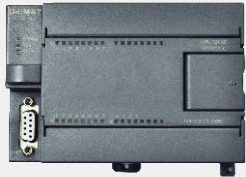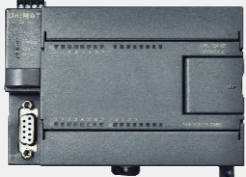# UN 120 Series Economical PLC

CPU 124 Profile

UN 120 series Economical PLCs are highly cost-efficient micro PLC which are independently developed, and self-produced by UniMAT, for the field of automated machinery equipment.UN 120 series PLC are the optimal choice for machinery equipment automatic production. Based on its strict cost control,and reliable quality.
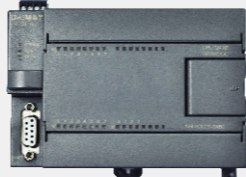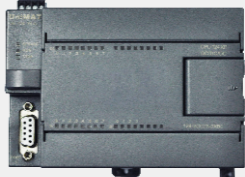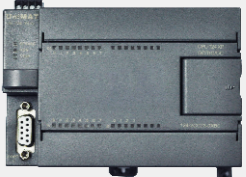
CPU 124 of UN 120 series has compact structure and powerful instruction set, and outstanding performance, can control various industrial equipment, it is mainly used in small automation control system and satisfies various control needs.

General Technical Specification

UN 120 series PLC general technical specification	
Protection Grade	IP20, Match IEC 60529
Environment Temperature Horizontal installation Vertical installation	0℃~60℃ 0℃~40℃
Relative humidity	5% ~ 95%, non condensing (RH Grade2, Match IEC61131-2)
Atmosphere	795~1080hPa
Isolation 24V DC circiut 230V AC circuit	Test voltage 500V DC Test voltage 1460V AC
Electromagnetic compatibility	Accord with EMC regulation's requirements Noise suppression, accord with IEC 61000-6-2 Testing accord with: IEC 61000-4-2, 61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC 61000-4-6
Mechanical grade vibration, testing condition is accord with	IEC 60068, Part2-6/10 μp58Hz; Constant amplitude 0.075mm; 58~150Hz; constant accelerated speed 1g; Vibration period: in every direction of three mutually orthogonal axis, every axis is 10 vibration period.

UN 120 Series CPU Module

CPU 124-1Q	CPU 124-2Q	CPU 124-1R
· Local Digital 14DI/10DO, Transistor output · Communication ports: one RS485 supports PPI Protocol, communication · Expansion Modules Max. allowed: 3 I/O Modules · Supports 128 digital and 32 analog · Apply FLASH's long-time data-holding on power-off, no need of power supply, can save data for 10 years · Unique AES iterative encryption algorithm, which protects clients' intellectual property.	· Local digital 14DI/10DO, transistor output · Communication ports: two RS485, support both PPI Protocol and free port communication · Expansion modules max. allowed: 3 I/O Modules · Supports 128 digital and 32 analog · Apply FLASH's long-time data-holding on power-off, no need of power supply, can save data for 10 years · Unique AES iterative encryption algorithm, which protects clients' intellectual property.	· Local Digital 14DI/10DO, relay output · Communication ports: one RS485, supports PPI Protocol and free port communication · Expansion modules max. allowed: 3 I/O Modules · Supports 128 digital and 32 analog · Apply FLASH's longtime data-holding on power-off, no need of power supply, can save data for 10 years · Unique AES iterative encryption algorithm, which protects clients' intellectual property.

CPU 124-2R	CPU 124XP-2Q	CPU 124XP-2R
· Local digital 14DI/10DO, relay output · Communication ports: two RS485, support both PPI Protocol and free port communication · Expansion modules max. allowed: 3 I/O Modules · Supports 128 digital and 32 analog · Apply FLASH's longtime data-holding on power-off, no need of power supply, can save data for 10 years · Unique AES iterative encryption algorithm, which protects clients' intellectual property.	· Local digital 12DI/8DO, transistor output · Local analog4AI/2AO, non-Isolated output · Communication ports: two RS485, support both PPI Protocol and free port communication · Expansion modules max. allowed: 4 I/O modules · Supports 128 digital and 32 analog · Apply FLASH's longtime data-holding on power-off, no need of power supply, can save data for 10 years · Unique AES iterative encryption algorithm, which protects clients' intellectual property.	· Local digital 12DI/8DO, transistor output · Local analog 4AI/2AO, non-isolated output · Communication ports: two RS485, support both PPI Protocol, and free port communication · Expansion modules max. allowed: 4 I/O modules · Supports 128 digital and 32 analog · Apply FLASH's longtime data-holding on power-off, no need of power supply, can save data for 10 years · Unique AES iterative encryption algorithm, which protects clients' intellectual property.

CPU 124 Techical Specifications

Model	CPU 124-1Q	CPU 124-2Q	CPU 124-1R	CPU 124-2R	CPU 124XP -2Q	CPU124XP-2R
Power consume			7W			
Program areas			8K			16K
Data areas			10K			
Local digital			14DI/10DO			12DI/8DO
Local analog			-			4AI/2AO
I/O Image area						
Digital			128 (64DI/64DO)			
Analog			32 (16AI/16AO)			
Expansion module			3			4
Data-holding on power off			support			
Analog adjustmnet			two 8 bits resolution			
Real-time clock			Built-in			
Removeable terminal			Non-removable			removable
Timers			Total 256pcs: 4pcs 1ms, 16pcs 10ms, 236pcs 100ms			
Counters			256			
Power consumption						
Sensor 24V			300mA			-
Bus 5V			340mA			
Integration communication function						
Communication port	1	2	1	2	2	2
PPI baud rate(kbps)			9.6, 19.2, 187.5			
Freeport baud rate(kbps)			1.2-115.2			

Model	CPU 124-1Q	CPU 124-2Q	CPU 124-1R	CPU 124-2R	CPU 124XP -2Q	CPU124XP-2R
Integration Communication function						
Max.cable length of each period	Using isolated repeater:187.5kbps then can be 1000meters 38.4kbps can be 1200meters Non-using isolated repeater:50meters					
PPI Master	Not support				Support	
Max. stations	Every segment 32 stations, every network 126 stations					
Max. masters	–	-			32	
Power Characteristics						
Input voltage	20.4-28.8 VDC					
Inrush current	12A(28.8 VDC)					
Isolation	Not isolated					
Fuse	3A 250V Slow Blow					
Digital input characteristics						
Local Integrated Digital Inputs	14 inputs				12 inputs	
General	24V DC input					
Type	PNP/NPN					
Rated voltage	24 VDC 4mA					
Max. Continuous permissible voltage	30 VDC					
Surge voltage	35 VDC 0.5s		35 V DC 0.5s		35V DC 0.5s	
Logic "1"(Min.)	15 VDC 2.5mA		15 V DC 2.5mA		15 V DC 2.5mA	
Logic "0"(Max.)	5 VDC 1mA		5V DC 1mA		5V DC 1mA	
Input delay	Optional (1-13ms)					
Permissible leakage current (Max.)	1mA					
Isolation	Yes					
Optoelectronic isolation	500 VAC for 1 minute					
High- speed Counters	Single -phase 2 pcs 20K (|0.0|0.1)					
Digital output standard						
Local digital integrated outputs	10 outputs				8 outputs	
General	24V output		Relay output		24V Output	Relay output
Type	Solid state MOSFET (Signal source)		Dry contact		Solid state MOSFET (Signal source)	Dry contact
Rated voltage	24 V DC		24 V DC or 250 V AC		24 V DC	24 V DC or 250 V AC
Voltage range	20.4-28.8 V DC		5-30 V DC, 5-250 V AC		20.4-28.8 V DC	5-30 V DC, 5-250 V AC
Surge current (Max.)	8 A 100ms		5 A 4S at 10% duty cycle		8 A 100ms	5 A 4S at 10% duty cycle
Logical "1" (Min.)	20V DC(Max. Current)		–		20V DC(Max. Current)	–
Logical "0" (Max.)	0.1 V DC 10KΩ load		–		0.1 V DC 10KΩ load	–
Rated current per point (Max.)	0.5A		2A		0.5A	2A

