

Differences between Coolmay 3G series products and 2N series products

PLC series Differences	CX2N/FX2NC series	CX3G/FX3GC series
Instruction operation time	About 30ns/Basic instruction; About 200ns (8K step about 25ms) /Applied instruction	0.42μs/Basic instruction; 1.6μs/Applied instruction
Digital input	Active NPN, COM connect negative	Passive NPN, public terminal isolated
PLC type	Compatible with Mitsubishi FX2N	Compatible with Mitsubishi FX3G
Programming software compatible version	Compatible with Works 2/GX Developer8.52	Compatible with Works 2/GX Developer8.86
Write type	RUN not supported	Support RUN, more convenient and faster for modifying program
Programming port	8-hole mouse head female RS232 programming port, Mini B type USB programming port optional; FX2NC series PLC default 8-hole mouse head female RS422 programming port.	CX3G series comes with two PLC programming ports (Mini B type USB port and RS232 port 8 hole mouse head holder); FX3GC series PLC comes with two PLC programming ports: MiniB type usb port (download and read speed is faster) and RS422 port 8-hole mouse head base). The programming port download can reach 115200bps, and the USB programming port download speed can reach 12Mbps.
COM port	Support Mitsubishi programming port protocol /MODBUS protocol/RS protocol. 1 RS485、 1 RS232 or 2 RS485 can be optional (CAN BUS can be optional for CX2N-24M/32M) ; When there are two optional COM port, the default second rs485 is the slave, If you need two RS485 or one RS232, one RS485 to be the master, tell us before place an order, and the second channel can not write RS instruction; FX2NC-12M/16M/24M have 1 optional RS485 port FX2NC-12M/16M/24M 1 RS485 port optional; FX2NC-30 1 RS485 port optional; FX2NC-28M 2 optional RS485 port.	Support Mitsubishi programming port protocol / MODBUS protocol / RS protocol / BD board protocol. CX3G series default 2 RS485, CX3G-34M/64M/80M can be customized to 1 RS485, 1 RS232, optional CAN; CX3G-16M/24M/32M/48M can be customized to 1 RS485, 1 RS232 or 1 RS485, 1 CAN or 1 RS232, 1 CAN; FX3GC-30M can be equipped with 1 RS485 port; FX3GC-16M can be expanded at most 2 RS485, 1 CAN port, 6AD/ 4DA; Or 1 RS485, 1 CAN port,

		8AD/4DA; Or 1 RS485, 8AD/6DA; Or 2 RS485, 1 CAN port.
Program Capacity	8K steps	32K steps
Auxiliary register range	[M0~M499] 500 points General; [M500~M1535] 1036 points Keep in; [M8000~M8255] 256 points Special.	[M0~M383] 384 points General; [M384~M1535] 1152 points to keep in; [M1536~M7679] 6144 points General; [M8000~M8511] 512 points Special.
Data register range	[D0~D199] 200 points General; [D200~D999] 800 points Keep in; [D8000-D8255] 256 points Special	[D0~D127] 128 points General; [D128~D7999] 7872 points to keep in; File register [R0~R23999] 24000 points to keep; [D8000-D8511] 512 points Special.
Status register range	[S0~S9] 10 points Initial state; [S10~S499] 490 points General ; [S500~S999] 500 points Keep in	[S0~S9] 10 points for initial state; [S10~S999] 990 points to keep in use; [S1000~S4095] 3096 points are generally used.
Timer range	[T0~T199] 200 points 100ms General [T200~T245] 46 points 10ms General [T246~249] 4 points 1ms, General [T250~T255] 6 points 100ms Cumulatively maintained.	[T0~T199] 200 points 100ms is generally used; [T200~T245] 46 points 10ms for general use; [T246~T249] 4 points 1ms cumulatively used; [T250~T255] 6 points 100ms cumulatively used; [T256~T319] 64 points 1ms Normal use.
Register range	[C0~C99] 100 points General 16bit; [C100~C199] 100 points Power outage maintained 16bits; [C200~C234] 35 points Power outage maintained 32bits.	[C0~C15] 16 points, generally 16 bits; [C16~C199] 184 points, power failure to maintain 16 places; [C200~C219] 20 points, generally 32 bits; [C220~C234] 15 points Power failure to maintain 32 bits.
Pointer, interrupt	[P0~P127] 128 point JUMP CALL.	[P0~P255] 256 points JUMP CALL; [P0~P1280] 1281 points JUMP CALL (26232 and above);

