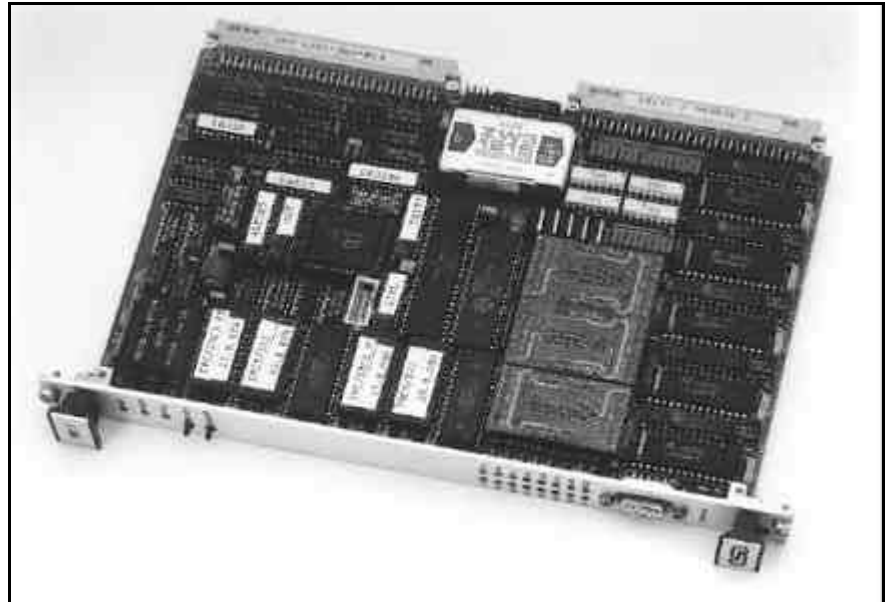
Motion Controller for 5 Axes

Intelligent Motion Controller

- Intelligence on board makes the controlling fast and relieves the VMEbus
- Standardized control of machines according to DIN 66025
- Easy handling by means of a shared RAM interface
- All axes can be synchronized

Industrial Standard

- Safety of operation by optoisolation between VMEbus and process environment
- Easy diagnosis by display of actual states on the front panel
- Proper wiring to the backplane via P2



Process Controller with 68000/10

VME-IMC5 is an intelligent motion controller for 5 axes on the VMEbus. It covers all necessary components on a VMEbus 6U board and needs only 1 slot.

The VME-IMC5 is equipped with a local 68000 CPU at 12.5/16 MHz for processing of complex track controls as well as synchronous movement of all drives.

Incremental Inputs

The actual positions are acquired by 30 bit incremental encoder inputs optionally for differential or ground related signals in the range from 5 to 24 volts. Drive of the motors is done by fast D/A converters using ± 10 V and 12 bits resolution.

Protected I/O Lines

10 additional digital inputs in the range from 5 to 24 volts can optionally be related to the channels, for two limit or reference switches per axis. External synchronization can be performed by a digital input. For digital outputs 5 sustained-short-circuit protected output drivers are available (1 A at 24 V). All digital and analog inputs are provided with protection diodes.

Electrical Isolation

All signals between VMEbus and process plant - including the analog signals - are optoisolated.

Firmware On-Board

The firmware of the local CPU is completely coded in real-time language PEARL, basing on the multitasking operating system RTOS-UH.

A channel-oriented shared RAM interface defines the sectors of parameters and commands for each channel and for the synchronous control.

This makes it easy to implement master systems like an OS-9 system.

The regulation of each single channel is done by hardware PID controllers, which allow a minimum scan time of 314 microseconds. Nevertheless, the user of this board can access the parameters of PID controllers at any time, including the limiting of the memory of the integrator.

For multiple uses, switch-overs or run-in tests, the parameter sets can be stored in a 256 kbytes battery backed SRAM.

Mailbox in the Shared RAM

An additional communication level between master board and VME-IMC5 slave board is realized by 4 bi-directional mailbox interrupts via VMEbus.

Monitor/Debugger

Moreover, at a local serial interface (RS-232) an EPROM-resident terminal program is available for the user, that emulates all master commands from the VMEbus, and displays all actual data and status values. Taking advantage of the multi tasking feature of the operating system, the terminal program is able to check the self-developed master software of the user in parallel, e. g. for run-in tests.

Controlling Machines

Execution of programs for the control of machines according to DIN 66025 is possible. The program can either be inserted online via the serial interface or it can directly be developed, edited and executed on the IMC5. The IMC5 can store NC programs in its battery-backed RAM. The necessary software module IMC5-NC is an option.

LED Display

All digital signals are displayed on the front panel of the VME-IMC5.

