

## CMC693PR144 – Programmable Logical Control IC with 4-axis Motion Control

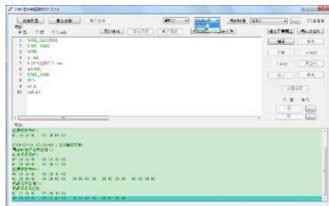


CMC chip integrates logic control, motion control, I/O, program storage, communication interfaces into one chip. By using the configuration software ConfDes, user's program can be downloaded to the on-chip memory, therefore the chip could achieve logic control and motion control, digital signal processing, and multiple data interface communication.

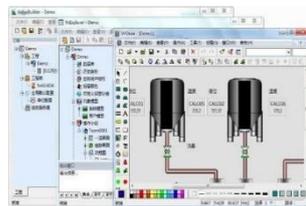
CMC chip can be used as a single controller, and also can be expanded as a large-scale control system with other CMC chips.

- Support 5 programming languages within IEC61131-3 Standard: IL, ST, LD, FBD and SFC, plus G code;
- All functional blocks and control algorithms in IEC61131-3 Standard as well as I/O, debug/diagnose service blocks are embedded in the CMC chip. The chip is also open to the users for their own algorithm definition.
- Support G code. The CMC chip can independently control 4 axes of either stepper motor driver or pulse type servo motor for position and speed control. In addition, it can perform 2/3-axis linear interpolation, CW/CCW circular interpolation, 4-axis bit pattern interpolation.
- Support multi types of AI/AO, DI/DO, PI/PO, Orthogonal coding detection and PWM output.
- The chip provides multi communication ports, easy to extend to protocols which used in other industries such as connecting to standard industrial equipment or system via Ethernet/CANopen/Modbus.

### Software kit for developers:



ConfDes: configuration software



SCADA software

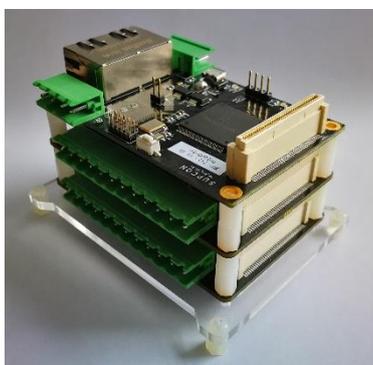


OPC server software



CMC Diagnose software

### Development kit for developers:



We offer our customer a development kit, which includes one main control module and several functional modules:

MU-211: Main control module with one CMC693RP144 (144pin) chip, dual 100M Ethernet, dual CAN and dual RS485;

AIO-211: Analog current input/output module. Combined with MU-211, it has 6 input channels of 4-20mA signal and 8 output channels of 4-20mA signal;

DI-211: Digital signal input module. Combined with MU-211, it has 12 input channels of 24V DC signal;

DO-211: Digital signal output module. Combined with MU-211, it has 12 output channels of 2A/30V DC signal;

For more functional modules, please visit our website: [www.nz-ic.com](http://www.nz-ic.com)

CMC hardware		
Main frequency		10 ~ 400Mhz (typical 200Mhz)
External CLK input		OSC, 2~15MHz
Data width		32bit
On-chip SRAM		256K Bytes
On-chip Flash		2M Bytes
Timer		4
Communication	Interface	UART x 2
		CAN x 2
		SPI x 2 (Master x 1, Slave x 1)
		I2C x 1
		Ethernet (MAC) x 2
Protocols		Modbus, CANopen, EPA, OPC-UA
GPIO		84 (Configurable)
I/O output range		9.8 ~ 35mA/3.3V
On-chip system clock		Set via PLL
Logic control speed	1 Standard PLCOpen test	0.44ms @100MHz
	1,000 basic instructions	0.25ms @100MHz
Motion control	Control axis	4 axes;
	Interpolation	2/3-axis linear interpolation, CW/CCW circular interpolation, 2/3/4-axis bit pattern interpolation;
	Speed	1pps – 4Mpps
	Range	-8,388,607 ~ +8,388,607
Internal algorithm		All functional blocks and control algorithms in IEC61131-3 Standard
Working voltage	IO: 3.3V (±10%)	
	Core: 1.2V (±10%)	
Working temperature		-40~85°C
Package		LQFP 144
Package size		20×20×1.4mm

ConfDes: CMC configuration software	
Standard	IEC61131-3:2002
Program language	IL, ST, LD, FBD, SFC, G code and C
Computer request	
Operation system	Windows XP or later
CPU	Minimum 1GHz
Memory	Minimum 1G
HDD	Minimum 500M
Communication Interface	Ethernet