		Input interrupt 6 points I0□□~I5□□; The timer is interrupted by 3 points I6□□~I8□□.
Analog	Support multiple analog input and output, single or mixed, at most 20AD/8DA, analog input precision 12 bit, output 10 bit. Analog input is read the value of special registers, analog output is to reset standard bit ON and then value special registers. AD type: EK thermocouple /S thermocouple /J thermocouple / PT100 / PT1000 /NTC10K/ NTC50K/NTC100K /0-20mA /4-20mA /0- 10V /0-5V DA type: 0-10V/0-5V /0-20mA	Support multiple channels of various types of analog single or mixed input and output, a single device up to 16 in 8 out, analog input and output accuracy 12 bits. The CX3G analog input read supports direct read registers, and can also use the FROM instruction. The analog output supports direct register assignment or the TO instruction. The analog registers are different. Analog input type: EKSTJ type thermocouple (can support negative temperature) / PT100/PT1000/NTC10K/NTC50K/ NTC100K/0-10V/0-5V/0-20mA/4-20mA or hybrid and other special specifications are optional; FX3GC series, CX3G series are not supported except 16M without analog Other models support -5V~5V and -10V~10V voltage input; Analog output type: 0-10V/0-5V/0-20mA/4-20mA or hybrid type optional.
High speed counter	Regularly with 2 channels single or AB phase 10Khz high speed counter. At most 6 channel single phase (4 10-100K,2 5-10K) or 3 channel AB phase (2 10-100K,1 5-10K) or 3 ABZ phase (1 10-100K,2 5-10K). Fixed double frequency.	Conventional single-phase 6 channel 60KHz or AB(Z) phase 2 channel 60KHz+1 channel 10KHz.
Pulse	Regularly 4 channel 20Kpulse, Y0/Y1/Y6/Y7, at most can be customized to 5channel 20-200K,the added channel is Y10. Acceleration and deceleration is the same register.	The conventional 8 channel Y0-Y3 is 100KHz, and the Y4-Y7 is 10KHz; Acceleration and deceleration independent, high-speed counting + high-speed pulse total transmission can not exceed 480KHz.

Supported instructions	Compatible with most instructs of FX2N , position instruct and floating points of 3U (123 instructs in total) 。 EI and high speed compare not supported. PID supported, adjust automatically not supported, users need to modify parameters manually.	Support interrupt, support high-speed instruction such as high-speed set reset, PID support auto-tuning (only support step response mode), support for index multi-point transfer instruction/binary floating-point number transfer, Gray code conversion, binary floating-point angle radians conversion, data Block addition and subtraction, cam matrix, digital tube instructions, etc. (More than 76 instructions supported by CX2N).
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Series Difference	EX2N series HMI/PLC all in one	EX3G series HMI/PLC all in one
Size difference		
Cutout size	EX2N-43H(A) series is the same as the EX3G-43HB (HA) series ,Dimension: 134*102*30mm, Cutout: 119*93mm; EX2N-43KH(A)/50KH(A) is the same as EX3G-43(50)KH/KHA series, Dimension: 150*93*32mm, Cutout: 143*86mm; EX2N-100HA series is the same as EX3G-100HA series, Dimension: 275*194*36mm, Cutout: 261*180mm; EX2N-70H(A/AS) series Dimension: 212*148*40mm, Cutout: 194*138mm; EX3G-70KHA(S) series Dimension: 226*163*35.6mm, Cutout: 218*153mm。	
HMI		
Resolution	EX2N-43H(A)/43KH(A): 480*272 EX2N-50KH(A)/70H(AS): 800*480 EX2N-70HA/100HA:1024*600	EX3G-43HB (HA) /43KH(A): 480*272 EX3G-50KH(A)/70KHAS: 800*480 EX3G-70KHA/100HA:1024*600
RAM	H/KH: 64MB;HA(S): 128MB	43HB:32MB 43(50)KH:64MB 43HA/43(50)KHA/70KHA(S)/100HA:128MB
CPU	H/KH series ARM9 core 400MHz KHA/HA(S) series CORTEX A8 720MHz-1GHz	HB:ARM9 core 216MHz KH:ARM9 core 400MHz HA/KHA(S):CORTEX A8 720MHz-1GHz
COM	Optional communication port supports the Mitsubishi programming port protocol/MODBUS protocol/RS protocol. EX2N-43H(A)/43KH(A)50KH(A) Optional 1 RS232, optional audio, no optional network port; EX2N-70H (A/AS)/100HA optional 1 RS232 or 1 RS485,Optional network port and audio.	The optional communication port supports the Mitsubishi programming port protocol/MODBUS protocol/RS protocol. EX3G-43HB(HA)/43(50)KH(A) can be equipped with 1 RS232. No optional network port; The EX3G-70KHA(S)/100HA can be equipped with one 232 or one 485, and the optional network port (can not coexist with the PLC network port).