Model	CPU 124-1Q	CPU 124-2Q	CPU 124-1R	CPU 124-2R	CPU 124XP -2Q	CPU124XP-2R
Rated current per common (Max.)	4A		8A		4A	8A
Digital output standard						
Leakage current (Max.)	10uA		–		10uA	–
Lamp load (Max.)	5W		30 WDC, 200 WAC		5W	30 WDC, 200 WAC
Inductive clamp voltage	L+minus 48 VDC, 1W dissipation		–		L+minus 48 VDC, 1W dissipation	–
On state resistance (contact)	0.3 Ω Typical (0.6Ω max.)		0.2 Ω		0.3 Ω Typical (0.6Ω max.)	0.2 Ω
Isolation	Optocoupler Isolation		Relay isolation		Optocoupler Isolation	Relay isolation
Pulse Frequency (Max.)	2 pcs 20kHz (Q0.0 Q0.1)		1Hz		2 pcs 20kHz (Q0.0 Q0.1)	1Hz
Lifetime mechanical cycles	–		10,000,000 (No load)		–	10,000,000 (No load)
Lifetime contacts	–		100,000 (Rated load)		–	100,000 (Rated load)
Outputs in parallel connection	Yes, only outputs in same group		no		Yes, only outputs in same group	no
Analog input Characteristics						
Local integrated Analog inputs points	–				4	
Analog input type	–				Single-ended	
Voltage range	–				± 10V	
Data word format, full-scale range	–				-32,000 to +32,000	
DC input impedance	–				> 100KΩ	
Max. input voltage	–				30V DC	
Resolution	–				11bits plus 1sign bit	
LSB value	–				4.88mV	
Isolation	–				Without	
Accuracy	–				±2.5% full range [Max. Error 0 to 55 degree] ±1.0% full range [typical 25 degree]	
Repeatability	–				±0.05% full range	
Analog to digtal conversion time	–				125ms	
Conversion type	–				SAR	
Step response	–				Max. 250ms	
Noise rejection	–				Typical-40dB@50Hz	
Analog Output Characteristics						
Local integrated analog output	–				2	
Signal Range	–				Voltage 0-10V Current 0-20mA	
Data word format, full-scale	–				0 to +32000	
Resolution, full range	–				12 bits	
LSB value	–				Voltage 2.44mV Current 4.88µA	

Model		CPU 124-1Q	CPU 124-2Q	CPU 124-1R	CPU 124-2R	CPU 124XP -2Q	CPU124XP-2R
Analog output Charac-teristics	Isolation	–				No	
	Accuracy	–				Max. error: voltage output ±2% full range; current output ±3% full range Typical case: voltage output ±1% full range; Current output ±1% full range	
	Setting time	–				Voltage output: 50μs Current output: 100μs	
	Max. output drive	–				Voltage output >=5000Ω (min.) Current output <=500Ω (max.)	
Dimension (W*H*D)		120.5×80×62mm					
Order number		UN 124-1AD23-0XB0	UN 124-2AD23-0XB0	UN 124-1BD23-0XB0	UN 124-2BD23-0XB0	UN 124-2CD23-0XB0	Un124-2DD23-0XB0

CPU124/124xp Structure

port1
I/O indicators
State indicators
SF/DIAG
RUN
STOP
Mode witch(RUN/STOP)
Module expansion port
Analog potentiometer
Removable Terminals
Backplane fastening screw
port0
DIN check

Remark: the Definition of Port1 (only for CPU 124-2Q and CPU 124-2R)

UniMAT
UN 120 PLC
□ SF
□ RUN
□ STOP

Name of port	UN 124-2AD23-0XB0 UN 124-2BD23-0XB0
⏚	Shielding ground
B	RS-485 signal B
A	RS-485signal A
R	End resistance selecting(short-connect with A means add end resistance)

CPU 124 Wiring Diagram

24VDC Power

1M 1L+ 0,0 0,1 0,2 0,3 0,4 2M 2L+ 0,5 0,6 0,7 1,0 1,1 ♦ ⏚ M L+ DC

CPU 124
DC/DC/DC

1M 0,0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 2M 1,0 1,1 1,2 1,3 1,4 1,5 M L+

24VDC Sensor
Power Output

UN124-1AD23-0XB0, UN124-2AD23-0XB0 wiring diagram

24VDC Power

1L 0,0 0,1 0,2 0,3 ● 2L 0,4 0,5 0,6 ● 3L 0,7 1,0 1,1 ♦ ⏚ M L+ DC

CPU 124
DC/DC/RLY

1M 0,0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 2M 1,0 1,1 1,2 1,3 1,4 1,5 M L+

24VDC Sensor
Power Output

UN124-1BD23-0XB0, UN124-2BD23-0XB0 wiring diagram

CPU124XP Wiring Diagram

24VDC Power

V0 I0 2M V1 I1 1M 1L+ 0,0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 ⏚ M L+

CPU 124XP
DC/DC/DC
124-2CD23-0XB0

A B 2M C D 1M 0,0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 1,0 1,1 1,2 1,3

UN 124-2CD23-0XB0 wiring diagram

24VDC Power

V0 I0 2M V1 I1 1L 0,0 0,1 0,2 0,3 2L 0,4 0,5 0,6 0,7 ⏚ M L+

CPU 124XP
DC/DC/RLY
124-2DD23-0XB0

A B 2M C D 1M 0,0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 1,0 1,1 1,2 1,3

UN 124-2DD23-0XB0 wiring diagram
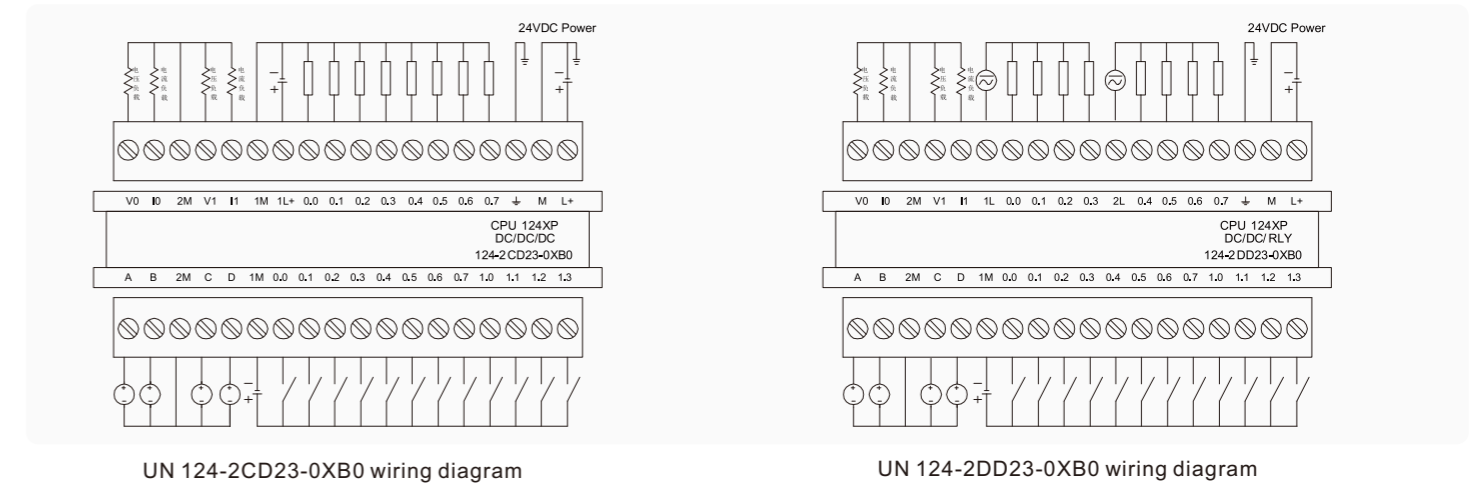
Ethernet Function CPU