Watchdog

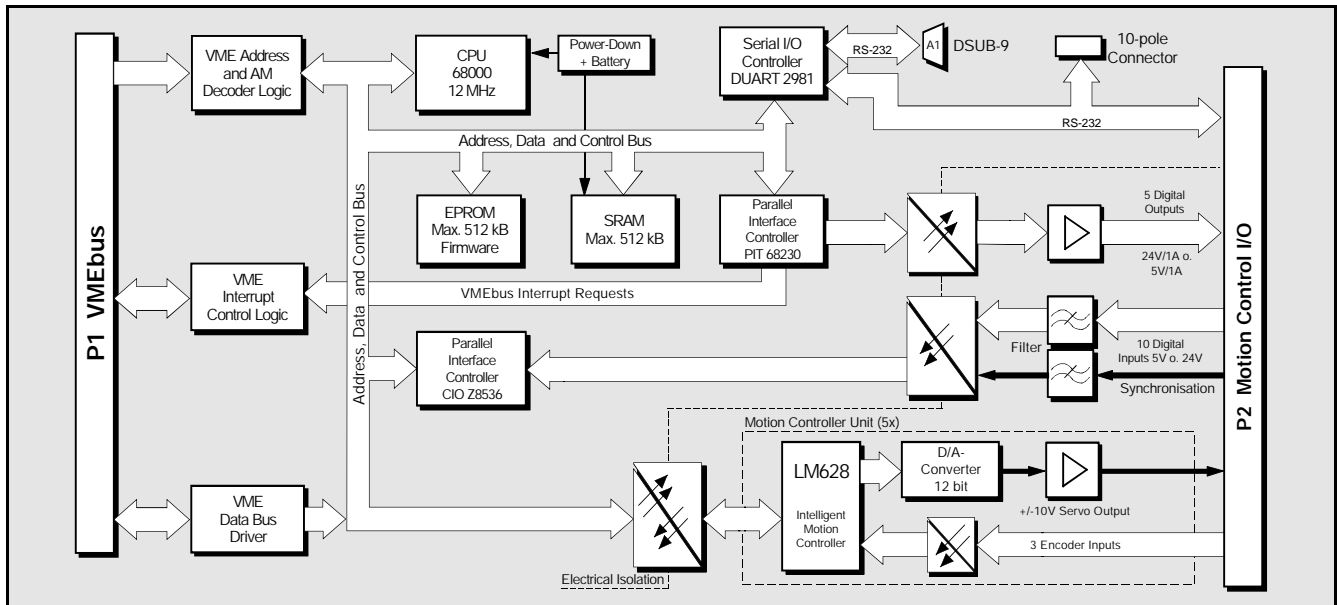
For security control a watchdog function is integrated, which generates a local or optionally a global RESET on error conditions.

VME Interface

The VME-IMC5 as a VME slave board is equipped with an A32/D16 or an A24/D16 interface, selectable by jumper. Interrupts can be generated at software-programmed interrupt levels.

VME-IMC5

Motion Controller for 5 Axes



Technical Specifications:

Process section:

CPU:	MC68000/12.5 MHz or 16 MHz
Memory:	up to 512 kbytes battery-backed SRAM with CRC check and 1024 kbytes EPROM
Motion controller:	5 axes, using intelligent motion controller LM628 or LM629 with 314 μ s cycle time
Serial interfaces:	2 serial interfaces RS-232C, 19.2 kBaud
Interrupts:	software-programmable VMEbus interrupts
Outputs:	5 outputs for dc and servo motors ± 10 V/12 Bit; 5 digital outputs 24 V/1 A, optocoupled
Inputs:	10 digital inputs 24 V, optocoupled; 5 incremental encoder inputs, each equipped with a HOME input, all inputs optocoupled, polarity selectable; synchronizing input for operation of more than 5 axes
Standardization:	operation at numeric controlled (NC) machines according to DIN 66025
LED array:	BUSY, RUN, O1-O5 (digital outputs), I11-I51 I12-I52 (digital inputs: lower, upper limit switch), S (synchronization not active), IRQ
Electrical isolation:	by optocouplers

VMEbus section:

Base address:	jumper selectable, the board covers 1Mb
Address modifier:	full AM decoding additionally with don't care mode for 'supervisory'/nonprivileged' mode
VMEbus revision:	IEEE 1014 rev. C.1
Data transfer	SADO32, SD16

General:

Ambient temperature:	0...50 °C
Humidity:	max. 90%, non-condensing

General (continued):

Connector types:	P1+P2: DIN 41612-C96 each P3: DSUB9 female
Board size:	160 mm x 233 mm
Weight:	620 g
Power supply:	DC to DC converter for all analog supply voltages (± 15 V and +5 V) on-board
Power consumption:	P1: 2.5 A at +5 VDC ± 5 %, max. 1 A at +12 VDC ± 5 %, max. 1 A at -12 VDC ± 5 % P2: 24 V externally for digital outputs, current is load-dependent

Order information:

Designation		Order no.
VME-IMC5.3-628	Motion controller for 5 axes, 12 MHz, 5 x LM628, I/Os +5 V, 64 kbytes SRAM	V.1803.05
VME-IMC5.3-628	Motion controller for 5 axes, 12 MHz, 5 x LM628, I/Os +24 V, 64 kbytes SRAM	V.1803.24
VME-IMC5.3-629	Motion controller for 5 axes, 12 MHz, 5 x LM629, I/Os +5 V, 64 kbytes SRAM	V.1804.05
VME-IMC5.3-629	Motion controller for 5 axes, 12 MHz, 5 x LM629, I/Os +24 V, 64 kbytes SRAM	V.1804.24
VME-IMC5-16MHz	68000 CPU for 16 MHz instead of 12 MHz	V.1805.08
VME-IMC5-RAM256	Memory extension to 256 kbytes SRAM	V.1805.02
VME-IMC5-RAM1M	Memory extension to 1 Mbyte SRAM	V.1805.04
IMC5-NC	Software module (DIN66025)	P.1805.10
VME-IMC5-OS9	C driver for OS-9 as source code	P.1805.50
VME-IMC5-VxW	C driver for VxWorks as source code	P.1805.56