PLC		
Instruction operation time	About 30ns/basic instruction; About 200ns (8K steps about 25ms) /application instruction	0.42μs/basic instructions; 1.6μs/application instructions
Digital input	Active NPN (common terminal connect with negative)	Passive NPN, common side isolation
PLC type	Compatible with Mitsubishi FX2N	Compatible with Mitsubishi FX3G
PLC programming software	Compatible with Works 2/GX Developer8.52	Compatible with Works 2/GX Developer 8.86 version
Write mode	write when run is not supported	Support RUN write, modify the program more convenient and fast
PLC programming port	DB9 port RS232 programming port	It comes with two PLC programming ports (Mini B type USB port and RS232 port), USB programming port download can reach 115200bps, USB programming port download speed can reach 12Mbps.
COM port	Optional communication port supports the Mitsubishi programming port protocol/MODBUS protocol/RS protocol. EX2N-43H(A)/43KH(A)50KH(A) can be optionally equipped with one RS485; EX2N-70H(A/AS)/100HA can be equipped with one RS232 or one RS485.	The optional communication port supports Mitsubishi programming port protocol/MODBUS protocol/RS protocol/BD board protocol, which facilitates PLC interconnection and communication with external devices. EX3G-43HB(HA)/EX3G-43(50)KHB series can be equipped with 2 485; EX3G-70KHA(KHB)/100HA can be equipped with 1 485 or 2 485 (optional 2 485, one of them) 485 is changed from the default 232 special), optional CAN port, network port (and touch screen network port can not coexist), optional WIFI (will occupy the default 232 port).
Program Capacity	8K steps	32K steps
Auxiliary register range	[M0~M499] 500 points General; [M500~M1535] 1036 points Keep in; [M8000~M8255] 256 points Special.	[M0~M383] 384 points General; [M384~M1535] 1152 points to keep in; [M1536~M7679] 6144 points General; [M8000~M8511] 512 points Special.
Data register range	[D0~D199] 200 points General; [D200~D999] 800 points Keep in ; [D8000-D8255] 256 points Special.	[D0~D127] 128 points General; [D128~D7999] 7872 points to keep in; File register [R0~R23999] 24000