Function introduction:
1、STEP7 MicroWIN V4.0SP6 vision or up software,program upload/download/monitoring and debugging online are supported.
2、UniMAT UH500 and UH300 series HMI connecting is supported.
3、MODBUS-TCP Host/slave communicator mode is supported,single CPU can communicate with 4 Host and 4 slave CPU at the same time.
4、Configuration software and OPC servo Upper connecting by MODBUS-TCP are supported.
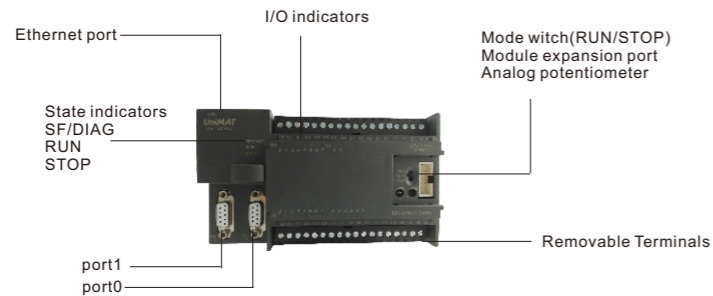
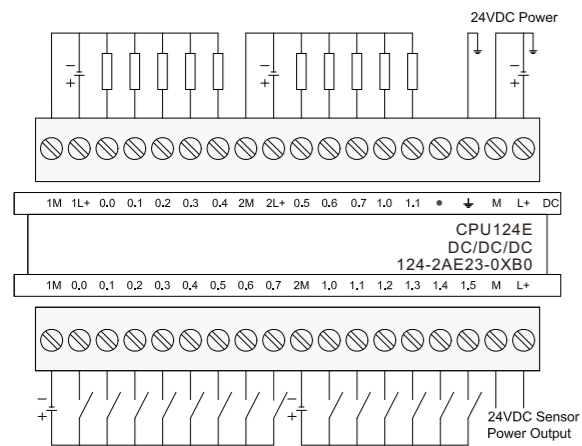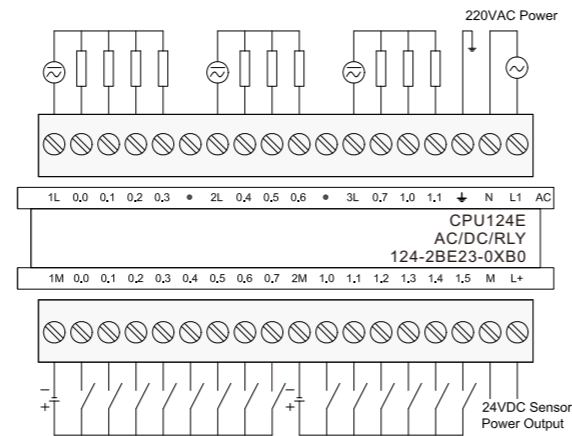| CPU 124-2QE	CPU 124-2RE
· Ethernet function CPU, transistor output · Removableterminal · Local digital 14DI/10DO · Communication ports: two RS485, support both PPI Protocol and free port communication,one RJ45 ethernet port. · Expansion modules max. allowed: 4 I/O Modules · Supports 256 digital and 64 analog · Apply FLASH's long-time data-holding on power-off, no need of power supply, can save data for 10 years · Unique AES iterative encryption algori-thm, which protects clients' intellectual property.	· Ethernet function CPU, relay output · Removableterminal · Local digital 14DI/10DO · Communication ports: two RS485, support both PPI Protocol and free port communication,one RJ45 ethernet port. · Expansion modules max. allowed: 4 I/O Modules · Supports 256digital and 64 analog · Apply FLASH's long-time data-holding on power-off, no need of power supply, can save data for 10 years · Unique AES iterative encryption algori-thm, which protects clients' intellectual property.

CPU124E Structure

Ethernet port

I/O indicators

Mode witch(RUN/STOP)
Module expansion port
Analog potentiometer

State indicators
SF/DIAG
RUN
STOP

Removable Terminals

port1
port0

CPU 124E Wiring Diagram

24VDC Power

1M 1L+ 0,0 0,1 0,2 0,3 0,4 2M 2L+ 0,5 0,6 0,7 1,0 1,1 • ⏚ M L+ DC

CPU124E
DC/DC/DC
124-2AE23-0XB0

1M 0,0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 2M 1,0 1,1 1,2 1,3 1,4 1,5 M L+

24VDC Sensor
Power Output

UN124-2AE23-0XB0 wiring diagram

220VAC Power

1L 0,0 0,1 0,2 0,3 • 2L 0,4 0,5 0,6 • 3L 0,7 1,0 1,1 ⏚ N L1 AC

CPU124E
AC/DC/RLY
124-2BE23-0XB0

1M 0,0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 2M 1,0 1,1 1,2 1,3 1,4 1,5 M L+

24VDC Sensor
Power Output

UN124-2BE23-0XB0 wiring diagram

CPU 124E Techical Specifications

Model	CPU 124 -2QE	CPU124-2RE
Power consume	5W	
Program areas	16K	
Data areas	10K	
Local digital	14DI/10DO	
I/O Image area		
Digital	256 (128DI/128DO)	
Analog	64 (32AI/32AO)	
Expansion module	4	
Data-holding on power off	support	
Real-time clock	Built-in	
Removeable terminal	removable	
Timers	Total 256pcs: 4pcs 1ms, 16pcs 10ms, 236pcs 100ms	
Counters	256	

Model	CPU 124 -2QE(transistor)	CPU124-2RE(relay)
Timed interrupts	Two with 1ms resolution	
Edge interrupts	4 up /4 down	
Real time clock	50 hrs/representative value（at 8 hrs at 40℃)	
Lock option	Battery card	
Power characteristics		
Rated voltage	DC 24V	AC 220V
Input voltage	DC 20.4-28.8V	AC 110-240V
Senor voltage and current	voltage:L+ minus 5V;current:300mA	
Ethernet communication capabilities		
Port	1 RJ485 ethernet port	
Communication rate	10/100 Mb/s	
Duplex mode	Full duplex support cross/straight line heat plug	
Communication distance	UTP 100m	
Max.simultaneous connection	8	
Max communication bytes one time	240 bytes	
PC communication	STEP7 Micro/Win and kingview support	
Modbus-TCP host	Max 4 connection at the same time	
Modbus-TCP salve	Max 4 connection at the same time	
Series port communication function		
Port	2 RS-485port（DB9 port）	
PPI baud rate	9600,19200,187500 bps	
Max stations	32 stations every section, 126 stations/network	
PPI host mode	support	
Digital input/output characteristic(s)		
Digital input integrated	14	
Input type	PNP/NPN	
Rated voltage	24V DC,4mA	
Max leakage current	1mA	
Isolation	yes	
Digital output integrated	10 outputs	
Output Type	Solid state -MOSFET	Dry contact
Rated Voltage	24V DC	24VDC or 250VAC
Voltage range	20.4-28.8V DC	5-30VDC 5-250VAC
Max Rated Current very point	0.5A	2A
Mechanic Life span	-	10000000(No load)
Contacts lifetime	-	100000(Rated load)
Parallel connections	yes,when in the same group	No
Environment parameters		
Working temperature	0℃～＋60℃	
Transportation temperature	-20℃～80℃	
Environmental relative humility	5~90%	
IP grade	IP20	
Order number	UN 124-2AE23-0XB0	UN 124-2BE23-0XB0

UN 120 Digital Input Modules

Technical Specification

Product	EM 121 8 input	EM 121 16 input
Product picture		
Product Introduction	• 8 digital input, 24V DC; • optocoupler isolation with high stability and anti-interference.	• 16 digital input, 24V DC; • optocoupler isolation with high stability and anti-interference.
Bus current consumption	40 mA	85mA
Total power consumption	2 W	3W
Inputs	8	16
Input type	PNP/NPN	
Rated voltage	24V DC 4mA	
Max. continuous permissible voltage	30V DC	
Surge voltage	35V DC, 0.5s	
Logic "0"	0~5V DC	
Logic "1"	15~30V DC	
Max. input delay	4.5 ms	
Optical isolation (field to logic)	500 V AC for 1 minute	
Permissible max.leakage current (Bero)	1 mA	
Cable length — Shielded	500m	
Cable length — Unshielded	300m	
Dimension (W*H*D)	46×80×62 mm	71.2x80x62 mm
Order number	UN 121-1BF22-0XA0	UN121-1BH22-0XA0

#### Wiring Diagram

UN 121-1BF22-0XA0

UN121-1BH22-0XA0
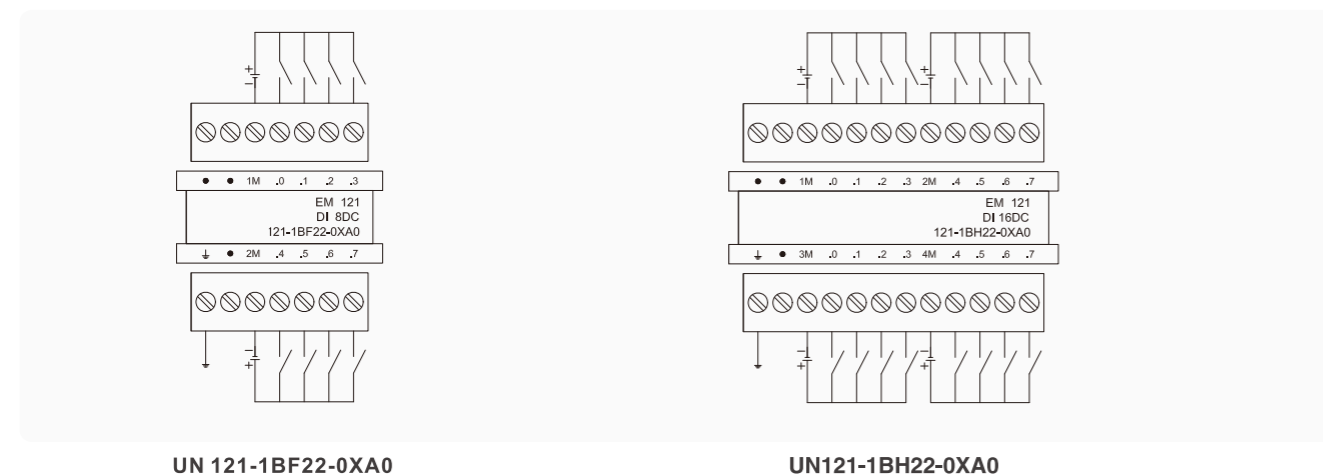
UN 120 Digital Output Modules

Technical Specification

Model	EM 122 8 output, transistor	EM 122 8 output, relay
Product picture		
Product Introduction	• 8 digital output, 24V DC; • strong anti-interference performance and high with a stability; • Transistor output, optical isolation.	• 8 digital output, 24V DC/250V AC • It has a strong anti-interference performance and high stability; • Relay output.
Bus current consumption	65 mA	60 mA
Total power consumption	2 W	3W
Digital output data units	8	8
Output type	transistor	relay
Isolation	optocoupler	relay
Rated voltage	24 V DC	24V DC/ 250V AC
Voltage range	20.4~28.8V DC	5~30V DC/ 20~250V AC
Rated current	0.75 A	2.0 A
Lamp load	5 W	30W DC/200W AC
Cable length — shielded	500m	
Cable length — unshielded	150m	
Switching frequency	/	1 Hz
Contacts machine lifetime	/	10,000,000
Contacts machine lifetime (rated load voltage)	/	100,000
Dimension (W*H*D)	46×80×62 mm	46×80×62 mm
Order number	UN 122-1BF22-0XA0	UN 122-1HF22-0XA0

Wiring Diagram


UN 122-1BF22-0XA0

UN 122-1HF22-0XA0
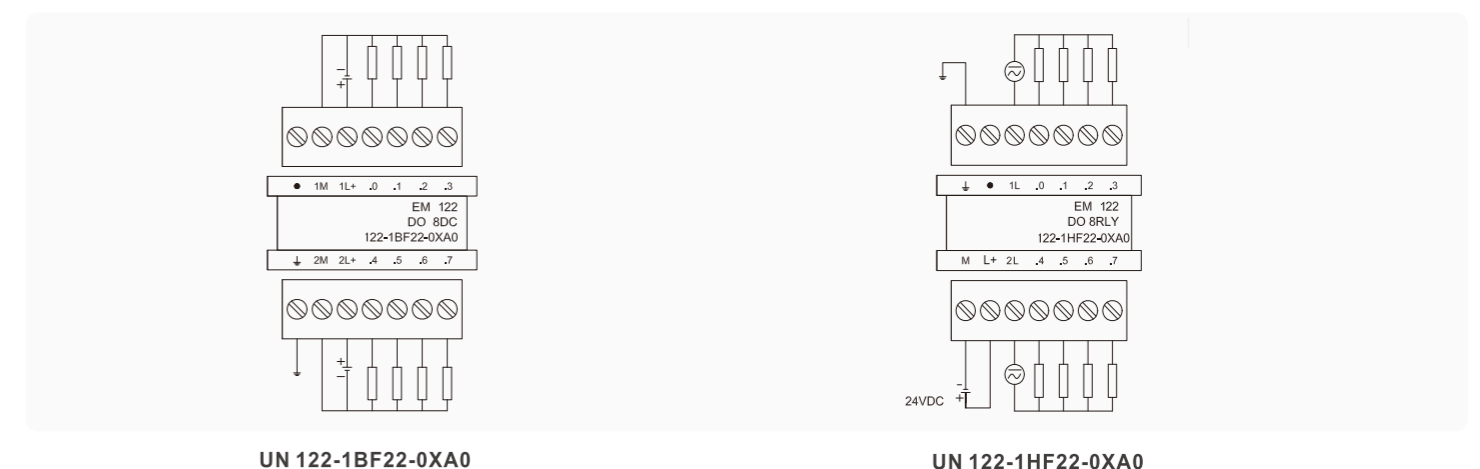
UN 120 Digital I/O Modules

Technical Specification

Model	Em123 4 input/4 output	Em123 4 input/4 output	Em123 8 input/8output	Em123 8 input/8output
Product Picture				
Product Introduction	• 4 digital input/ 4 output, 24V DC; • Transistor output, optocoupler isolation;	• 4 digital input/4 output, 24V DC/250V AC • Relay output, electro-magnetism isolation;	• 8 digital input /8 output, 24V DC; • Transistor output,opto-coupler isolation;	• 8 digital input/ 8 output, 24V DC/250V AC; • Relay output, electrom-agnetism isolation;
	• Strong anti-interferencr performance and high stability.			
Bus current consumption	40mA		80mA	
Total power consumption	2W		3W	
Input characteristics				
Number of digital input	4		8	
Rated voltage	24V DC,4mA			
Logic "0" voltage range	0~5V DC			
Logic "1" voltage range	15~30V DC			
Input delay (max.)	4.5ms			
Signal input type	PNP/NPN			
Optical isolation (field to logic)	500V AC for 1 minute			
Cable length	500m(shielded); 300m(unshielded)			
Output characteristics				
Number of digital output	4	4	8	8
Output type	transistor	relay	transistor	relay
Isolation	optocoupler	relay	optocoupler	relay
Rated voltage	24V DC	24V DC/250V AC	24V DC	24V DC/250V AC
Voltage range	20.4~28.8V DC	5~30V DC/20~250V AC	20.4~28.8V DC	5~30V DC/20~250V AC
Rated current	0.75A	2.0A	0.75A	2.0A
Lamp load	5W	30W DC/200W AC	5W	30W DC/200W AC
Lifetime mechanical cycles(no load)	/	10,000,000	/	10,000,000
Lifetime contacts (rated load)	/	100,000	/	100,000
Cable length	500m (shielded); 150m (unshielded)			
Demension (W*H*D)	46×80×62 mm	46×80×62 mm	71.2×80×62 mm	71.2×80×62 mm
Order number	UN 123-1BF22-0XA0	UN 123-1HF22-0XA0	UN 123-1BH22-0XA0	UN 123-1PH22-0XA0

Wiring Diagram

UN 123-1BF22-0XA0   UN 123-1HF22-0XA0   UN 123-1BH22-0XA0   UN 123-1PH22-0XA0
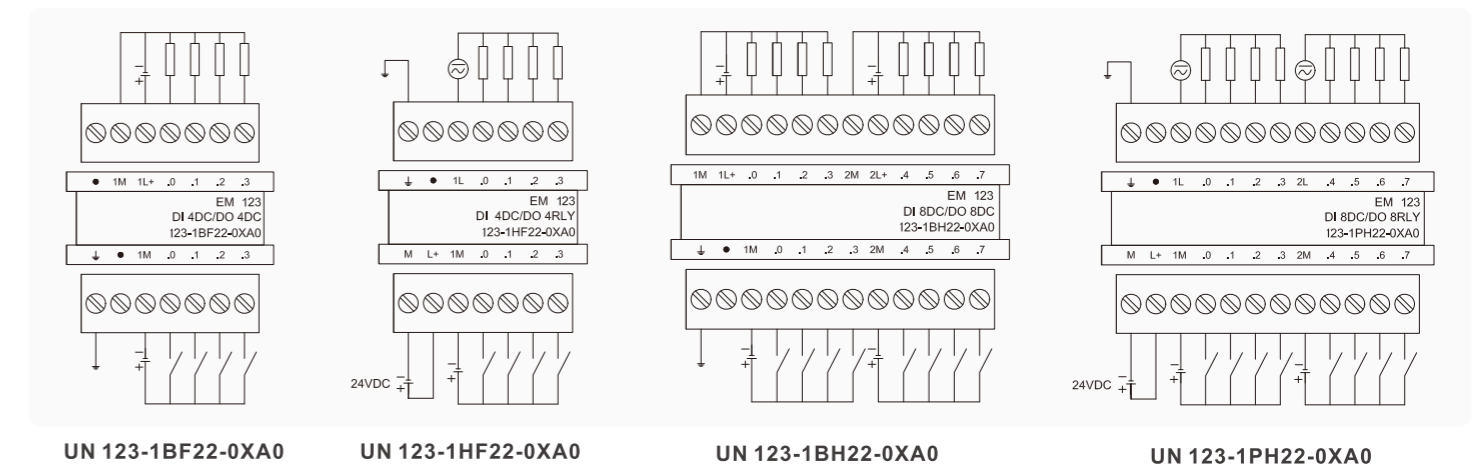
UN 120 Analog Input Modules