		points to keep; [D8000-D8511] 512 points Special.
Status register range	[S0~S9] 10 points Initial status; [S10~S499] 490 points General; [S500~S999] 500 points keep in.	[S0-S9] 10 points for initial state; [S10~S999] 990 points to keep in use; [S1000~S4095] 3096 points Generally used.
Timer range	[T0~T199] 200 points 100ms General; [T200~T245] 46 points 10ms General; [T246~249] 4 points 1ms, General; [T250~T255] 6 points 100ms Cumulative keep in.	[T0~T199] 200 points 100ms is general; [T200~T245] 46 points 10ms for general use; [T246~T249] 4 points 1ms cumulatively used; [T250~T255] 6 points 100ms cumulatively used; [T256~T319] 64 points 1ms Normal use.
Counter range	[C0~C99] 100 points Generally 16 bits; [C100~C199] 100 points Power outage remains 16 bits; [C200~C234] 35 points Power outage remains 32 bits.	[C0~C15] 16 points, generally 16 bits; [C16~C199] 184 points, power failure to maintain 16 places; [C200~C219] 20 points, generally 32 bits; [C220~C234] 15 points Power failure to maintain 32 bits.
Pointer, interrupt	[P0~P127] 128 points JUMP CALL.	[P0~P255] 256 points JUMP CALL; [P0~P1280] 1281 points JUMP CALL (26232 and above); Input interrupt 6 points I0□□~I5□□; The timer is interrupted by 3 points I6□□~I8□□.
DI/DO	Up to 24DI/20DO, at most 18 relay can be available.	Supports up to 30DI/30DO and up to 28 MR. Note: When the switch quantity reaches 30DI/30DO, the analog quantity can be up to 5AD/2DA; when the switch quantity is 24DI/20 DO, the analog quantity can be up to 16AD/8DA.
DO type and load	Relay MR(Maximum load: 5A)/Transistor MT(Maximum load:500mA)/Mixed output MRT.	EX3G-43HA/HB/EX3G-43(50)KHB series optional Relay MR (maximum load 5A) / MOS tube (maximum load 2A) EX3G-70KHA/70KHB/100HA optional relay MR (maximum load 5A) / Transistor MT (maximum load 500mA) / mixed output MRT.

Analog	<p>Support multiple analog input and output, single or mixed, at most 20AD/8DA, analog input precision 12 bit, output 10 bit. Analog input is read the value of special registers, analog output is to reset standard bit ON and then value special registers.</p> <p>AD type: EK thermocouple /S thermocouple /J thermocouple / PT100 / PT1000 /NTC10K/ NTC50K/NTC100K /0-20mA /4-20mA /0- 10V /0-5V</p> <p>DA type: 0-10V/0-5V /0-20mA</p>	<p>Support multiple channels of various types of analog single or mixed input and output, a single device up to 16 in 8 out, analog input and output accuracy 12 bits. The CX3G analog input read supports direct read registers, and can also use the FROM instruction. The analog output supports direct register assignment or the TO instruction.</p> <p>Analog input type: EKSTJ type thermocouple (can support negative temperature) / PT100/PT1000/NTC10K/NTC50K/NTC100K/0-10V/0-5V/0-20mA/4-20mA or hybrid and other special specifications; EX3G-70KHA(S)/100HA all-in-one supports -5V~5V And -10V~10V voltage input.</p> <p>Analog output type: 0-10V/0-5V/0-20mA/4-20mA or hybrid type optional.</p>
High speed counter	<p>Regularly with 2 channels single or AB phase 10Khz high speed counter. At most 6 channels single phase (4 10-100K,2 5-10K) or 3 channels AB phase (2 10-100K,1 5-10K) or 3 ABZ phase (1 10-100K,2 5-10K). Fixed double frequency.</p>	<p>EX3G-43HB single phase 6 channel 10KHz or AB (Z) phase 3 channel 0KHz.</p> <p>Conventional single-phase 6 channel 60KHz or AB(Z) phase 2 channel 60KHz+1 channel 10KHz.</p>
Pulse	<p>Regularly 4 channels 20Kpulse, Y0/Y1/Y6/Y7, at most can be customized to 5channel 20-200K. Acceleration and deceleration is the same register.</p>	<p>The conventional 8 channel Y0-Y3 is 100KHz, and the Y4-Y7 is 10KHz; Acceleration and deceleration independent, high-speed counting + high-speed pulse total transmission can not exceed 480KHz.</p>
Supported instructions	<p>Compatible with most instructs of FX2N , position instruct and floating points of 3U (123 instructs in total) .EI and high speed compare not supported. PID supported, adjust automatically not supported, users need to modify parameters by hand.</p>	<p>Support interrupt, support linear arc interpolation, support high-speed instruction such as high-speed set reset, PID support auto-tuning (only step response mode is supported), support for index multi-point transfer instruction/binary floating-point number transfer, Gray code conversion, binary Floating point angle arc conversion,</p>

		data block addition and subtraction, cam matrix, digital tube command, etc. (More than 76 instructions supported by CX2N).
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