Technical Specification

Model	EM 131 4 inputs × 12bits	EM 131 8 inputs × 14bits
Product Picture		
Product Introduction	•4 AI, resolution 12bits, 24V DC; •Circuit design support no gain calibration, easy to use; •strong anti-interference performance with a stable state.	•8 AI, resolution 14bits,24V DC; •Circuit design supports no gain calibration,easy to use; •All channels support voltage range and current rang, high flexibility.
From bus current consumption	20 mA	20 mA
From L+current consumption	60 mA	60 mA
Total power consumption	2W	2W
AI port	4	8
Input type	Differencial input	
Voltage input range: unipolarity	0~5V, 0~10V	
Voltage input range: bipolar	±2.5V,±5V	±5V,±10V
Input range: current	0~20mA	0~20mA,±20mA
Resolution	12bits	14bits
Bipolar range	−32,000~+32,000	
Unipolarity range	0~+32,000	
Cable length (unshielded)	300m	
Input Impedance	≥10M Ω voltage input	
	250 Ω current input	
Isolation (field to logic)	>2000V	no
Aualog to digital conversion time	＜250μs	
Common-mode rejection	40dB, DC to 60Hz	
Common-mode voltage	Signal voltage + common-mode voltage ≤12V	
Max. input voltage	30V DC	
Max. input current	32mA	
Address range	AIW	
Dimension (W∗H∗D)	71.2×80×62 mm	
Order number	UN 131-0HC22-0XA0	UN 131-0HF22-0XA0

▮ DIP Switch configuration table ▮

Model No.	Switch	SW 1	SW 2	SW 3	SW 4	SW5	SW 6	Full inputs
UN 131-0HC22-0XA0		ON	OFF	ON			OFF	0 ~ 10V
		ON	ON	OFF			OFF	0 ~ 5V
		ON	ON	OFF			OFF	0 ~ 20mA
		OFF	OFF	ON			OFF	±5V
		OFF	ON	OFF			OFF	±2.5V

Model No.	Switch	SW 1	SW 2	SW 3	SW 4	SW5	SW 6	Full inputs
UN 131-0HF22-0XA0		OFF	OFF	ON	OFF	OFF	OFF	0 ~ 10V
		OFF	OFF	ON	ON	OFF	OFF	0 ~ 5 V
		ON	ON	ON	ON	ON	OFF	0 ~ 20mA
		OFF	OFF	OFF	OFF	OFF	OFF	±10V
		OFF	OFF	OFF	ON	OFF	OFF	±5V
		ON	ON	OFF	ON	ON	OFF	±20mA

★ Remark: To guarantee the configuration of DIP switch effective, PLC should be repowered.

▮ Wiring Diagram ▮

UN 131-0HC22-0XA0   UN 131-0HF22-0XA0
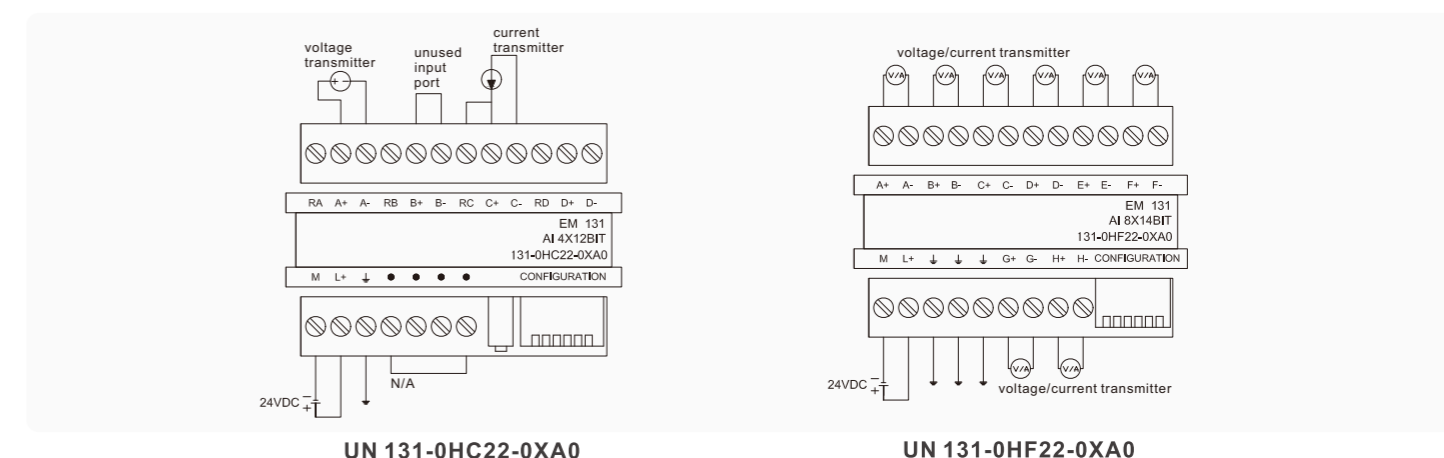
UN 120 Analog Output Modules

Technical Specification

Model	EM 132 2 output × 12bits	EM 132 4 output × 12bits
Product Picture		
Product Introduction	•2 AO; •12 bits voltage output, 11 bits resolution current output; •All channels to support voltage outputs and current outputs, which has a high flexibility.	•4 AO; •12 bits voltage output, 11 bits resolution current output; •All channels to support voltage outputs and current outputs, which has a high flexibility
Bus current consumption	20 mA	22 mA
From L+ current consumption	70mA	92mA
Total power consumption	2W	2.5W
Output Feature		
Number of analog output	2	4
Voltage output range	10 ~ +10V	
Current output range	0 ~ 20mA	
Load resistance — For voltage output	Min. 5KΩ	
Load resistance — For current output	Max. 0.5KΩ	

Model	EM 132 2 output×12bits	EM 132 4 output×12bits
Resolution	12 bits voltage output; 11 bits current output	
Data word format	Voltage output	32,000 ~ + 32,000	
	Current output	0 ~ 32,000	
Basic error	± 0.5% FS	
Dimension (W∗H∗D)	46×80×62 mm	71.2×80×62 mm
Order Number	UN 132-0HB22-0XA0	UN 132-0HD22-0XA0

Wiring Diagram

UN 132-0HB22-0XA0

UN 132-0HD22-0XA0
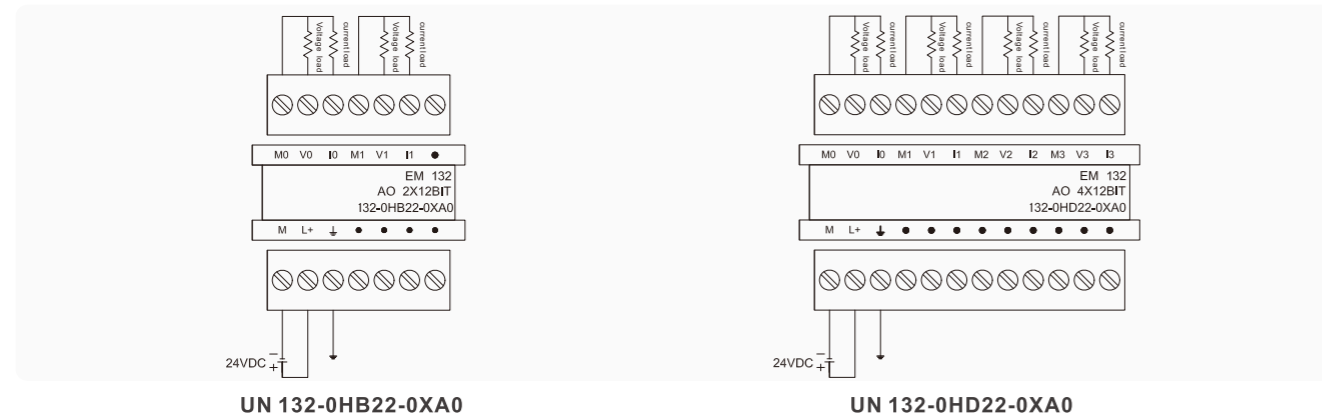
UN 120 Analog I/O Modules

Technical Specification

Model	EM 135 4 input/1 output × 12bits
Product Picture	
Product Introduction	• 4 AI; • 1 AO; • Resolution 12 bits voltage output, 11 bits current output.

Input Feature	
Bus current consumption	30mA
From L+ current consumption	60mA
Total power consumption	2W
Number of analog input	4
AI type	Differencial input
Max. Input voltage	30V
Max. Input current	32mA
Voltage input range	Unipolar	0 ~ 50mV, 0 ~ 100mV, 0 ~ 500mV, 0 ~ 1V, 0 ~ 5V, 0 ~10V
	Bipolar	±1V, ±2.5V, ±5V, ±10V, ±25mV, ±50mV, ±100mV, ±250mV, ±500mV
Current input range	0 ~ 20mA
Resolution	12 bits
Unipolar, full-scale range	0 ~ 32,000
Bipolar, full-scale range	− 32,000 ~ + 32,000
Analog to digital conversion time	< 250 μs

Output Feature	
Number of analog output	1
Voltage output range	−10 ~ +10V
Current output range	0 ~ 20mA
Maximum drive	Voltage output	Min. 5KΩ
	Current output	Max. 0.5KΩ
Resolution	12 bits voltage output; 11 bits current output
Data word format	Voltage output	32,000 ~ + 32,000
	Current output	0 ~ 32,000
Basic error	± 0.5% of full range
Size (L*W*H)	71.2×80×62 mm
Order number	UN 135-0KD22-0XA0

Wiring Diagram

UN 135-0KD22-0XA0

DIP switches configuring table

Model No. Switch	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	Full scale input
UN 135-0KD22-0XA0	ON	OFF	OFF	ON	OFF	ON	0 ~ 50mV
	OFF	ON	OFF	ON	OFF	ON	0~100mV
	ON	OFF	OFF	OFF	ON	ON	0~500mV
	OFF	ON	OFF	OFF	ON	ON	0 ~ 1V
	ON	OFF	OFF	OFF	OFF	ON	0 ~ 5V
	ON	OFF	OFF	OFF	OFF	ON	0 ~ 20mA
	OFF	ON	OFF	OFF	OFF	ON	0 ~ 10V
	ON	OFF	OFF	ON	OFF	OFF	± 25mV
	OFF	ON	OFF	ON	OFF	OFF	± 50mV
	OFF	OFF	ON	ON	OFF	OFF	± 100mV
	ON	OFF	OFF	OFF	ON	OFF	± 250mV
	OFF	ON	OFF	OFF	ON	OFF	± 500mV
	OFF	OFF	ON	OFF	ON	OFF	± 1V
	ON	OFF	OFF	OFF	OFF	OFF	± 2.5V
	OFF	ON	OFF	OFF	OFF	OFF	± 5 V
	OFF	OFF	ON	OFF	OFF	OFF	± 10V

★ Remark:After DIP switches are set up, it will be effective only when the PLC is repowered.

Product Instructions

How to input and calibrate UN 135-0KD22-0XA0: Use a voltage source or a current source to add "0" signal to one input terminal. Regulate OFFSET Potentiometer till its reading is "0". Then add a signal of full-scale value to another input terminals, regulating GAIN Potentiometer till its reading is "32000".

UN 120 TC Modules

Technical Specification

Model	EM 131 4 input, RTD	EM 131 4 input, TC
Product Picture		
Product Introduction	•4 input thermal resistance temperature measurem-ent modules; •Resolution: 16 bits •Optical isolation, stable performance	•4 input thermal couple temperature measurement modules; •Resolution: 16 bits; •Optical isolation, stable performance
Bus current consumption	45mA	87mA
From L+ current consumption	20mA	60mA
Dissipation	1W	1.8W
Number of analog input	4	4
Input type	Module ground referenced RTD	Floating TC
Common mode rejection	> 120dB @ 120V AC	
Wire loop resistance (Max.)	20Ω (Cu10 is 2.7Ω)	100Ω
Module update time	800 ms	290 ms

Model	EM 131 4 input, RTD	EM 131 4 input, TC
Data word format	Resistance: 0 ~ +27648	Resistance: −27648 ~ +27648
Input ranges	Thermal resistance: Pt100, Pt200, Pt500, Pt1000, Pt10000, Ni100, Ni120, Ni1000, Cu10 (9.035) Resistance: 150Ω, 300Ω, 600Ω	Type: E, J, K, N, R, S, T Voltage range: ±80mV
Measurement principle	Sigma→delta	
Resolution	15 bits plus 1 sign	
Address interval	AIW	
Basic error	0.1% FS	
Isolation (field to logic)	＞500V	> 2000V
24VDC supply voltage range	20.4 ~ 28.8V DC	
Dimension (W∗H∗D)	71.2×80×62 mm	
Order Number	UN 131-7PC22-0XA0	UN 131-7PD22-0XA0

▌ Wiring Diagram ▌
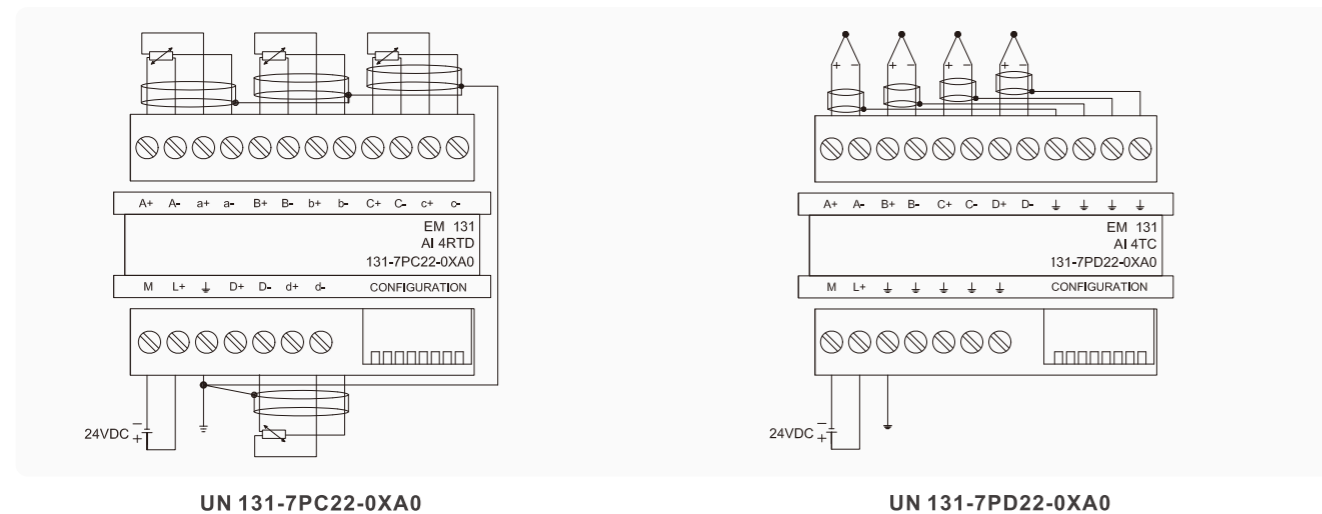
UN 131-7PC22-0XA0   **UN 131-7PD22-0XA0**

■ UN 120 RTD temperature measurement modules DIP switches configuring table

Model	UN 131-7PC22-0XA0	
Location	Options	Setting
SW1 ~ SW5	Thermal resistance: Pt100, Pt200, Pt500, Pt1000, Pt10000, Ni100, Ni120, Ni1000, Cu10 (9.035) Resistance: 150Ω, 300Ω, 600Ω	
SW 6	Offline detection direction	0: positive (+3276.7) 1: negative (-3276.8)
SW 7	Measurement units options	0: degree centigrade 1: fahrenheit degree
SW 8	Connections method selection	0: line3 1: line2 or line4

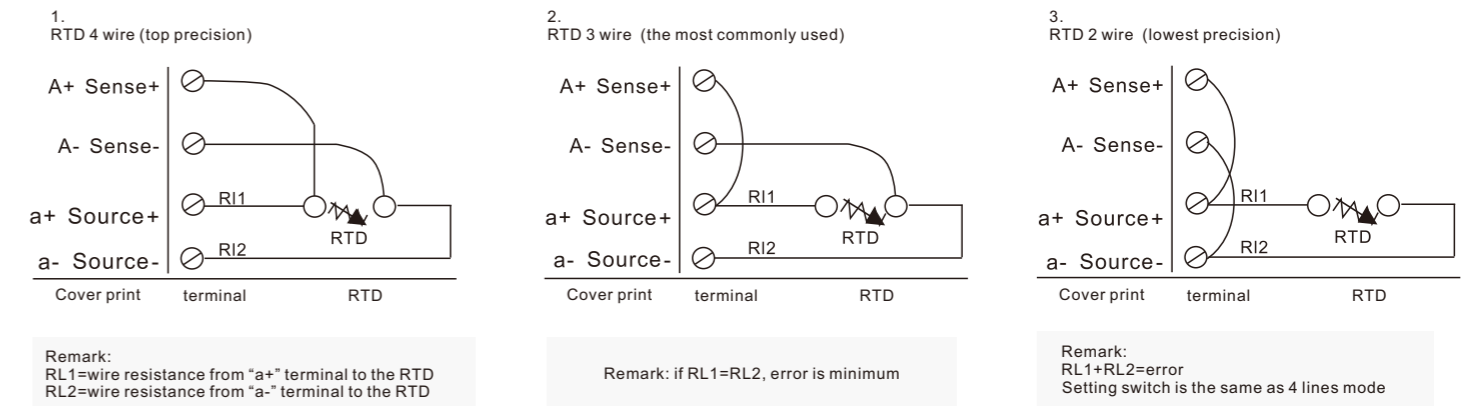## ■ UN 120 TC temperature measurement modules DIP switches configuring table

Model	UN 131-7PD22-0XA0	
Location	Options	Setting
Sw1 ~ SW3	TC type: J, K, T, E, R, S, N, ±80mV	
SW 4	Hold unused	Hold unused
SW 5	Open wire detection direction	0: positive (+3276.7) 1: negative (-3276.8)
SW 6	Open wire detect enable	0: enable 1: prohibit
SW 7	Measurement units option	0: degree centigrade 1: fahrenheit degree
SW 8	Cold junction compensation	0: yes 1: no

■ UN 120 RTD temperature measurement modules model selection and DIP switch configuring table

RTD type	SW 1	SW 2	SW 3	SW 4	SW 5	RTD type	SW 1	SW 2	SW 3	SW 4	SW 5
100Ω Pt0.003850 (default)	0	0	0	0	0	100Ω Pt0.003902	1	0	0	0	0
200Ω Pt0.003850	0	0	0	0	1	200Ω Pt0.003902	1	0	0	0	1
500Ω Pt0.003850	0	0	0	1	0	500Ω Pt0.003902	1	0	0	1	0
1000Ω Pt0.003850	0	0	0	1	1	1000Ω Pt0.003902	1	0	0	1	1
100Ω Pt0.003920	0	0	1	0	0	Nc	1	0	1	0	0
200Ω Pt0.003920	0	0	1	0	1	100Ω Ni0.00672	1	0	1	0	1
500Ω Pt0.003920	0	0	1	1	0	120Ω Ni0.00672	1	0	1	1	1
1000Ω Pt0.003920	0	0	1	1	1	1000Ω Ni0.00672	1	0	1	1	1
100 Ω Pt.0.00385055	0	1	0	0	0	100 Ω Ni0.006178	1	1	0	0	0
200Ω Pt0.00385055	0	1	0	0	1	120 Ω Ni0.006178	1	1	0	0	1
500Ω Pt.0.00385055	0	1	0	1	0	1000Ω Ni0.006178	1	1	0	1	0
1000Ω Pt0.00385055	0	1	0	1	1	10000Ω Pt0.003850	1	1	0	1	1
100Ω Pt0.003916	0	1	1	0	0	10Ω Cu0.004270	1	1	1	0	0
200Ω Pt0.003916	0	1	1	0	1	150Ω FS resistance	1	1	1	0	1
500Ω Pt0.003916	0	1	1	1	0	300Ω FS resistance	1	1	1	1	0
1000Ω Pt0.003916	0	1	1	1	1	600Ω FS resistance	1	1	1	1	1

★Remark: When RTD resistance value is corresponding to table, indicating that measuring temperature is 0℃; Cu10 indicates its measuring resistance value when the temperature is 25℃; the resistance value is 9.035Ω when the temperature is 0 ℃.

■ UN 120 RTD temperature measurement modules wiring diagram

1.
RTD 4 wire (top precision)

Remark:
RL1=wire resistance from "a+" terminal to the RTD
RL2=wire resistance from "a-" terminal to the RTD

2.
RTD 3 wire (the most commonly used)

Remark: if RL1=RL2, error is minimum

3.
RTD 2 wire (lowest precision)

Remark:
RL1+RL2=error
Setting switch is the same as 4 lines mode

■ UN 120 4TC type and DIP switch SW1-SW3 corresponding table

On-off state

↑ 1－ON

↓ 0－OFF

TC type	SW1	SW2	SW3
J (default)	0	0	0
K	0	0	1
T	0	1	0
E	0	1	1
R	1	0	0
S	1	0	1
N	1	1	0
+/-80mv	1	1	1

UniMAT General Accessories
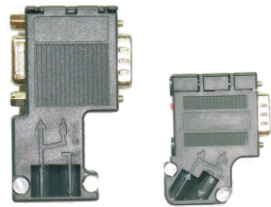
PROFIBUS connector

Name		Order Number
90°	without programming port	UN 972–0BA12–0XA0
90°	with programming port	UN 972–0BB12–0XA0
35°	without programming port	UN 972–0BA41–0XA0
35°	with programming port	UN 972–0BB41–0XA0

BUS Cables

Name	Order Number
Profibus Cable	UN 830–0EH10

Order Data

UN300 Medium

UN300Series CPU Modules	Order Number
CPU314-2PtP 1MB Flash, TF Card slot, Micro USB port, MPI port, RS485 free port	UN 314-2AG14-0AB0

UN300 Digital Expansion Module	Order Number
SM321 16 inputs 24V DC (NPN)	UN 321-1BH02-0AA0
SM321 16 inputs 24V DC (PNP)	UN 321-1BH50-0AA0
SM321 16 inputs 230V AC	UN 321-1FH00-0AA0
SM321 32 inputs 24V DC (NPN)	UN 321-1BL00-0AA0
SM322 8 outputs 24V DC 2A	UN 322-1BF01-0AA0
SM322 16 outputs 24V DC 0.5A	UN 322-1BH01-0AA0
SM322 16 outputs Relay 2A	UN 322-1HH01-0AA0
SM322 32 outputs 24V DC 0.5A	UN 322-1BL00-0AA0
SM323 16 inputs, 24V DC/ 16 outputs 24V DC 0.5A	UN 323-1BL00-0AA0

UN300 Analog Expansion Modules	Order Number
SM331 8 inputs, voltage/ current x 13 bits	UN 331-1KF02-0AB0
SM321 8 inputs, voltage/ current/ TC x 16 bits/ 4 inputs,RTD x 16bits	UN 331-7KF02-0AB0
SM321 8 inputs, RTD x 16 bits	UN 331-7PF01-0AB0
SM321 8 inputs, TC x 16 bits	UN 331-7PF11-0AB0
SM332 4 outputs voltage/current x 12 bits	UN 332-5HD01-0AB0
SM332 8 outputs voltage/current x 12 bits	UN 332-5HF00-0AB0
SM335 high-speed 4 inputs x 14 bits/high-speed 4 outputs x 12 bits	UN 335-7HG02-0AB0

UN300 Communication Module	Order Number
CP341 RS485/422 Modbus communication Module	UN 341-1CH02-0AE0

UN300 Bus Interface Module	Order Number
IM153 Profibus-DP Communication interface Module	UN 153-1AA03-0XB0
IM365 Rack Expansion interface Module	UN 365-0BA01-0AA0

UN300 Power	Order Number
PS307 Power, 5A	UN 307-1EA01-0AA0
PS307 Power, 10A	UN 307-1KA01-0AA0

Special Accessories		Order Number
Adapter	USB-MPI/DP Adapter	UN 972-0CB20-0XA0
	RS232-MPI serial-port Adapter	UN 972-0CA23-0XA0

UN300 Din Rail		Order Number
	160mm Din Rail	UN 390-1AB60-0AA0
	320mm Din Rail	UN 390-1AD20-0AA0
	483mm Din Rail	UN 390-1AE80-0AA0
	530mm Din Rail	UN 390-1AF30-0AA0
	830mm Din Rail	UN 390-1AJ30-0AA0
	483mm Din Rail (Hot-plugging)	UN 195-1GA00-0XA0
	530mm Din Rail (Hot-plugging)	UN 195-1GF30-0XA0
	620mm Din Rail (Hot-plugging)	UN 195-1GG30-0XA0

UN300 Front Connector	Order Number
20-pin front connector Screw type	UN 392-1AJ00-0AA0
40-pin front connector Screw type	UN 392-1AM00-0AA0

UN200 Small PLC

UN200 Series CPU	Order Number
CPU224 DC/DC/DC, 24V DC, 14DI/10DO, 2 RS485 (Support PPI / free port)	UN 214-1AD23-0XB8
CPU224 AC/DC/Relay, 220V AC, 14DI/10DO, 2 RS485 (Support PPI / free port)	UN 214-1BD23-0XB8
CPU226 DC/DC/DC, 24V DC, 24DI/16DO, 2 RS485 (Support PPI / free port)	UN 216-2AD23-0XB0
CPU226 AC/DC/Relay, 220V AC, 24DI/16DO, 2 RS485 (Support PPI / free port)	UN 216-2BD23-0XB0
CPU284 DC/DC/DC, 24V DC, 14DI/10DO, 1 PPI port, 1 PPI/free port, 1 free port	UN 284-3AD23-0XB0
CPU284 AC/DC/Relay, 220V AC, 14DI/10DO, 1 PPI port, 1 PPI/free port, 1 free port	UN 284-3BD23-0XB0
CPU224XP DC/DC/DC, 24V DC, 14DI/10DO, 2 RS485 PPI port(Support free port and MODBUS)	UN 214-2AD23-0XB0
CPU224XP AC/DC/Relay, 220V AC, 14DI/10DO, 2 RS485 PPI port(Support free port and MODBUS)	UN 214-2BD23-0XB0

UN200 Digital Expansion Moudles	Order Number
EM221 8 inputs, 24V DC	UN 221-1BF22-0XA0
EM221 16 inputs, 24V DC	UN 221-1BH22-0XA0
EM221 32 inputs, 24V DC	UN 221-1BL22-0XA0
EM222 8 outputs, Transistor, 24V DC, 0.75A	UN 222-1BF22-0XA0
EM222 8 outputs, Relay, 24V DC, 2A	UN 222-1HF22-0XA0
EM222 16 outputs, Transistor, 24V DC, 0.75A	UN 222-1BH22-0XA0
EM222 16 outputs, Transistor, Relay, 2A	UN 222-1HH22-0XA0
EM222 32 outputs, Transistor, 24V DC, 0.75A	UN 222-1BL22-0XA0
EM223 4 inputs/4 outputs, 24V DC,transistor, 0.75A	UN 223-1BF22-0XA0
EM223 4 inputs/4 outputs, Relay, 2A	UN 223-1HF22-0XA0
EM223 8 inputs, 24V DC/8 outputs, Transistor, 24V DC, 0.75A	UN 223-1BH22-0XA0
EM223 8 inputs, 24V DC/8 outputs, Relay, 2A	UN 223-1PH22-0XA0
EM223 16 inputs, 4V DC/16 outputs, Transistor, 24V DC, 0.75A	UN 223-1BL22-0XA0
EM223 16 inputs, 24V DC/16 outputs, Relay, 2A	UN 223-1PL22-0XA0

UN200 Analog Expansion Moudles	Order Number
EM231 4 inputs x 12 bits	UN 231-0HC22-0XA0
EM231 8 inputs x 14 bits, AIW address	UN 231-0HF22-0XA0
EM231 8 inputs x 14 bits, VW address	UN 231-0HH32-0XA0
EM231 2 inputs, RTD	UN 231-7PB22-0XA0
EM231 4 inputs, RTD	UN 231-7PC22-0XA0
EM231 4 inputs, TC	UN 231-7PD22-0XA0
EM231 8 inputs, TC, AIW address	UN 231-7PF22-0XA0
EM231 8 inputs, TC, VW address	UN 231-7PH22-0XA0
EM231 16 inputs, TC	UN 231-7PL22-0XA0
EM232 2 outputs, Voltage/Current x 12 bits	UN 232-0HB22-0XA0
EM232 4 outputs, Voltage/Current x 12 bits	UN 232-0HD22-0XA0
EM235 4 inputs/1 output x 12 bits	UN 235-0KD22-0XA0

UN200 Communication Moudles	Order Number
EM277 PROFIBUS-DP Communication module, optoelectronic isolation	UN 277-0AA22-0XA0
IM 260 PROFIBUS-DP interface module, optoelectronic isolation	UN 260-1AA00-0XA0

Special Function Module	Order Number
Four high-speed & high precision Analog input Module, 4AI x 16 bits	UN 231-7HC22-0XA0

UN200 General Accessories	Order Number
RS 232-PPI Serial-Port Adapter	UN 901-3CB30-0XA0
USB-PPI Adapter	UN 901-3DB30-0XA0
UN 200 PLC Bus Extension Cable	UN 290-6AA20-0XA0

UN 200 Power Supply	Order Number
UN 207 24V DC/2.5A Power	UN 207-1CB00-0AA0

UN120 Economical PLC

UN120 Series CPU	Order Number
CPU124-1Q 24V DC, 14DI/10DO, Transistor, 1 RS485 (Support PPI/free port)	UN 124-1AD23-0XB0
CPU124-2Q 24V DC, 14DI/10DO, Transistor, 2 RS485 (Support PPI/free port)	UN 124-2AD23-0XB0
CPU124-1R 24V AC, 14DI/10DO, Relay, 1 RS485 (Support PPI/free port)	UN124-1BD23-0XB0
CPU124-2R 24V AC, 14DI/10DO, Relay, 2 RS485 (Support PPI/free port)	UN 124-2BD23-0XB0
CPU124XP-2Q 24V DC, 12DI/8DO, Transistor, 4AI/2AO, 2 RS485 (Support PPI/free port)	UN 124-2CD23-0XB0
CPU124XP-2R 220V AC, 12DI/8DO, Relay, 4AI/2AO, 2 RS485 (Support PPI/free port)	UN 124-2DD23-0XB0
CPU124-2QE 24V DC, 14DI/10DO, Transistor, 2 RS485 ,1RJ45 ethernet port	UN 124-2AE23-0XB0
CPU124-2RE 220V AC, 14DI/10DO, Relay, 2 RS485 ,1RJ45 ethernet port	UN 124-2BE23-0XB0

UN120 Digital Expansion Module	Order Number
EM121 8 inputs, 24V DC	UN121-1BF22-0XA0
EM121 16 inputs, 24V DC	UN121-1BH22-0XA0
EM122 8 outputs Transistor, 24V DC, 0.75A	UN122-1BF22-0XA0
EM122 8 outputs Relay, 2A	UN122-1HF22-0XA0
EM123 4 inputs/ 4 outputs, Transistor, 24V DC, 0.75A	UN123-1BF22-0XA0
EM123 4 inputs/ 4 outputs, Relay, 2A	UN123-1HF22-0XA0
EM123 8 inputs, 24V DC/ 8 outputs, Transistor, 24V DC, 0.75A	UN123-1BH22-0XA0
EM123 8 inputs, 24V DC/ 8 outputs, Relay, 2A	UN123-1PH22-0XA0
EM123 10 inputs, 24V DC/ 6 outputs, Relay, 2A	UN123-1HH50-0XA0

UN120 Analog Expansion Module	Order Number
EM131 4AI x 12bits	UN131-0HC22-0XA0
EM131 8AIx 14bits, AIW address	UN131-0HF22-0XA0
EM132 2AO, Voltage/Current x 12bits	UN132-0HB22-0XA0
EM132 4AO, Voltage/Current x 12bits	UN132-0HD22-0XA0
EM135 4AI/1AO x 12bits	UN135-0KD22-0XA0

UN120 Temperature Collecting Module	Order Number
EM131 4AI, RTD	UN131-7PC22-0XA0
EM131 4AI, TC	UN131-7PD22-0XA0

UniMAT General Accessories

Name		Order Number
Profibus Bus Connector	90℃ without program interface	UN972-0BA12-0XA0
	90℃ with program interface	UN972-0BB12-0XA0
	35℃ without program interface	UN972-0BA41-0XA0
	35℃ with program interface	UN972-0BB41-0XA0
BUS Cable	Profibus Bus Cable	UN830-0EH10
	Profinet Bus Cable	UN840-2AH10
UNNET-PPI	Ethernet to PPI Communication Adapter	UN901-3EB30-0XA0
UNNET-MPI	Ethernet to MPI Communication Adapter	UN972-0CE20-0XA0

Programmable Logic Controller

Product Catalog

Shenzhen UniMAT Automation Technology Co.,Ltd

Add: 5/F, Building 15-16, Wisdomland Business Park, Road 2 Nantou port, Nanshan District, Shenzhen, China

TEL:0086-755-86582719   FAX:0086-755-26504049

E-mail: globalsales@unimat.com.cn, globalsales2@unimat.com.cn, globalsales1@unimat.com.cn

WEB: www.unimat.com.cn

Hot-line:
4000-300-890
UniMAT

UniMAT

Corporate Profile

UniMAT Automation Technology Co., Ltd established in 2004. With the philosophy "based on quality, morality, and be surpassing by heart with concentrated attention", we are now in the leading fleet of China Industrial Automation. We focus on the field of core control, create UniMAT brand, self-research and self-production PLC, HMI, servo driver, converter, industry specialized controllers and other automation products. We also provide systematic comprehensive solutions for equipment production and system integration.

Our enterprise has good relationship with colleges and universities and has built research centers in Shenzhen and Wuhan. 35% of our employees are R&D engineers. All of these help our company win the title of "state-level high-tech enterprise" and "software enterprise". Over the past few years, our products are widely used in the field of metallurgy, chemical engineering, environmental protection, renewable energy, electric vehicles, logistics etc. We are dedicated ourselves to develop Chinese high-end equipment manufacturing.

We pay serious attention to the product quality, providing 3-year free quality warranty for PLC products and 18-month quality warranty for other products.

At present, we have set up over 20 branches in Beijing, Shanghai, Guangzhou and other cities to form service site nationwide. At the same time, our international business has expanded to more than 20 countries and districts, and won good reputation widely.

Our mission is using technology to enhance human productivity, and striving for being a global respected leading enterprise in industry automation field.

Company Mission

To improve Human Productivity through Technology Development

Value

Integrity, Responsibility, Cooperation, Innovation

Company Vision

Become the Global Leading and Respected Provider of Automatic Products and Service

Quality Warranty

ISO 9001:2008 Management system
TQC production and quality control system
All products CE Certificated

Corporate culture